

A BEHAVIORAL PERSPECTIVE ON TECHNOLOGY EVOLUTION AND DOMAIN NAME REGULATION[†]

Todd Davies*

April 17, 2008

Table of Contents

I. Introduction	2
II. Psychology, Technology, and the Foundations of Law.....	3
A. The Making of Law and Legal Conservatism.....	4
i. Behavioral Research and Lawmaking.....	5
a) Status Quo Bias.....	5
b) Biased Assimilation.....	7
c) Self-Serving Biases in Fairness Judgments.....	8
d) System Justification and Conservatism.....	9
e) The Iron Law of Oligarchy.....	10
ii. Technology and Lawmaking.....	12
B. Legal Concepts and Incremental Refinement.....	13

[†] This is a revised version of a paper published in the PACIFIC McGEORGE GLOBAL BUSINESS AND DEVELOPMENT LAW JOURNAL, Volume 21, Number 1, 2008, pages 1-25. Citation for the original: Todd Davies, *A Behavioral Perspective on Technology Evolution and Domain Name Regulation*, PAC. McGEORGE GLOBAL BUS. & DEV. L.J. 21, 1-25 (2008). The revised draft has benefited from comments by Mark Lemley.

* Todd Davies (davies at stanford dot edu), Associate Director and Lecturer, Symbolic Systems Program, Stanford University, Stanford, CA 94305-2150. and President (July 2006 - May 2007), Computer Professionals for Social Responsibility (CPSR). The views expressed herein are solely my own, and do not represent those of CPSR, the Symbolic Systems Program, or Stanford University. This paper is based on my talk at the University of the Pacific McGeorge Law School in February 2007 -- *video available at* http://iiswebdev.pacific.edu/mcgeorge/videos/icann/icann_panel3.wmv (last visited Feb. 25, 2008), *slides at* <http://www.stanford.edu/%7Edavies/ICANN-McGeorge.pdf>, (last visited March 2, 2008) -- , although that talk contained some material not included in this paper which I hope to publish elsewhere. I wish to thank Eric Goldman, David Levine, and other participants at the McGeorge Symposium for helpful comments.

2 *A Behavioral Perspective on Technology Evolution*

- i. Behavioral Research and Legal Concepts.....14
 - a) Progressive Differentiation of Concepts.....14
 - b) Overgeneralization.....15
- ii. Technology and Concept Evolution.....16
- III. Simple Nonrival goods.....17
 - A. Nonrival Goods, Excludability, and Public Goods.....17
 - B. Simple Goods.....18
 - C. Simple Nonrival Goods: Examples.....19
 - D. Observations about Simple Nonrival Goods.....19
 - E. Loss Aversion and Rights Assignment.....21
 - i. Variables Affecting Loss Aversion.....21
 - ii. Loss Aversion, Perceived Justice, and Property Rights.....23
 - F. Barriers to Negotiation.....24
 - G. Technology-enabled Decentralization.....25
- IV. Domain Name Regulation.....25
 - A. Names are simple nonrival goods.....26
 - B. The hazards of rights assignment apply to domain names27
 - C. A global domain name system is unnecessary.....28
 - D. Domain names cause many problems which would be avoided if names were deregulated.....29
 - E. ICANN poses dangers of oligarchy in the control of information.....31
 - F. Internet law is an opportunity to evolve concepts more appropriately.....32
- V. Conclusion.....33

I. INTRODUCTION

This paper argues that private property and rights assignment, especially as applied to communication infrastructure and information, should be informed by advances in both technology and our understanding of psychology. Current law in this area in the United States and many other jurisdictions is founded on assumptions about human behavior that have been shown not to hold empirically. A joint recognition of this fact, together with an understanding of what new technologies make possible, leads one to question basic assumptions about how law is made and what laws we should have in a given area, if any.

I will begin by analyzing different aspects of U.S. law, from a high-level critique of law making to a critique of rights assignment for what I call “simple nonrival goods.”. I will (a) describe my understanding, as a non-lawyer with a background in psychology and computing, of the current conventions in U.S. law, (b) consider the foundational assumptions that justify current conventions, (c) describe advances in psychology and technology that call these conventions into question, and (d) briefly note how the law might normatively change in this light. I will then apply this general analysis to the question of domain name assignment by the Internet Corporation for Assigned Names and Numbers (ICANN).

II. PSYCHOLOGY, TECHNOLOGY, AND THE FOUNDATIONS OF LAW

More and more, legal institutions and practice are being questioned on the basis of empirical behavioral science.¹ This follows an older tradition of revisions, and even revolutions, in law brought about by technological change, as well as questioning of law in the light of new technology.² It is thus a natural step to look at the effects of changing technology on the law from a behavioral perspective. This involves trying to understand the psychological background against which law is made, and how law reacts to technology. Many of the phenomena that are discussed *below infra* have been recognized by legal scholars without much reference to the academic psychology literature. My intention here is to deepen the analysis by making such connections explicit, and to suggest, as others have done, that psychological and other empirical social science research has much to say about the foundations of law.

¹See, e.g. Justin D. Levinson, *Mentally Misguided: How State of Mind Inquiries Ignore Psychological Reality and Overlook Cultural Differences*, *How. L. J.* 49, 1-30 (2005), available at http://www.law.howard.edu/dictator/media/229/how_49_1.pdf (last visited March 2, 2008)

²See, e.g. Lawrence Lessig, *An Information Society: Free or Feudal?*, *THE COOK REPORT ON THE INTERNET*, 102-104 (July-Sept. 2003), available at <http://www.itu.int/wsis/docs/pc2/visionaries/lessig.pdf> (last visited March 2, 2008).

A. The Making of Law and Legal Conservatism

The establishment of law in most instances throughout history has resulted in, even if it is not initially supported by, a force of *legal conservatism*. Conservative philosophies are ones that uphold tradition and/or the status quo, and I will use “legal conservatism” to refer to the foundational commonality of principles, systemic attributes, and practices that support established social arrangements and vested interests. “Established” and “vested” here refer to arrangements and interests having relatively high status and resources within a society. Systemic aspects of law such as precedent and constitutions, doctrines such as *stare decisis* and constitutionalism, and institutional phenomena such as incumbency advantage and capture are all manifestations of legal conservatism. Legal conservatism can be at odds with other forms of conservatism, such as social conservatism. A legal regime that supports commercial interests, for example, can make it easier for a large retail chain to disrupt a traditional community, by displacing local businesses and making material available for sale that contradicts community values. So, legal conservatism competes not just with legal progressivism (which favors the leveling of status and resources) but also with other forms of conservatism, including forms that favor a return to previous arrangements (the *status quo ante*).

I am claiming that legal conservatism is built into the law at its core, which makes it a phenomenon for social science to explain. The foundations and institutions of law are descriptively much less responsive to quantitative empirical research from social science than are the particulars of law. Statutes, rule making, and case decisions often cite quantitative empirical studies that either augment or overturn pre-research viewpoints. But debates about more general legal principles usually revolve around intuitive judgments, with stories, historical examples, widely accepted norms, and hypothetical scenarios forming the basis of arguments. Legal conservatism also makes it difficult for changes in technology to overturn legal principles and institutions when such changes would conflict with vested interests. Principles of human behavior from

experimental psychology and other social science literatures, together with the potential of new technologies to invalidate assumptions built into existing laws, give a rhetorical boost to progressive arguments in the foundations of law, and may ultimately be a basis for overturning legal conservatism itself.

i. Behavioral Research and Lawmaking

Research in psychology has documented widespread human tendencies that bias our intuitions in the direction of legal conservatism. The term “bias” in this literature refers to the difference between, on one hand, the behavioral pattern at play when real action occurs and, on the other hand, a normatively derived possible response that may be counterfactual. The meaning of “bias” should become clear through its use in the examples that follow. The implication is that if one accepts that these tendencies are present in lawmaking - among legislators, bureaucrats, lawyers, judges, and the public - and that they represent biases away from a more defensible normative standard, then these facts are arguments against legal conservatism and the institutional practices that manifest it. Revising legal philosophy in light of new knowledge about psychology might therefore be seen as a process of bias correction.³

a) Status Quo Bias

Other things being equal, most people tend to favor the status quo over a change. Psychologists and behavioral economists have labeled this effect the *status quo bias*. In one study, students in economics courses were asked to make hypothetical choices between options, with some of the students having been told in some way that one of the options was the status quo (e.g. “You are currently a professor at College A in the midwest. Recently, you have been approached by colleagues at other universities with job opportunities. Your choices are:”), while others were

³Cf. Christine Jolls and Cass R. Sunstein, *Debiasing Through Law*, J LEGAL STUDIES 35, 199-241 (2006). The approach of Jolls and Sunstein is more of an attempt to use the law to counteract biases in the citizenry, rather than using behavioral science to question the foundations of law.

asked to select from the same set of options without one being designated the status quo (e.g. “Having just completed your graduate degree, you have four offers of teaching jobs in hand. Your choices are:”). The researchers found that an option was significantly more likely to be chosen if it was designated as the status quo,⁴ and that the advantage of the status quo increased with the number of options.⁵

Many other demonstrations of the status quo bias exist. Anecdotally, students at colleges with semester terms, for example, tend to prefer semesters over quarters, while students at colleges with quarter terms tend to prefer quarters. Field studies have shown that people tend to remain with whatever default pension plan, insurance policy, or utility service to which they are assigned, rather than switching to something that might be better, and that the status quo preference exists across different options for the same decisions.⁶

The status quo bias tends to take effect as soon as an option is labeled as the status quo, and has been shown to exist for many policy decisions.⁷ Furthermore, it exists even for investment exchange decisions in which there are little to no costs associated with change, so a normative transaction cost explanation is difficult to support.⁸

There is some evidence, however, that the status quo bias depends on an inference that the status quo is a signal of value. In experimental markets, people have been shown to be reluctant to trade away whichever object (e.g. a coffee mug versus a chocolate bar) they have been given by an experimenter, a finding sometimes termed the *endowment effect*.⁹ But the effect is sensitive to methodological details, and disappears when the experimenter tells participants

⁴William Samuelson and Richard Zeckhauser, *Status Quo Bias in Decision Making*, J OF RISK AND UNCERTAINTY 1, 12-26 (1988).

⁵Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler, *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*, J OF ECONOMIC PERSPECTIVES 5, 193, 197-198 (1991).

⁶*Id.* at 198-199.

⁷Avital Moshinsky and Maya Bar-Hillel, *Loss Aversion and the Status Quo Label Bias*, Center for Rationality and Interactive Decision Theory, Hebrew University, Jerusalem (2005), available at <http://ideas.repec.org/p/huj/dispap/dp373.html> (last visited Feb. 29, 2008).

⁸SAMUELSON AND ZECKHAUSER, *supra* note 4 at 12-13.

⁹KAHNEMAN, KNETSCH, AND THALER, *supra* note 5, at 194-197.

that the commodity they have been given was determined by a coin flip.¹⁰ In other experiment and field studies, the suggestion value of the status quo remains a plausible explanation for the status quo bias. An inference that an option has more value because it is the status quo may nonetheless rely on the false assumption that the option was selected in the past for a good reason. People appear to assume this by default unless it is transparently false, and they tend to forgo a *de novo* evaluation of possibilities which might be in their interest (e.g. in the case of investment decisions).

Applied to lawmaking, the status quo bias thus implies an advantage for established law over and above what can be argued for philosophically. The empirical research implies that human nature is imbued with this tendency. We should take this into account when evaluating arguments for the status quo, and realize that some portion of the expressed sentiment probably has no rational basis.

b) Biased Assimilation

People tend to incorporate new evidence and arguments into their beliefs in a way that is biased toward preserving prior beliefs, especially when such beliefs are strongly held. In a well-known experiment by social psychologists, when shown two research studies supporting opposite sides of the capital punishment debate, both students *in favor of* and those *opposing* the death penalty accepted evidence consistent with their prior beliefs, but they were very critical of opposing evidence. In fact, the same evidence caused *both* groups to become more confident of their views. Normatively, mixed evidence should bring the two groups closer together, but instead it pushed them farther apart.¹¹ This phenomenon is known as “biased assimilation”, and it has also been demonstrated observationally, for example with the audiences for presidential debates in the United States. Supporters of a candidate are overwhelmingly more

¹⁰Charles R. Plott and Kathryn Zeiler, *Exchange Asymmetries Incorrectly Interpreted as Evidence for Endowment Effect Theory and Prospect Theory?*, AMERICAN ECONOMIC REVIEW 97, 1449, 1461-1462 (2007).

¹¹Charles G. Lord, Lee Ross, and Mark R. Lepper, *Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence*, J OF PERSONALITY AND SOCIAL PSYCHOLOGY 37, 2098 (1979).

likely than opponents to see their favored candidate as having won a debate,¹² and debates tend to strengthen each group's belief in their favored candidate.¹³

The implication of biased assimilation research for lawmaking is that new evidence and arguments are unlikely to have the effect they deserve to have when a principle of law is well established, because those who make law can interpret new evidence so as to preserve the principle when they already believe in it. This would be another bias toward legal conservatism. It might be tempting to argue that judges, at least, can be more neutral than the average person. A follow-up to the death penalty study provides reason to doubt this, however. When people were asked to be “as *objective* and *unbiased* as possible”, they were just as biased as before.¹⁴ The facts that (a) appellate judges often vote on opposite sides from one another despite hearing the same arguments, and (b) these differences tend to follow consistent patterns across cases, show that different prior dispositions among judges strongly affect their decisions. The biased assimilation literature implies that most people responsible for making laws are unlikely to approach new questions in a way that is as open to overturning established law as newly available facts might warrant.

c) Self-Serving Biases in Fairness Judgments

People tend to interpret ambiguities in questions of fairness in ways that benefit themselves. In one experiment, survey takers were given an opportunity to dictate relative payments for their work as survey respondents. When they were told that another participant (an experimental confederate) had to leave early, the

¹²Donald R. Kinder and David O. Sears, *Public Opinion and Political Action*, in *HANDBOOK OF SOCIAL PSYCHOLOGY*, THIRD EDITION (Gardner Lindzey and Elliot Aronson eds., Random House, 1985).

¹³Geoffrey D. Munro, Peter H. Ditto, Lisa K. Lockhart, Angela Fagerlin, Mitchell Gready, and Elizabeth Peterson, *Biased Assimilation of Sociopolitical Arguments: Evaluating the 1996 U.S. Presidential Debate*, *BASIC AND APPLIED SOCIAL PSYCHOLOGY* 24, 15 (2002).

¹⁴Charles G. Lord, Mark R. Lepper, and Elizabeth Preston, *Considering the Opposite: A Corrective Strategy for Social Judgment*, *J OF PERSONALITY AND SOCIAL PSYCHOLOGY* 41, 1231, 1238 (1984). Generally on this topic see David G. Myers, *SOCIAL PSYCHOLOGY*, NINTH EDITION (McGraw Hill, 2006) at 77-79.

survey takers gave themselves more money than the purported fellow participant when they *either* worked longer *or* completed more questionnaires. They only allocated money evenly when there was no basis for a different allocation. The fact that people allocate evenly when no fairness argument can be adduced for doing otherwise illustrates a general principle about biases: that they may be largely unconscious. People strive to be fair to others – they just tend to be self-serving when it is not obvious how to be unbiased.¹⁵

Putting this finding together with the status quo bias implies that people will accept and may even try to justify inequalities favoring themselves that they would not impose *de novo*. Those who make the law tend to be more advantaged than the average person and to be well-served by existing social practices. The implication for lawmaking is that those who make law will therefore be less likely than a representative sample of the population would be to favor progressive laws, in other words biasing lawmaking toward legal conservatism.

d) System Justification and Conservatism

A bias toward established arrangements that benefit oneself might be seen as rational from the point of view of neoclassical economic theory. But the status quo bias experiments discussed *supra* suggest that support for existing conditions goes beyond mere self-interest. Indeed, John Jost and colleagues have done studies that support a general theory they call “system justification,”¹⁶ which posits that people are strongly biased toward supporting existing social systems - even when they are disadvantaged by them. System justification theory builds on several findings from earlier literature, including “cognitive dissonance” experiments, “tolerance of injustice” among the disadvantaged, and a widespread need to believe in a

¹⁵Eddy van Avermaet, *Equity: A Theoretical and Empirical Analysis* (Doctoral Dissertation, University of California, Santa Barbara, 1974), described in Jonathan Baron, *THINKING AND DECIDING, THIRD EDITION* (Cambridge University Press, 2000) at 425-426.

¹⁶John T. Jost and Orsalya Hunyady, *The Psychology of System Justification and the Palliative Function of Ideology*, *EUROPEAN REV. OF SOCIAL PSYCHOLOGY* 13, 111 (2002).

“just world” in order to perceive that we control our fate. A number of original predictions from the theory have been confirmed, including that likely events are judged to be more desirable than unlikely events, and that system justification levels are higher in societies with more extreme social and economic inequality.

Jost and colleagues have studied conservative ideology directly as well and found in an international study that individual adherence to conservatism correlates with motivational needs. They write:

“The core ideology of conservatism stresses resistance to change and justification of inequality and is motivated by needs that vary situationally and dispositionally to manage uncertainty and threat.”¹⁷

All of this work implies that there is a general tendency among both advantaged and disadvantaged groups to support existing legal systems, and that personal and situational factors make some people especially prone to this tendency. The tendency to justify existing systems is at least in part a bias, however, because its consequences are often either neutral with respect to, or at odds with, both self-interest and doing what is fairest for everyone. Whenever philosophical arguments are offered for legal conservatism as providing the best overall outcomes for society, we should balance them against system justification tendencies which people exhibit even when an existing system has no advantages for oneself or for others.

e) The Iron Law of Oligarchy

The sociologist Robert Michels coined the phrase “iron law of oligarchy” to describe a phenomenon he observed in organizations, such as political parties, which are structured to make decisions. The iron law claims that all such organizations, regardless of how democratic (or, for that matter, autocratic) they are at their beginning, eventually become oligarchies: dominated by a small elite.¹⁸ Although

¹⁷John T. Jost, Jack Glaser, Arie W. Kruglanski, and Frank J. Sulloway, *Political Conservatism as Motivated Social Cognition*, *PSYCHOLOGICAL BULLETIN* 129, 339 (2003).

¹⁸Robert Michels–, *POLITICAL PARTIES: A SOCIOLOGICAL STUDY OF THE OLIGARCHICAL TENDENCIES OF MODERN DEMOCRACY* (Eden and Cedar Paul, translators., Hearst's International Library Company, 1915).

the “iron” nature of Michels' law has been plausibly challenged,¹⁹ the mechanisms of coalescing power that Michels and later adherents put forward to explain the empirical observations on which it was based give it plausibility as a general tendency. Especially when an organization is large, or grows to be large in population, resources, responsibilities, or power, bureaucratic structure and specialization have some efficiency advantages in the face of barriers to mass participation. When combined with human psychological tendencies toward self-preservation, enjoyment of power and privilege, promoting like underlings, system justification, and identification of followers with their leaders, these efficiency advantages are often invoked to favor hierarchical forms that are mirrored by social status.

The mechanisms of oligarchy formation and maintenance are important, because most forms of organization that are typically proposed for governance give these mechanisms a strong foothold. In a well-studied, conscious attempt to avoid Michels' law, for instance, the German Green Party in the 1980s adopted a loose structure without regular office holders and with strong rights for party members to participate in decisions. As it grew in power, however, it took on a more oligarchic form in order to organize effectively and win national offices.²⁰ Oligarchy can emerge as a response to the exigencies of the world in which an organization is embedded, for example the need to compete for political power in a large nation-state. The persistence of the oligarchic tendency, while not, as Michels seemed to believe, strictly impossible to overcome, nonetheless suggests an additional source of bias toward legal conservatism. Law tends to be made and decided upon by organizations that are prone to oligarchy, and is often set up as such from the beginning. To the extent that legal elites share the interests of other elites, and work in entrenched

¹⁹See Kim Voss and Rachel Sherman, *Breaking the Iron Law of Oligarchy: Union Revitalization in the American Labor Movement*, *AMERICAN JOURNAL OF SOCIOLOGY* 106, 303 (2000); Julie Fisher, *Is the Iron Law of Oligarchy Rusting Away in the Third World?*, *WORLD DEVELOPMENT* 22, 129 (1994).

²⁰See Frieder Otto Wolf, *Whatever Happened to the German Greens?*, *RED PEPPER*, (August 2003), available online at <http://www.redpepper.org.uk/article93.html>; Charles Lees, *THE RED-GREEN COALITION IN GERMANY: POLITICS, PERSONALITY, AND POWER* (Manchester University Press, 2001).

structures, law itself will tend to have inertia and will tend to favor established interests.

ii. Technology and Lawmaking

New technologies can often be disruptive, threatening those who are benefited by existing practices. The Internet, for example, has been widely pointed to as a disruptive technology, reducing the reach of businesses such as compact discs, print periodicals, 976 phone services, and network television. In such cases, technology pushes in the opposite direction from legal conservatism. While legal conservatism favors existing arrangements, disruptive technology undermines them. Thus, the behavioral tendencies described *supra* favor a legal philosophy that is at odds with one of the main features of contemporary life in the United States and elsewhere: technological change that undermines existing practices.

A partial consequence of this tension is what has been called the “losers’ paradox:” lawmakers tend to support industries whose business models have been disrupted by a new technology, because these “losers” focus their accumulated resources and relationships with government on lobbying for laws that protect them against this disruption.²¹ The institutional manifestations of legal conservatism (the persistence of laws, precedent, capture, and the like) give these actors many advantages in steering the law toward their interests. In a system such as that in the United States, where wealth can buy lobbying power, the process might be thought of as a positive feedback cycle: law benefits established interests, who put some of their gains back into the shaping of law to give them more advantages. The presence of new technology alternatives may or may not provide enough negative feedback to neutralize the advantage of incumbents, who may either succumb to a disruptive technology or successfully prevent its widespread adoption through law or market power.

Disruptive technologies can result in substantial

²¹See Richard E. Baldwin and Frédéric Robert-Nicoud, *Entry and Asymmetric Lobbying: Why Governments Pick Losers*, J OF THE EUROPEAN ECONOMIC ASSOCIATION 5, 1064 (2007). See also Lawrence Lessig's blog post and discussion at http://lessig.org/blog/2004/08/the_losers_paradox.html (last visited March 15, 2008).

improvements in social welfare: for example, vastly more people having access to information, entertainment, and capabilities to affect the world. Thus, if we ground lawmaking in legal conservatism, we may be interfering with such improvements.²² If legal conservatism is partly based on psychological biases away from what is normatively rational, then we have an additional reason to question it. Thus, both the likelihood of technological change and the findings of behavioral research encourage us to question legal conservatism and its manifestations.

B. Legal Concepts and Incremental Refinement

While the process of lawmaking is characterized by legal conservatism, the application of law to particular cases is characterized by *incremental refinement* of concepts and rules. The law in the United States is based on rules from common law, the Constitution, statutes, and regulations. And concepts are refined over time through their application to cases. The advantage of this is that the law is codified: actors can predict with some accuracy whether a contemplated action is legal, based on written rules and how they have been interpreted in the past. This way of applying law can be at odds with both utilitarianism and democracy, however. A utilitarian decision is just the one that produces the best outcome in a particular situation, rendering legal rules unnecessary.²³ And a democratic decision usually just depends on the judgments of the voters, who do not need to agree on (or even to know about) legal rules in order to vote, and who might collectively prefer an outcome at odds with preexisting rules.²⁴

Of course, having rules might be preferred under both

²²Improvements in aggregate welfare can be made into Pareto improvements, in which no one is made worse off, through Kaldor-Hicks compensation of the "losers". But in practice this seldom happens, and can be difficult to justify when it requires nullifying all of the future gains on which incumbents had been counting. See Joe B. Stevens, *THE ECONOMICS OF COLLECTIVE CHOICE* 47-50, 71 (Westview Press, 1993).

²³Jonathan Baron, *Moral Heuristics and Biases* (Society for Judgment and Decision Making, Presidential Address, November 19, 2007), *slides available at* <http://finzi.psych.upenn.edu/~baron/talks/sjdm.htm> (last visited March 1, 2008).

²⁴See Ian Shapiro, *DEMOCRATIC JUSTICE*, Yale University Press (1999).

utilitarian and democratic decision making, but incremental refinement - a process that *begins* with rules and concepts, and *then* defines what these mean as cases arise - is not the only way to develop legal principles that can be widely understood in advance of contemplated actions. Incremental refinement is a top-down process, in which preexisting rules are presumed to cover novel cases that were not anticipated when the rules were developed. An alternative would be to write rules only after cases have arisen, and to seek consistency across cases that are clearly similar. Rules would then be well defined and known for familiar actions, but truly novel actions, such as downloading or uploading a music file on the Internet right after the technology became available, would have no law associated with them. Whether an action was novel would, of course, be up for dispute, but the question of novelty would be a decision point, rather than being assumed away as a consequence of legal practice. New rules and concepts would have to be written before any law could be applied to novel cases. We might call this more bottom-up approach *incremental synthesis* in order to distinguish it from incremental refinement.

i. Behavioral Research and Legal Concepts

Just as human psychology biases lawmaking toward legal conservatism, our psychology leads us to apply legal concepts through incremental refinement, rather than through incremental synthesis. The development of legal concepts therefore recapitulates the development of concept understanding in individual humans, which is characterized by two phenomena that are particularly relevant in discussing the law: progressive differentiation and over-generalization.

a) Progressive Differentiation of Concepts

Research has shown that, from an early age, children learn concepts through *progressive differentiation* - first learning general distinctions between objects such as animate-inanimate, then learning about different kinds of objects within each category, descending down a hierarchy

of more specialized concepts. For example, the child learns “bird” before “robin” or “canary.”

This mirrors the process of incremental refinement in the institutional development of legal concepts. The concept of “murder” has been refined into different “degrees”, been distinguished from “manslaughter”, etc., over time. This seems so natural that it is hard to imagine how it could be otherwise, and indeed the psychological evidence suggests that we refine legal concepts incrementally because this matches the way we learn concepts as individuals. But progressive differentiation in human conceptual development appears to be a consequence of the way our brains evolved, to do computations in a way that favors mapping perceptual data onto more and more refined concepts as we acquire experience.²⁵ The brain exhibits hysteresis – it has evolved not as an optimal design for every task it may face in the modern world, but rather as a path-dependent series of structural changes selected for at different times and in different environments.²⁶ In other computational architectures that we might imagine, concept development could proceed very differently, in particular via what I have called incremental synthesis. In this hypothetical world, a child with such an alternatively styled brain might learn first to recognize robins, and upon encountering her first canary might then not apply any concept to the canary, instead recognizing that it is a novel object, and then construct a new superordinate category “bird” which would represent the common features of robins and canaries.

b) Overgeneralization

Related to progressive differentiation is the phenomenon in human conceptual development known as

²⁵Timothy T. Rogers and James L. McClelland, *A Parallel Distributed Processing Approach to Semantic Cognition: Applications to Conceptual Development*, in BUILDING OBJECT CATEGORIES IN DEVELOPMENTAL TIME, chapter 14 (Lisa Gershkoff-Stowe and David H. Rakison, eds., Laurence Erlbaum Associates, 2005), available at <http://www.cpsc.cmu.edu/~jlm/papers/RogersMcCIPSympChap.pdf> (last visited March 2, 2008).

²⁶See Salvatore Rizzello, *Knowledge as a Path Dependent Process*, J OF BIOECONOMICS 6, 255, 266-267 (2004); Herbert A. Simon, *Rationality as Process and as Product of Thought*, AMERICAN ECONOMIC REV. 68, 1 (1978).

overgeneralization. This occurs when a child assumes that new instances of a category will have the features that past learned instances of the category have had. For example, the child might infer, falsely, that all animals have legs. As the concept space is differentiated and the child learns about animals, such as snakes, that do not have legs, this rule falls away for the newly learned categories of animals, although having legs lingers as a prototypical feature of animals.

Overgeneralization in the law follows as a consequence of the incremental refinement of legal concepts. Rules are based on concepts, such as “property”, and the rules that apply to a concept are based on features which familiar instances of the concept share. If the concept of “property” is based initially only on tangible property, then it will be built into the concept of “property” that it cannot be given to someone else without losing its use for oneself. This feature might then have many consequences for rules about property that would be inappropriate for “intellectual property”.

ii. Technology and Concept Evolution

Technological change can disrupt our understanding of concepts, just as it disrupts established social arrangements and business models. This is partly because technology produces concepts that are novel at the time the technology is first introduced. The name for a novel concept may be familiar (“tag”, “file”...) or unfamiliar (“wiki”, “blog”...). And of course it will usually be an instance of some higher level concept that is already familiar and is happily recognized as such (“communication”, “text”...). But the novel concept may fail to share crucial features with previous instances of a familiar concept which people attempt to apply to it. A 45 RPM single and an MP3 file are both instances of recorded music. But if the rules developed for recorded music assume features, such as the requirement to expend raw materials and labor in order to produce another copy, that are present in the familiar instance (the vinyl record) but not in the novel one (the digital MP3 file), then it may be inappropriate to apply these rules to the novel case.²⁷

²⁷See Lawrence Lessig, *FREE CULTURE* (Penguin Press, 2004) at 183-207,

The characteristics of concept evolution stemming from technological change suggest that an incremental synthesis model for developing law around new technology makes more sense than an incremental refinement model. This is true because, and to the extent that, technology creates novel concepts. When a concept is novel, this does not mean that no higher level concept can be applied to it, but it does mean that attempts to project features of a preexisting concept onto the novel case may fail and produce overgeneralization. Thus, technology pushes us toward a different model for legal concept development from the one that our psychology naturally suggests, and, as before, the fact that our behavioral tendency represents one way to do things, and not necessarily the best way, calls its application to the law into question. As an alternative, we might embrace the incremental synthesis model. Rather than assuming that familiar concepts and principles must apply to unanticipated situations, we could wait until we have enough experience with novel actions to know how we should classify them and what the rules should be.

III. SIMPLE NONRIVAL GOODS

We are now ready to begin applying the behavioral and technological principles discussed in section II to substantive legal issues, which will end in an analysis of domain name regulation. Let us begin with an analysis of the superordinate class of goods to which the relevant principles will apply, namely what I will call *simple nonrival goods*.

A. Nonrival Goods, Excludability, and Public Goods

A *good* is anything that has positive utility.²⁸ Thus, at least some people would prefer having the good to not having it. The good is *rival* if one person's use of the good interferes with another's. Rival goods are assumed to have positive economic value, because people prefer to be able to use the good and not to be interfered with while doing so.

available at <http://www.free-culture.cc/freecontent/> (last visited March 1, 2008).

²⁸It is often distinguished from a *bad*, something with negative utility. See David W. Pearce, ed., *THE DICTIONARY OF MODERN ECONOMICS* 177 (MIT Press, 1983).

A *nonrival good* is a good whose use by one person does not interfere with another's use of it. A nonrival good can acquire economic value if use of it can be externally controlled, and in this case we say the good is *excludable*. A good that is both nonrival and nonexcludable is called a *public good*, and it is assumed that no one will pay money to use it, since access to the good is not limited. A television signal is an example of a nonrival but excludable good. One person's use of the signal does not interfere with another's, but the signal can be scrambled so that one must purchase a device or service in order to decode the signal.²⁹

Excludability is a slippery concept, because any good can be made excludable through sufficiently heavy handed means. Use of the good can be made contingent on payment of a fee, for example, and those who use the good without paying the fee could be punished, with or without the aid of the law. Thus, the excludability of any good is up for discussion by lawmakers.³⁰ But we can distinguish between excludability which depends on law (e.g., through license fees) and that which does not (e.g., scrambling a broadcast signal), and call anything that is nonrival and nonexcludable without legal enforcement a *natural public good*.

B. Simple Goods

I am going to define "simple goods" (a neologism) as those which do not require creative production. A tree found in nature, an undeveloped plot of land, and the air we breathe are all clearly examples of simple goods. But we could extend the definition to include many artificial objects whose production does not require creative labor on the part of any named producer. An ordinary cup of coffee and a piece of standard rope, for example, would qualify. Whoever invented these goods has long since died, and knowledge of how to make them is quite common.

I define goods as simple not to denigrate them, but to mark them out as goods for which claims of intellectual

²⁹STEVENS *supra* note 22 at 59-60.

³⁰*Id.* at 360-361. The same can be said for rivalness as well. Governments may make a naturally rival good such as bread effectively nonrival by providing all of the good that everyone needs for free.

property cannot plausibly be made.

C. Simple Nonrival Goods: Examples

Examples of simple nonrival goods include electromagnetic frequencies and most familiar, individual words. Both are very useful, of course. Frequencies can be used for telecommunication (e.g. radio, TV), visual designs (colors), and other applications (microwave ovens, x-ray scans). And words are obviously necessary for the way humans communicate. The claim that broadcast frequencies, in particular, are nonrival has only become possible recently and is still contentious. Whereas traditional broadcasting has taken place on set frequencies, and nearby users of those same frequencies can create signal interference, advances in technology have made possible the sharing of frequencies by arbitrary numbers of people using devices appropriately equipped to differentiate signals being carried on the same frequencies.³¹

Most familiar words are obviously simple goods in the sense that we do not know who coined them and they are commonly known. They are also generally nonrival, because one person's use of a word in a sentence does not interfere with someone else's use of it. While there are examples of words that do not fit the simple nonrival goods definition (e.g. "kleenex," "communicating"), the point is just that many words do fit the definition.

D. Observations about Simple Nonrival Goods

The point of defining a class of simple nonrival goods is, I argue, that goods in this category share a common set of characteristics with regard to property and rights assignments. The justification usually offered in legal theory for granting property rights is based on rival goods: property rights avoid the *tragedy of the commons*, in which people's uses of a rival good interfere with each other, but the individuals have an incentive to use as much as they can

³¹See Yochai Benkler, *Some Economics of Wireless Communications*, HARVARD J OF LAW & TECHNOLOGY 16, 25, 38-47 (2002), available at <http://jolt.law.harvard.edu/articles/pdf/v16/16HarvJLTech025.pdf> (last visited March 2, 2008).

rather than restricting their use for the good of everyone.³² This justification does not apply to most cases of intellectual property, however, because the underlying good is nonrival. In the case of patents this has always been the case. An idea can be used by someone without their use interfering with another's use of it.

For copyrighted works, the nonrival nature of information has only recently become so apparent, since an Internet user can send her friend a digital file and still retain that file on her own computer. Nonetheless, the concept of intellectual property from the beginning was based on rewarding and incentivizing creative production. Simple nonrival goods do not require creativity in their production, and there is no tragedy of the commons associated with them, so both of the standard arguments for propertization fail to apply to simple nonrival goods.³³

Nonetheless, property and other exclusive rights are sometimes granted for simple nonrival goods. One example appears to be naturally occurring genes in the human genome, which can now be patented, supposedly because granting patent rights to genes incentivizes research and development into their use for improving human outcomes.³⁴ Another example is the continued exclusive licensing of spectrum frequencies, despite the fact that technology appears to have made arguments based on interference obsolete. As Yochai Benkler has pointed out, granting exclusive rights to use frequencies creates a *tragedy of the anticommons* in which it becomes practically impossible to pull together the necessary resources for a common purpose, for example, creating wide band spectrum for mesh networks and cognitive radios. Rights holders demand payment for use of their frequencies, and the transaction costs and fees required can make projects

³²The tragedy of the commons justification for property goes back at least to Aristotle, *POLITICS* (Benjamin Jowett, tr., 350 B.C.E.) at 2-5, available at <http://classics.mit.edu/Aristotle/politics.2.two.html> (last visited March 1, 2008). See also Garrett Hardin, *The Tragedy of the Commons*, *SCIENCE* 162, 1243-1248 (1968).

³³See Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, *TEXAS L. REV.* 83, 1031, 1051 (2005).

³⁴Kyle Jensen and Fiona Murray, *Intellectual Property Landscape of the Human Genome*, *SCIENCE* 310, 239 (2005), available at <http://www.sciencemag.org/cgi/content/summary/310/5746/239> (last visited March 2, 2008).

that depend on multiple frequencies uneconomical.³⁵

A further observation about the economics of simple nonrival goods is that *if* an exclusive right to such a good is granted, then it can be tremendously valuable. Value is not determined by creativity. “Travel.com” was a very valuable domain name from the beginning, but is not very creative compared to “Travelocity.com”, although the latter would have been less valuable before the company by that name had been started.

E. Loss Aversion and Rights Assignment

The most frequently cited theoretical contribution by psychologists to economics is *prospect theory*, a key component of which is the empirical phenomenon known as *loss aversion*. Simply stated, loss aversion is the finding that for most people in most choice situations, perceived losses loom larger than perceived gains. This can be illustrated through decisions which involve losses and gains on different dimensions of comparison. In one experiment, participants were divided at random into two groups. The “dinner group” received one free dinner at a restaurant and a monthly calendar from their university. The “photo group” received a professional photo portrait plus the same monthly calendar as the dinner group. Participants in the two groups were then asked whether they would like to keep their gift, or trade it for either (a) two free dinners at the restaurant or (b) a professional photo portrait plus five smaller photo prints. Only 11% of participants kept their original gift, and in both groups a majority chose to trade for the gift that was better on the distinguishing dimension (81% of the dinner group chose a and 52% of the photo group chose b). This illustrates that people, when they do opt out of the status quo, prefer to avoid losing what they already have.³⁶

i. Variables Affecting Loss Aversion

³⁵BENKLER *supra* note 31 at 63. .

³⁶Amos Tversky and Daniel Kahneman, *Loss Aversion in Riskless Choice: A Reference-Dependent Model*, QUARTERLY J OF ECONOMICS 106, 1039-1061 (1991).

The magnitude of the loss aversion ratio increases with the seriousness of a loss prospect. People demand an order of magnitude more compensation for participating in a medical experiment with a .001 chance of imminent death than they will pay to be cured of a disease with which they have just been diagnosed that carries the same risk.³⁷ In this example, agreeing to participate in the experiment is experienced as a loss prospect relative to the status quo, whereas being cured of a disease one already has is experienced as a gain prospect, and the loss prospect looms much larger.

Loss aversion may also be enhanced by prior investments of time, money, and other resources. This *sunk cost effect* may be due to cognitive heuristics that people have adopted, such as “don't waste”, which have been argued to make adult humans less rational about sunk costs than children and “lower animals” are.³⁸

A very important point about loss aversion is that people experience it relative to a reference point that is subjective: perceived losses as opposed to actual ones. In a widely cited study, respondents (including doctors) who were considering the prospect of a dreaded new disease outbreak strongly favored (a) a health program that would save 200 people for certain over (b) one with a 1/3 probability of saving 600 people who would otherwise not be saved. But they also strongly favored (c) a program with a 1/3 probability that no one would die and a 2/3 probability that 600 people would die over (d) a program in which exactly 400 people would die. This pattern of preferences is inconsistent, because the two choices are just different ways of framing the same certain (a or d) versus uncertain (b or c) outcomes. Thus loss aversion can be used to manipulate people's preferences based on how prospects are described to them.³⁹

³⁷Richard H. Thaler, *Toward a Positive Theory of Consumer Choice*, J OF ECONOMIC BEHAVIOR AND ORGANIZATION 1, 39-60 (1980), described in KAHNEMAN, KNETSCH, AND THALER, *supra* note 5 at 201-202.

³⁸Hal R. Arkes and Peter Ayton, *The Sunk Cost and Concorde Effects: Are Humans Less Rational than Lower Animals?*, PSYCHOLOGICAL BULLETIN 125, 591-600 (1999).

³⁹Daniel Kahneman and Amos Tversky, *Choices, Values, and Frames*, AMERICAN PSYCHOLOGIST 39, 341, 343 (1984).

ii. Loss Aversion, Perceived Justice, and Property Rights

Loss aversion is closely connected with perceptions of being treated unfairly. In one experiment, 63% of respondents thought that it was unfair for a company to decrease salaries by 7% in a community experiencing “no inflation”, but only 22% thought it was unfair to increase salaries by 5% in a community experiencing “inflation of 12%”, even though both cases involve a 7% reduction in real wages. Framing this as a gain changes people's perception of fairness.⁴⁰ Businesses have long heeded this effect. In the 1980s, for example, gas stations offered a “discount for cash” but never a “surcharge for credit”, preferring to frame the price difference as a gain rather than a loss.

In surveys about environmental policy, the reference point for gains and losses often depends on prior rights and ownership. Loss aversion in this case is manifested in respondents demanding that a corporation pay the government a much higher price for the right to develop public land than the amount they are willing to have the government pay to recover a comparable plot of privately owned land.⁴¹ But the feeling of loss aversion depends on how the question is framed. In the case of broadcast frequencies in the United States, for example, the framework of private control of the airwaves that was put in place beginning with the Radio Act of 1927 was sold to the public as a way to save the government money: by getting the private sector to develop broadcasting, which was seen as a cost. Thus, the granting of rights was seen as a gain. Once in place, however, these rights became very difficult to challenge because they had more economic value than the public was apparently willing to pay to recover them.⁴²

Loss aversion is felt by people not just for tangible property that they have been given, but for anything of

⁴⁰KAHNEMAN, KNETSCH, AND THALER, *supra* note 5 at 204.

⁴¹Ronald G. Cummings, David S. Brookshire, and William D. Schulze, eds., *VALUING ENVIRONMENTAL GOODS* (Rowman and Allanheld, 1986), *discussed in Id.* at 202.

⁴²Yochai Benkler, *THE WEALTH OF NETWORKS* (Yale University Press, 2006), at 195-196, *available at* <http://www.congo-education.net/wealth-of-networks/> (last visited March 1, 2008). It is quite possible, of course, that public willingness was not adequately reflected in the willingness of politicians to buy back frequencies, or to create more public broadcasting stations on unused frequencies.

value they have come to see as part of their endowment, including rights and privileges, status, freedoms, abilities, and expected future earnings.⁴³ The effect is to create intense motivation to avoid what are perceived to be losses, greatly outweighing the motivation to achieve equivalent gains. Indeed, this was recognized in 1897 by Oliver Wendell Holmes, who wrote: "It is in the nature of a man's mind. A thing which you enjoyed and used as your own for a long time, whether property or opinion, takes root in your being and cannot be torn away without your resenting the act and trying to defend yourself, however you came by it. The law can ask no better justification than the deepest instincts of man."⁴⁴

The relevance of this to simple nonrival goods is that assigning exclusive rights to things like broadcast frequencies and words creates loss aversion. Rights holders are likely to take extraordinary means, even beyond what makes economic sense, to avoid losing their rights. This may help to explain the ferocity of lobbying by incumbents for laws like copyright extension⁴⁵ and against reforms that would turn simple nonrival goods into a commons, and hence the losers' paradox.

The lesson for law making is that loss aversion should be taken into account before deciding to grant exclusive rights. Granting property or other exclusive rights may turn out to be inefficient and difficult to reverse, because of loss aversion's motivating power and the political-economic power of rights holders.

F. Barriers to Negotiation

An additional factor that should militate against the granting of rights is that there are psychological barriers to negotiation beyond the normal transaction costs when parties might jointly benefit from an agreement, for example, to share simple nonrival goods to which one party has exclusive rights.

Prominent among these barriers is what is known in the

⁴³See KAHNEMAN AND TVERSKY *supra* note 39 at 349.

⁴⁴KAHNEMAN, KNETSCH, AND THALER *supra* note 5 at 204.

⁴⁵See Lawrence Lessig, *How I Lost the Big One*, LEGAL AFFAIRS (March-April 2004), available at http://www.legalaffairs.org/issues/March-April-2004/story_lessig_marapr04.msp (last visited March 1, 2008).

literature as *reactive devaluation*. This occurs when the mere fact that one side has made an offer makes the other side value what is offered less than they would otherwise. A number of other barriers to negotiation have been identified.⁴⁶ The point here is just that the difficulties facing prospective deal makers who must overcome the exclusive rights held by some of them go far beyond the costs of doing business, and the psychological barriers can scuttle a deal that would otherwise make sense economically.

G. Technology-enabled Decentralization

As I have argued is the case generally for lawmaking and legal evolution, technology change in the U.S. has made a strong culture of rights assignment for simple nonrival goods especially inappropriate. For example, while tradition, arguments by many economists, and psychological factors like loss aversion are pushing for *stronger* rights regimes for goods such as broadcast frequencies, the technology of radio transmission is dramatically *reducing* the need for frequency rights.⁴⁷ In the next section, I will apply this point to domain names, first arguing that names for Internet navigation are simple nonrival goods, and then showing how adopting a different attitude toward names could avoid many problems.

IV. DOMAIN NAME REGULATION

The analysis *supra* gives us a way to think about Internet domain names and the Internet Corporation for Assigning Names and Numbers (ICANN), which regulates domain names as well as, indirectly, the Internet Protocol (IP) address numbers to which the names map.

I will argue six points: (A) Names are simple nonrival goods; (B) The hazards of rights assignment apply to domain names; (C) A global domain name system is unnecessary; (D) Domain names cause many problems which would be avoided if names were deregulated; (E) ICANN poses dangers of oligarchy in the control of

⁴⁶See Lee Ross and Constance Stillinger, *Barriers to Conflict Resolution*, NEGOTIATION JOURNAL, 389-404 (Oct. 1991).

⁴⁷BENKLER *supra* note 31.

information; and (F) Internet law is an opportunity to evolve concepts more appropriately.⁴⁸

A. Names are simple nonrival goods

Domain names such as “Disney.com” are currently used on the Internet to navigate to servers controlled by the owner of the domain name, in this case the Walt Disney Company. Disney pays an annual registration fee in exchange for exclusive rights to the name in the .com generic top level domain (gTLD), and in several other TLDs as well. But Disney's domain names have value far in excess of the registration costs, and their collective market value is probably at least in the hundreds of thousands, if not millions, of U.S. dollars.⁴⁹ Why is this? The simple reason is that the Domain Name System (DNS) gives the name value, because it is one way for users to find Disney's website. “Disney.com” is simple to guess and to remember.⁵⁰

Many well-known businesses, however, get by without a domain name that is easy to guess, and instead use one that most customers do not know the first time they visit the company's website.⁵¹ Customers can usually find a business's site easily by typing a company's name into the keyword box of a search engine such as Google or Yahoo!, and the majority apparently do this all the time anyway.⁵²

The market for domain names is based on artificial scarcity. There is no limit to the number of TLDs that could

⁴⁸For a legal analysis favoring deregulation of domain names, see Eric Goldman, *Deregulating Relevancy in Internet Trademark Law*, EMORY LAW J 54, 507-596 (2005), available at http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID758638_code332758.pdf (last visited March 2, 2008); See also GOLDMAN 2007 *infra* note 59.

⁴⁹See Bob Sullivan, *Domain Name Sells for \$2.75 Million*, MSNBC (July 20, 2004), available at <http://www.msnbc.msn.com/id/5467584> (last visited March 1, 2008).

⁵⁰Internet Engineering Task Force (IETF), *Domain Names: Implementation and Specification* (RFC1035) at 2.1, available at <http://www.ietf.org/rfc/rfc1035.txt> (last visited March 1, 2008).

⁵¹For example, California's Great America amusement park has the domain “pgathrills.com”. See <http://www.pgathrills.com/> (last visited March 2, 2008).

⁵²GOLDMAN 2005 *supra* note 48 at 547-548. See also http://corkuniversitypress.typepad.com/cork_university_press/2006/02/page/2/ (last visited on March 1, 2008): “The study shows that most people use search engines to find even well known websites, like ebay.com, google.com, or yahoo.com.”

be used, and yet very few have been created by ICANN.⁵³ If TLDs were allowed to proliferate indefinitely, then, except for trademark considerations, everyone who wanted a given name could have it, because no one could buy up every TLD for it. Premium TLD owners (i.e. “.com”) would retain market advantage as long as the domain name system is in use, but there appears to be no reason to maintain this system other than to give advantages to current domain name owners and to direct funds toward ICANN and its network of registries and registrars.

Thus, the value of domain names is contingent on the existence of a system which most people do not use, and which, as I will argue *infra*, is not necessary. So names on the Internet are in general simple nonrival goods because one website's use of a name does not interfere with another's to any greater extent than is the case for business or organization names generally, and that is already governed by trademark law.⁵⁴

B. The hazards of rights assignment apply to domain names

As described *supra*, the problems with assigning rights to simple nonrival goods include the creation of transaction costs when a non-rights holder wants to use a name to which someone else holds the rights, and loss aversion which motivates those who hold rights to act aggressively to maintain them. In this case, many domain name owners have paid thousands, and a few in the millions, of dollars for their names, so they would presumably have a great deal of sunk cost loss aversion over the prospect of the system itself going away.⁵⁵

Again, we can set aside trademarked names (other than those based on the domain name itself), because the use of those in commerce is already protected by law. We are then left with names whose value stems from their common meaning, and not from association with a particular company or organization. Ownership of a name such as

⁵³There are currently 21 gTLDs, listed at <http://www.iana.org/domains/root/db/#> (last visited on March 1, 2008).

⁵⁴ICANN, *Uniform Domain Name Dispute Resolution Policy* (October 24, 1999), available at <http://www.icann.org/dndr/udrp/policy.htm> (last visited March 1, 2008).

⁵⁵SULLIVAN, *supra* note 49.

“Cars.com” provides a competitive barrier against potentially superior sites that do not own the favored name, and thus hurts consumers as well. In a world without a domain name system, the owner of the name would have to compete for market share more purely on the basis of the quality of their business.

So a system without such barriers would therefore likely provide better overall welfare. By definition, then, attempts to preserve the system, which rights holders are likely to continue to do, are welfare diminishing.

C. A global domain name system is unnecessary

There are many alternatives to a global domain name system. Domain name resolution into IP addresses is not necessary for navigation.⁵⁶ Various sites, as well as users' personal address books, could do this mapping for web navigation, email addressing, and other purposes, similar to the way that telephone directories and lists work. Moreover, IP addresses (when the address space is expanded⁵⁷) are not scarce, are all about equally attractive, and can be dispensed either for free or, if an Internet tax is desired, for a uniform fee. Private third-party services, such as existing search engines and portals, can provide trusted name mapping, and can compete on quality. Eric Goldman has

⁵⁶IETF *supra* note 50 at 2.1. “The goal of domain names is to provide a mechanism for naming resources in such a way that the names are usable in different hosts, networks, protocol families, internets, and administrative organizations.

“From the user's point of view, domain names are useful as arguments to a local agent, called a resolver, which retrieves information associated with the domain name. Thus a user might ask for the host address or mail information associated with a particular domain name. To enable the user to request a particular type of information, an appropriate query type is passed to the resolver with the domain name. To the user, the domain tree is a single information space; the resolver is responsible for hiding the distribution of data among name servers from the user.”

⁵⁷See Simson Garfinkel, *Internet 6.0*, TECHNOLOGY REV. (Jan. 7, 2004), available at <http://www.technologyreview.com/Infotech/13426/?a=f> (last visited March 1, 2008). “The most important thing that IPv6 does is quadruple the size of the Internet address field from 32 bits to 128 bits. Because in principle, any combination of these 128 bits is a valid address, this quadrupling results in a massive increase in space. For example, whereas IPv4 could never supply enough addresses for every human being on the planet, IPv6 can do that and then some: in fact, IPv6 could provide each of us roughly 60 thousand trillion trillion addresses.”

argued convincingly elsewhere that the use of domain names for web navigation has converged with keyword usage, so that there is no compelling case for regulating them differently from other keywords, such as those used in search engines.⁵⁸

For legal accountability, government-certified name mappers tied to particular jurisdictions could provide the users of sites with legal guarantees within that jurisdiction. A site or business could choose to register its service with the mapping agency and agree to be bound by the laws of that jurisdiction.

D. Domain names cause many problems which would be avoided if names were deregulated

One of the main problems with the DNS as it currently exists is that it provides a very false sense of security to name owners and users alike. Users are likely to feel reassurance about the identity of an address when they see a familiar domain name on their screen. But this can often be illusory.

In fact, a slew of problems beset the domain name system,⁵⁹ most of which are deeply rooted in human psychology:

- cybersquatting – holding a name for ransom (greed)
- unwanted expiration/transfer (memory limitations and poor organization)
- DNS attacks – attacks on a domain name server

⁵⁸GOLDMAN 2005 *supra* note 48 at 542-548.

⁵⁹For more detail on the problems discussed below, see Steve DelBianco and Braden Cox, *ICANN Internet Governance: Is It Working?* (Working paper, 2007), available at <http://www.mcgeorge.edu/documents/centers/global/ICANN%20Internet%20Governance%20-%20Is%20It%20Working.pdf> (last visited March 2, 2008); Eric Goldman, Keyword Regulation and Domain Name Exceptionalism, presentation at: I Think I Can, I Think ICANN: Regulating the Internet...Or Not (Symposium, University of the Pacific McGeorge School of Law, February 24, 2007), slides available at <http://www.ericgoldman.org/Speeches/domainnameregulation.pdf> (last visited March 15, 2008). Some of the problems listed here have analogues in the IP address system: for example, IP spoofing, which can be used in denial of service attacks. However, IP address forgery relies on a technical problem with TCP/IP that is corrected in IPv6 (see <http://www.securityfocus.com/infocus/1674>, last visited April 17, 2008). While IP address problems are generally amenable to technical fixes, domain name problems are more often inherent in human psychology and thus not so amenable.

(malice)

address bar spoofing/redirection and phishing – fooling users into revealing private data (greed, cognitive limitations, acquiescence)

typosquatting – registering names similar to a common name (motor limitations)

domaining – accumulating names for sale (motor limitations)

user confusion (memory limitations)

sharking/domain name tasting – abusing the 5-day grace period for purchasing a newly registered name by parking ads there (greed)

slamming – tricking a name holder into changing to a new registrar (greed, cognitive limitations)

expiration extortion – charging high rates to let holders keep domains that have expired (greed, loss aversion)

mousetrapping⁶⁰ – disabling the browser, e.g. when a user mistypes an address or enters an expired domain name and lands on the mousetrapper's site instead (cognitive limitations, greed)

The response to these problems in the U.S., which controls domain names through its contract with ICANN, has been a proliferation of regulations specific to domain names. The increasing number and scope of these regulations contrasts with those for the keywords used in search engines.⁶¹ Indeed, the problems identified *supra* are

⁶⁰GOLDMAN 2005 *supra* note 48 at 544-545.

⁶¹GOLDMAN 2007 *supra* note 59 has listed a number of domain name-specific regulations in the U.S. as of February 2007. His list includes the following.

- Federal Laws: [1] the Anti-Cybersquatting Consumer Protection Act, implementing trademark protection (15 USC § 1125(d)(1)), *in rem* jurisdiction (15 USC § 1125(d)(2)), personal name protection (15 USC § 1129), and domain name registrar/registry immunization (15 USC § 1114(2)(D)); [2] the Fraudulent Online Identity Sanctions Act, increasing IP remedies (15 USC § 1117(e); 17 USC § 504(c)(3); 18 USC § 3559); [3] the Truth in Domain Names Act (18 USC § 2252B) related to misleading domain names leading to obscenity/pornography; and [4] the Dot Kids Implementation and Efficiency Act of 2002.
- State Laws: [1] State anti-cybersquatting laws (CA B&P Code §17525-28; Hawaii 481B-21 to 25; Louisiana LSA-R.S. 51:300.11-22); [2] State anti-political cyberfraud laws (CA Elec. Code §18320-23); and [3] anti-spam/anti-phishing laws.
- Administrative regulations: [1] Ex ante: allocation controlled by centralized bodies with complex governance structures; [2] Ex

inherent in our psychology and domain name system as it currently operates. The toll of these problems is hard to calculate, but one wonders how much the supposed benefits of the domain name system are worth, even for those who own the most valuable names.

In evaluating the costs and benefits of the domain name system, it is worth recalling the psychological effects mentioned in II.A. *supra*. We tend to be biased toward the status quo, even when the benefits of change outweigh the costs. We tend to assimilate new evidence in a way that is biased toward prior understandings. Those who benefit from an existing system tend to feel it is just, and even those who are disadvantaged by the system are biased in favor of justifying it. Debiasing this area of the law implies evaluating the costs and benefits of changing the domain name system in a way that consciously adjusts for these biases, by making an extra effort to look at the benefits of change and the costs of the status quo.

E. ICANN poses dangers of oligarchy in the control of information

An additional behavioral tendency noted in II.A. *supra* was the iron law of oligarchy. Many others have critiqued the structural evolution of ICANN, and I will not attempt to summarize the history and arguments here.⁶² For completeness in applying the empirical lessons of behavioral science to questions about domain name regulation, however, I must note the troubling tendencies in ICANN since it dispensed with the attempt to represent Internet users democratically in 2002, and how those fit with Michels' law.⁶³ Oligarchic structures are favored especially when they lack accountability to an external public. This is

post: ICANN's Uniform Dispute Resolution Policy (UDRP), *supra* note 54.

By contrast, Goldman notes that there are relatively few laws regulating keywords. State laws on his list include: Utah 13-40-102 to 302; and Alaska 45.45.792 to 798. Private search engines have, on the other hand, instituted trademark policies: Yahoo and MSN allow trademark owners to block competitive keyword buys; and Google (US) allows trademark owners to block trademark references in advertising copy.

⁶²See Jonathan G.S. Koppell, *Pathologies of Accountability: ICANN and the Challenge of "Multiple Accountabilities Disorder"*, PUBLIC ADMINISTRATION REV. 65, 94-108 (2005).

⁶³*Id.* at 102-104.

arguably the case with ICANN, since its public accountability runs through a thread of control not with Internet users generally but with the U.S. Government, and there is in fact no international body that could be said to represent the people of the world democratically.

Meanwhile, another feature of ICANN – its growing power and resources – makes it a target for capture by the vested interests who disproportionately control resources on the Internet and elsewhere. The ICANN board is an elite group, and appears structured to be so, but the interests in its orbit are also very powerful.⁶⁴ These and many other observations one could make about ICANN call into question whether the supposed benefits of the DNS in its present form, which probably does require some organization to regulate it, are worth the potential price in oligarchic control, given what I have argued *supra* is the lack of necessity for this system.

F. Internet law is an opportunity to evolve concepts more appropriately

In II.B. *supra*, I argued for a different system of legal concept evolution, especially for technology policy, namely: incremental synthesis. Domain name law appears to have evolved by extending preexisting concepts: trademarks, frequency licenses, and property. But of course the bodies of law around all of these concepts developed for a set of cases that did not include domain names, and domain names possess novel aspects with respect to all of them.

Names used for Internet navigation are a novel concept, somewhat akin to ordinary names such as those held by organizations and individuals. In most cases, the law does not grant exclusive rights to names. The case for doing so rests on the idea that overall welfare is improved by having a unique mapping between names and IP addresses that holds everywhere and for everyone (though importantly not forever). But as I have argued, the requirements of such a system result in very serious costs, and the system seems more likely to be perpetuating itself because of the psychological tendencies I have argued characterize the law generally.

⁶⁴*Id.*

It is possible that the domain name system will wither away, if browsers and their users evolve practices that ignore official domain names in favor of more locally useful ways to resolve words into addresses. On the other hand, there is substantial momentum behind the domain name system. But merely understanding the alternatives might be enough to push the system and its infrastructure out of existence, for example if private and government interests realize that they can build tools in a way that deemphasizes domain names *per se*.

V. CONCLUSION

The analysis I have presented makes an argument for the deregulation of domain names on the grounds that the domain name system is unnecessary at a global level, that it causes serious problems for users and site providers, and that it creates a class of rights holders who constitute vested interests and might stand in the way of better Internet architectures. At this point, ICANN and the DNS are well enough established that they may be difficult in practice to abolish. If so, then the creation of domain names and eventually of ICANN should serve as an example of what to avoid: a regime that is unnecessary, costly, and cumbersome to reform.

Meanwhile, I find this corner of technology policy to be a useful place to apply deeper thinking about psychology, technology, and law. Behavioral biases have the most potential to do damage in when we have the least experience to counteract them. New technologies represent realms where everyone, including lawmakers, lacks experience. So it seems reasonable to pay special attention to behavioral biases when thinking about the law around new technologies.