Tulsa Law Review

Volume 49
Issue 3 *Health Law Policy - Honoring the Work of Einer Elhauge*

Article 2

Spring 2014

I'm Not Quite Dead Yet -- and Other Health Care Observations

Einer Elhauge

I'M NOT QUITE DEAD YET—AND OTHER HEALTH CARE OBSERVATIONS

Einer Elhauge *

I wanted to thank the University of Tulsa College of Law for putting on such a wonderful conference on my health law scholarship. I am touched, honored, and appreciative. But I must admit that, when I first got my invitation, I was also more than a little bit surprised. I wondered: had there been a mistake? It felt premature. After all, I'm only 52. I like to think my best work is still ahead of me. But I concluded it was unlikely that my inviters meant some other Einer Elhauge. So then I thought: maybe I had some fatal illness no one had told me about yet? A friend who heard about the conference actually asked me in worried fashion if I was dying or something. No worries, the doctor says I am healthy. I have some time left. I just got to enjoy feeling like Tom Sawyer when he listened in on his eulogy. In any event, while I hope I have plenty more to accomplish, it is nice to know that I have reached the stage of life when I can rest on my laurels if I want.

As I reflect on my work, I realize that my best work really consists of the people here. Great scholars like conference participants Glenn Cohen, Abigail Moncrief, Barak Richman, Chris Robertson, and Talha Syed have all been either students or fellows of mine at Harvard Law School and its Petrie-Flom Center. The goal of any academic is to make meaningful contributions, but the real dream is to do work that others build on so that the ideas can live and grow. When I see the inventiveness and the importance of what my former students and fellows have added to my initial contributions, I feel a sense of parental pride in having had some small role in their development.

Here I offer a few observations on the articles that they published in this symposium and their connections to my work. These observations give me the opportunity to ruminate widely on diverse topics ranging from how best to restructure our health care system, which efforts to enhance human biology should be regulated, why changes to the central organizing principle of medicine are inevitable, and what we should avoid as health care reform increasingly encourages the bundling of medical services.

I. CHRIS ROBERTSON'S PRESUMPTION AGAINST EXPENSIVE HEALTH CARE CONSUMPTION

Although I'm not quite dead yet, the truth is that we are all dying, eventually. We

* Petrie Professor of Law, Harvard Law School.

like to speak of medicine saving lives or curing illness, but all medicine can really do is postpone death and delay illness.[1] As Daniel Callahan pointed out, while medicine can help individuals put off facing the "ragged edge" between life and death, health and illness, we all will have to face it eventually, and the more successful health care is in pushing off death and illness today, the more of us will be at that ragged edge in the future, facing health care problems that are generally more difficult to treat because we are older and the earlier problems were, by definition, treated.[2] We could, moreover, spend 100 percent of our GDP without running out of interventions that could provide some, albeit small, health benefit.[3] This and many other reasons have led me to conclude that we somehow have to trade off the benefits of health care against its costs, but that there was little hope of doing so as long as health care remains governed by an absolutist paradigm that refuses to do so and instead threatens malpractice liability and professional discipline on those who make such tradeoffs and mandates forms of insurance that remove the individual incentive to even try.[4]

Innovation will not help with this problem because our current system incentivizes innovation that provides any marginal health benefit, regardless of the cost, and provides no incentive for cost-reducing innovation.[5] Nor will better information about technologies or medical practices help because, in our current system, accurately identifying which technologies and practices have small health benefits and high costs makes them more likely to be used.[6] Scientists cannot, in any event, tell us how to trade off benefits and costs because those are questions of value that cannot be answered through science.[7] Even if they could, the benefits and costs would vary by patient, practitioner, region, and output and constantly change over time as the technology and costs change; no centralized regulator could possibly deal with the informational problems.[8]

Given these and other considerations, I have concluded that the best solution is to create a system where individuals choose among care-allocating plans that each get a fixed budget they must spend on health care (based on the number of enrollees they attract and adjusted for enrollee health status) and also a bonus based on how many enrollees they get.[9] In such plans, tradeoffs in spending the fixed budget would not be framed as morally problematic choices between health against dollars, but rather as whether any given amount spent would provide more health benefit if spent on action X or Y.[10] Indi-

1. *See* Einer Elhauge, *Allocating Health Care Morally*, 82 CAL. L. REV. 1450, 1460 (1994) [hereinafter Elhauge, *Allocating Health Care Morally*].

2. *Id.* (discussing DANIEL CALLAHAN, WHAT KIND OF LIFE: THE LIMITS OF MEDICAL PROGRESS 63-65, 120, 221-22 (1990)).

3. Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1459.

4. *Id.* at 1459-65; Einer Elhauge, *The Limited Regulatory Potential of Medical Technology Assessment*, 82 VA. L. REV. 1525, 1531-67 (1996) [hereinafter Elhauge, *Limited Regulatory Potential*].

5. Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1459-60, 1462-63, 1543; Elhauge, *Limited Regulatory Potential*, *supra* note 4, at 1526.

6. Elhauge, *Limited Regulatory Potential*, *supra* note 4, at 1527, 1585-88.

7. *Id.* at 1529, 1598-99.

8. *Id.* at 1530, 1607-15.

9. Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1453-54, 1620; Elhauge, *Limited Regulatory Potential*, *supra* note 4, at 1620.

10. Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1465; Elhauge, *Limited Regulatory Potential*, *supra* note 4, at 1620.

viduals would have incentives to pick the plans that maximize their expected health benefit and that pick the measure of health maximization that best fits their moral values.[11] Plans would have no incentive to spend too much (because their budgets would be fixed) or too little (because unlike with current capitated plans they could not keep what they did not spend); instead their incentives would be to make decisions that maximize health benefits to their patients because that is the best way to attract more enrollees and earn more of the bonuses that determine their profits.[12] In such a system, we would get the maximum health benefit out of whatever amount we decided as a society it was worth budgeting to health care, rather than on other things in life that we value.

In his article, Professor Chris Robertson quite reasonably points out that this is all fine and good, but twenty years after I proposed this solution, no one seems to have adopted it yet, and in the meantime we need to make decisions about how to muddle through using our existing insurance system.[13] He proposes that when public or private insurers make decisions about how best to modify insurance reimbursements, they should be guided by a generalized presumption against using expensive health care technologies.[14] He offers no less than a dozen persuasive reasons to doubt we have any strong reason to believe health care benefits exceed costs for such technologies. The dirty dozen includes: (1) new medical technologies have huge costs; (2) FDA approval indicates only minimal benefits and no consideration of costs; (3) less than half of medical care is based on good empirical evidence of effectiveness; (4) publication bias means the empirical studies we do have may not be valid; (5) empirical studies are often biased by poor blinding or randomization; (6) empirical studies are often funded by self-interested businesses; (7) drug effectiveness often means only that the drug is effective at achieving some result that might not relate to better health; (8) benefits are generally so small that only one in five patients is likely to benefit from the intervention; (9) the most expensive treatments are generally the newest, about which we know the least; (10) patients have low incentives to consider costs given insurance and little ability to assess benefits; (11) physicians are also largely insulated from costs and have incentives to incur them; and (12) aggregate data shows that the United States spends 20-30 percent more than other similar nations without getting any better health results.[15]

His points are all excellent, but I would make it a baker's dozen by stressing a point from my earlier work that Robertson also mentions. We have goals in life other than health and even to the extent we did not, studies suggest that spending on things like education, nutrition, housing, environmental protection, or just distributing cash all tend to produce more *health* benefit than equal spending on health care.[16] For example, in my town, like many others, health care spending for teachers keeps rising in a way that raises

11. Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1524-26; Elhauge, *Limited Regulatory Potential*, *supra* note 4, at 1620-21.

12. Elhauge, *Limited Regulatory Potential*, *supra* note 4, at 1620, 1622.

13. Christopher T. Robertson, *The Presumption Against Expensive Health Care Consumption*, 49 TULSA L. REV. 627 (2014).

14. *Id*. at 630.

15. *Id*. at 635-42.

16. Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1460-61.

the school budget, and the way the town copes is to keep cutting the number of teachers. (I wonder sometimes whether in the future the whole town will be taught by one teacher, who in turn is monitored constantly by a team of hundreds of doctors and nurses.). Studies like these suggest that the additional health care spending probably provides less health benefit to the remaining teachers than the harm to student health that results from lowering education, even if we foolishly ignore the non-health value of education in edifying our minds and making us more productive. The cost of health care should not be thought of as cold abstract dollars: it consists of all the other things in life we could fund with those same dollars that would bring us greater joy and better health.

The big question is how one would implement such a presumption using an insurance reimbursement policy, and on that Roberston suggests, among other things, that such a presumption provides support for two clever proposals to reform health insurance design that he has developed at length in other work: (1) scaling patient cost-sharing and (2) splitting health benefits.

1. Scaling Cost-Sharing. Robertson's proposal to scale cost-sharing would address an ugly reality in our current system: insurance plans tend to apply the same deductibles and copays and cost-sharing caps to the poor and rich alike. For the poor, this often deters them from pursuing highly beneficial care; for the rich it makes them oblivious to cost-benefit tradeoffs; and the combination results in a system that is remarkably regressive. To address this, he suggests scaling cost-sharing so that it is based on a percentage of income, rather than using the same flat amounts for people with wildly different incomes.[17]

As my prior work indicates, I myself doubt that patient cost-sharing will lead to sound cost-benefit tradeoffs because patients would still underweigh the costs (given that most costs would remain insured) and inherently cannot assess benefits as well as medical professionals (given that what they are purchasing from those professionals is, after all, their superior medical knowledge).[18] Indeed, these factors mean that patients will generally just rely on the advice that medical professionals give them anyway. I think that sound reform has to structure matters so that the relevant decision makers have both the knowledge *and* incentives to make sound tradeoffs.[19] That is why I instead favor restructuring the system so that medical professionals with the knowledge on health benefits also have the right incentives by giving them a fixed budget to spend on caring for a population (adjusted for the population's health status), with a bonus for the number of enrollees they attract. The fixed budget would mean these physicians could not profit by providing too much care or too little; their only incentive would be to allocate the fixed budget in a way that maximizes health benefits for the population in a way that attracts the new enrollees that give them their bonus. Although Robertson is right that we are not there yet, there are portions of Obamacare that, with proper regulatory implementation,

17. Christopher T. Robertson, *Scaling Cost-Sharing to Income: How Employers Can Reduce Healthcare Spending And Provide Greater Economic Security*, 14 YALE J. HEALTH POL'Y L. & ETHICS (forthcoming 2014).

18. Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1542; Elhauge, *Limited Regulatory Potential*, *supra* note 4, at 1536-37, 1562-63.

19. Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1542.

could lead in that direction.[20]

Still, as Robertson points out, we in fact do now rely on consumer cost-sharing, and if we are going to do so, then he is certainly right that scaling it would be sensible. However, I would offer a friendly amendment. In my experience, what cost-sharing means in practice is that months after someone in my family received health care, I receive a set of statements stating that some seemingly random share of the cost has not been reimbursed for opaque reasons that make little sense unless you have an unusual ability to translate insurance coding into English. For scaled cost-sharing to have any beneficial effect on consumption decisions, the cost sharing has to be clear and prospectively disclosed to patients before those consumption decisions are made. Otherwise, it is just a meaningless and arbitrary reduction in the financial protection that insurance is supposed to provide that comes too late to beneficially impact consumption decisions.

2. Splitting Benefits. Robertson's other proposal to modify current insurance design may be even more clever: cover expensive treatments with a split benefit, under which the insurer would pay the patient *X* percent of the treatment cost in cash and if the patient chose to spend that cash to get the treatment, then the insurer would cover the rest of the treatment cost.[21] That way, the patient gets full financial protection but also has incentives to forgo treatments if the patient benefits are less than *X* percent of the treatment costs. For example, if an expensive treatment costs $100,000, an insurer might give a patient 10 percent, or $10,000, and if the patient chooses to spend that money on the treatment, the insurer would also cover the remaining $90,000. When patients do not think a treatment is worth even 10 percent of its cost, the patients would keep the cash, saving the health care system from expenditures that apparently are very inefficient.

His proposal is quite brilliant, and yet to me it not only raises the issues noted above about whether patients have the knowledge and incentives to make sound cost-benefit tradeoffs, but also harkens back to a fundamental question: why exactly do we treat health care as specially deserving of funding even though health care is actually less effective at promoting health than other things we could spend the money on, including just distributing cash? The answer, I think, is odd but true: we are more motivated to fund health care not because it provides greater benefits, but because funding health care results in less harm to productive incentives.[22] The ordinary motive to redistribute money is restrained by the fear that if we redistribute too much, it might diminish the incentives of recipients to work. But when we redistribute in the form of funding health care, this restraint melts away. After all, people do not want to be sick, and have little interest in consuming health care unless they are sick. And sick people have a hard time working anyway. So we can fund health care spending without much fear that it will diminish work incentives.

If we provide a split benefit, we will be giving people cash for being sick, cash that they can use on things they value when they are not sick. This will give them incentives

20. Einer Elhauge, *Obamacare and the Theory of the Firm*, *in* THE FUTURE OF HEALTH CARE REFORM (Anup Malani & Michael H. Schill eds., forthcoming 2014) [hereinafter Elhauge, *Obamacare*].

21. *See* Christopher T. Robertson, *The Split Benefit: The Painless Way to Put Skin Back in the Health Care Game*, 98 CORNELL L. REV. 921 (2013).

22. *See* Elhauge, *Allocating Health Care Morally*, *supra* note 1, at 1486-93.

to fake or exaggerate their illnesses. Moreover, even when they are sick, we will be giving them cash for seeking medical authorization for outlandishly expensive treatments that they then turn down. People who now might not even consider the unproven expensive treatment will have powerful incentives to consider it in depth to get the cash benefit. As Robertson correctly points out, the net effect all turns empirically on how many such people there are compared to the number of persons whom the split benefit would cause to decline excessively costly health care that they would otherwise have obtained. But I fear the dynamic effects would multiple the former as they learn about this new way to generate cash. I fear also that such a system might undermine a foundational rationale for treating health care as special in the first place.

II. GLENN COHEN ON HUMAN ENHANCEMENT

One of the many reasons I'm glad that I'm not quite dead yet is that I still need to finish a book that I have labored on for many years about efforts to re-engineer human biology to enhance our attributes. This unpublished book on human enhancement is the topic of the article by my wonderful colleague Professor Glenn Cohen, a man so amazingly productive that he is now writing pieces about my work before I can even finish it. My main solace is that, after reading Cohen's cataloging of the maze of issues that my book covers, I think you can understand the complexities that explain why it has been taking me a while to synthesize my analysis of those issues into a coherent narrative and unified theory. My other solace is that future human enhancements might allow me to insert the Cohen fast-writing gene into my genome.

Cohen ably summarizes a great many of the analytical distinctions I address and debunk in my book, including not only the fundamental distinction between treatment and enhancement, but also distinctions based on whether enhancements are biological or non-biological, genetic or non-genetic, reversible or irreversible, and for self or others.[23] However, Cohen is less categorical in his rejection of some of these distinctions and sympathetic to others. Cohen also captures well my point that our regulatory strategies include not just legal sanctions, but also taxes and moral sanctions.[24] Cohen further covers many of the justifications that my book addresses and rejects, such as claims that enhancements threaten safety, equality, solidarity, diversity, earning our accomplishments, savoring random talent distribution, the parent-child relationship, and the right to an open future.[25] However, Cohen is less categorical than me in his rejection of some of these justifications and sympathetic to others, and his grounds for skepticism about certain justifications are somewhat different from mine.

Finally, in an important original contribution, Cohen relies on Derek Parfit's non-identity problem to argue that enhancements often replace one potential child with another in a way that means the enhancement can neither be said to harm or benefit the

23. I. Glenn Cohen, *What (If Anything) Is Wrong With Human Enhancement? What (If Anything) Is Right With It?*, 49 TULSA L. REV. 645, Part I (2014).

24. *Id.* at Part II.

25. *Id.* at Part III.

parent's children.[26] I cannot deny the force of this argument, but I am not yet persuaded by it. To draw an analogy, suppose a parent gives a child a terrible education and home environment; not one involving abuse, but one that leaves the child poorly equipped to succeed in the world. I think it is no defense for the parent to say to the child, "Yes, I gave you a terrible upbringing, but you are better off than if I had done even less, so I did not affirmatively harm you, and you would not have the psychological identity you have now without the terrible upbringing I gave you." I do not think the persuasive reason for condemning this parental conduct is that the child started with a psychological identity that the upbringing did not change but could be said to harm. To the contrary, the change to psychological identity is likely strong, and the harm compared to a past baseline is dubious. I think the reason for condemnation is instead that as parents we owe a duty to raise our children the best that we can, even though the choices we make inevitably do alter who our children are. The right baseline is thus how our children would be if we did our best, not if we did nothing, even though the difference between doing our best and nothing does alter the psychological identity of our children.

Likewise, if in some future world, parents could order up whatever genes they want their children to have, wouldn't they have a duty to equip their children with the best genes they could? In such a world, I do not think it would be a defense for a parent to say, "Yes, I did a terrible job picking your genes, but you are better off than if I had not created you at all, so I did not really harm you, and you would not have the genetic identity you have now without the terrible genes I gave you." In other words, I think a world where pre-birth enhancements can manipulate the genes our children carry problematizes the baseline notions about the relation between identity and genetic makeup that drive Cohen's non-identity argument. But I have not yet fully worked through this complicated problem, which is part of what is delaying my project.

Obviously, I cannot summarize a book's worth of analysis here. So let me focus on just two things: (1) clarifying the fundamental distinction about absolute and transfer benefits, the one distinction I think does make normative sense; and (2) exploring an important theme of my book that Cohen does not cover but that I think has profound implications for the future organization of health care.

1. Clarifying Absolute v. Transfer Benefits. As Cohen notes, my book concludes that the fundamental distinction that does make sense is based on the extent to which interventions have absolute benefits versus transferred benefits and costs.[27] Absolute benefits are gains from human re-engineering that would be enjoyed even if others obtained the same biological improvement. In contrast, transferred benefits are gains from human reengineering that reflect transfers of value from others, and thus result in no value for anyone if everyone engages in reengineering with the same effects. Shifted costs are harms from human engineering that are inflicted on others, whereas unshifted costs are costs from re-engineering that the user suffers personally. Usually, the best test of whether this standard is met is to ask whether the persons being re-engineered would still do so without any transferred benefits or ability to shift costs. If so, then the absolute

26. *Id.* at III.a, IIIg.ii, IV.
27. *Id.* at 665.

benefits exceed the costs of undergoing the intervention, and thus the intervention should be allowed. My book not only argues that this test makes the most sense on consequentialist grounds, but also observes (in a discussion Cohen echoes) that it conforms to the Kantian categorical imperative that one should act in such a way that one would want everyone to act.[28]

Although Cohen is right that my theory is related to the objection that many human enhancements raise a problem of "positional goods,"[29] my theory differs from that objection in four ways.

First, the analysis in my book is more general in that it also includes certain other cases where costs are shifted to others.

Second, the term "positional goods" has several ambiguities that my framework avoids. Sometimes the term is used to refer to value derived from goods that turns *only* on how the good ranks one person versus another. Under this view, if the value I get from building an addition to my house comes only from the fact that now my home is bigger than my neighbor's—I experience no value from the added space itself—then that is a positional good. But I want to extend this concept to cover situations where there is a real experienced benefit that is transferred: such as when the act causes my neighbor's house to be transferred to me. Further, the term "positional good" is generally ambiguous about just how much of a good's value must be positional for it to count as a positional good. Some use the term to mean goods whose *only* value is positional, others to mean goods that have *any* positional value, and others to mean goods whose *main* value is positional. My book clarifies that none of those abstract definitions are appropriate because what matters instead is whether the person would incur the costs of obtaining the good without whatever portion of value was positional/transferred. Although that test would always be met if all of the value were positional, that test might or might not also be met in cases where some or most of the value is positional/transferred, depending on whether the rest of the value exceeds the costs of the intervention. This approach allows my theory to explain a far wider range of limits on human re-engineering, and it also provides a clearer theory of how to draw the line between the prohibited and permitted categories.

For example, at the conference Professor Arti Rai asked the insightful question: isn't intelligence a positional good? It is a good question because being more intelligent certainly provides one with advantages over others, and yet intelligence is generally not what people mean by a positional good that merits prohibition. To the contrary, enhancing intelligence is generally regarded as the human enhancement that is most justifiable. Our whole educational system seeks to pursue this goal. The key to answering this question is that whether an intervention merits prohibition does not turn on whether some or most of the benefits are positional; it turns on whether a *decisive* portion of the benefits are merely transferred from others. Education certainly provides positional gains, but it also provides important absolute benefits even if everyone gets it. We do (and should) find it desirable because those absolute benefits exceed the costs, even if we ignore the positional gains.

28. *Id.* at 651.
29. *Id.* at 676.

Third, prior scholars have generally listed positional goods as merely one in a long list of arguments against human enhancements, as Cohen does. In contrast, my argument is that the problem of transferred benefits and shifted costs is the only objection that really justifies any regulatory limit on efforts to improve human biology.

Fourth, precisely because my theory expands upon the positional good argument and shows why this expanded version is the exclusive persuasive objection, my book shows that this justification fits the actual pattern of which interventions we allow and condemn. My book explains, for example: (1) why the performance-enhancing use of beta-blockers is prohibited for Olympic archers, but allowed for classical musicians; (2) why the performance-enhancing use of ADHD drugs is condemned when used to boost SAT scores, but allowed for military pilots; (3) why some forms of plastic surgery are viewed benignly, while others are socially sanctioned; and (4) why selecting the sex of children is deemed morally permissible in the United States, but not in India or China.

As this discussion should clarify, although Cohen treats this transferred benefit/externality problem as distinct from what he calls the problem of coerced voluntary enhancement,[30] the latter is actually a subset of the former. When Cohen describes the cases of coerced voluntary enhancements that he finds objectionable, he asks us to "imagine a good that is distributed in a zero-sum way, be it money, a job, a meaningful romantic relationship, etc."[31] But if the good is zero-sum, that means that 100 percent of the benefit from obtaining the good is transferred. By definition, in such a case, there is no absolute benefit, and thus the absolute benefits could not exceed any costs from the intervention.

Indeed, one of the core cases that my book discusses is why we properly condemn using ADHD drugs temporarily to boost SAT scores. Such temporary usage does not result in any long term improvement in intelligence or knowledge. Rather, temporarily using ADHD drugs during SATs provides only a transferred benefit because the benefits to the person who successfully uses them to increase her scores—getting into a better college—come at the expense of someone else who does not get into that same college. The benefits from usage thus consist purely of a transfer of value to the user from others. Assuming those transferred benefits exceed the personal costs in terms of money and side effects, one would expect widespread use of ADHD drugs during the SATs absent any legal, social or moral sanction. But then everyone's SATs scores will be inflated by taking ADHD drugs, and there will be no reason to think that the relative scores among applicants will change significantly. If so, who gets into which college will be largely unaffected. No one will gain an improvement in college placement. But everyone will suffer whatever costs and side-effects are caused by temporary use of ADHD drugs.

As my book stresses, because of the underlying collective action problem, people can feel coerced to engage in the biological intervention even when they otherwise would not. Suppose, for example, that some persons feel morally opposed to taking ADHD drugs to improve their SAT scores. If others are taking ADHD drugs and improving their SAT scores accordingly, the persons who decline to do so will effectively suffer

30. *Id.* at 658-59.
31. *Id.* at 659.

an SAT penalty for their choice. The same will be true for any biological intervention that creates purely transferred benefits that exceed personal costs: those transferred benefits will cause some to engage in the activity and create a coercive penalty that tends to induce others to do the same.

But as my book also explains, while such a collective action problem simplifies the analysis, because it indicates the activity makes everyone worse off on balance, condemnation does not depend on the collective action problem materializing. Suppose, for example, that in practice only half the SAT test takers will have the money or connections to get ADHD drugs. That half of test takers may enjoy personal benefits that exceed their costs, and thus they would not be worse off, and others would not be successfully coerced into taking ADHD drugs. Nonetheless, it remains the case that there is no net benefit because the college placement that the drug-users gain is just transferred from someone else, and there is a net cost. Indeed, here the net cost includes not only the personal cost in money or side-effects to the student taking ADHD drugs, but also the externalized cost of distorting the college admission process. Because the concentration benefits of temporary use will not continue long term, admitted students will be less qualified than colleges would prefer.

In contrast, the United States has openly encouraged mentally-fatigued military pilots to take Dexedrine, an ADHD drug that the military calls a "go-pill," even though, as Cohen notes, one could say that such usage also involves coerced voluntary enhancement.[32] As my book explains, the lack of condemnation for this practice makes sense because such pilot usage is not dominated by transferred benefits, at least not within the United States. Instead, the believed benefits involve a reduction in plane crashes and mental errors that are desirable for both the pilots and others, and do not come at the expense of other pilots.

Indeed, consistent with the importance of transferred benefits, the main ethical objection to go-pills has come from foreign nations that do not allow their own pilots to use go-pills and that regard usage by the U.S. military as unethical. Part of the explanation may be that using go-pills gives the U.S. military a tactical advantage over the air forces of other nations. Thus, while a pilot's individual use may not give them a transferred benefit relative to other pilots or U.S. citizens, the U.S. military's use may have a transferred benefit relative to other nations. However, given that more military crashes result from mental fatigue than from enemy fire, it seems likely that (even ignoring the transferred benefits) the absolute benefits would suffice to justify usage by U.S. military pilots given the great health risks of pilot error compared to the lesser health risks from the drug.

Finally, Cohen suggests that to the extent human enhancements involve externalities like transferred benefits or costs, a natural solution might be a Pigouvian tax to get persons to internalize the externality.[33] That seems sensible in theory, and is certainly consistent with my theory, which treats legal penalties and taxes, along with social and moral sanctions, as simply alternative regulatory strategies. In practice, however, I think

32. *Id.*
33. *Id.* at 666-67.

we would find it very difficult to quantify the tax that equals the transferred benefit from, say, using Ritalin while taking SATs. Nor is it the case that we always use taxes rather than prohibitions to regulate externalities, especially when they can lead to collective action problems; for example, we tend to prohibit littering or exceeding fishing limits with penalties that are designed to deter the activity rather than to price it. As my book stresses, and Cohen notes, in a world where no regulation is perfectly accurate, choices among such regulatory strategies turn on whatever choice best minimizes the total harm from over-deterring desirable conduct and under-deterring harmful conduct.[34]

2. The Coming Death of the Medical Treatment Limit. Although I'm not quite dead yet, I think conventional limits on what medicine means soon will be. Current health care law and professional ethics are organized around the principle that medicine should be limited to the treatment of disease and disability. This principle thus draws a distinction between such permissible treatments and impermissible efforts to enhance health beyond the cure of disease and disability. As Cohen indicates, I do not think this treatment-enhancement distinction makes much normative sense.[35] But the point in my book goes even further: I think this distinction is inherently unsustainable. Thus, even those who normatively favor the treatment-enhancement distinction are going to need a new theory of how to set regulatory limits, and medical regulation will have to get a new central organizing principle.

The best explanation for the medical treatment limit is that it tracks a sensible risk-benefit calculation. As put by distinguished Harvard philosopher Norman Daniels, if we are trying to cure a disease or disability, the benefits are large enough to offset the medical risks, but "if we are trying to improve on an otherwise normal trait, the risks of a bad outcome, even if small, outweigh the acceptable outcome of normality."[36] At first blush, this seems like a sensible prudential rule, but to really understand its implications, we need to understand what concretely distinguishes being normal from having a disease or disability.

A disease or disability is typically defined, in work that Daniels himself helped pioneer, as: "Any state of a person's biology or psychology which reduces species-typical normal functioning below some statistically defined level."[37] In short, a disease or disability is something that puts our functioning in a sufficiently low percentile to bring our functioning below the normal statistical range. Just what determines that percentile depends on judgments about the importance of the characteristic for functioning in society. For intelligence, having an IQ in the bottom 2.5 percent (below 70) is defined as a disability,[38] whereas for height it is the bottom 1.2 percent, which the FDA ruled was when human growth hormone was approved to correct short stature that did not have an under-

34. *Id.* at 673-74.

35. *Id.* at 655-56.

36. Norman Daniels, *Can Anyone Really Be Talking About Ethically Modifying Human Nature?*, *in* HUMAN ENHANCEMENT 25, 38 (Julian Savulescu & Nick Bostrom eds., 2010).

37. Julian Savulescu et al., *Well-Being and Enhancement*, *in* ENHANCING HUMAN CAPACITIES 3 (Julian Savulescu et al., eds., 2011).

38. *Id.*

stood cause.[39] Thus, the prudential judgment of the medical treatment limit is that if your characteristic is below a certain percentile in human functioning, then the benefits of addressing the problem are worth the risk of biological intervention, but if above that percentile, the risks exceed the benefits.

However, there is no real reason to think that the risk-reward tradeoff for every biological intervention magically gives us a line that happens to equal the bottom of the normal range for the condition of interest. It all depends on the particular risks and benefits of the specific intervention. There may be many characteristics above the bottom of a normal statistical range that are worth correcting because the benefits are large relative to the risks. True, one could account for this issue by simply raising the percentile threshold until it matched the relevant risk-benefit tradeoff. We seem to have already done so for interventions to correct eyesight, allowing such interventions when eyesight is below 20/20, even though only 35 percent of adults have 20/20 vision without correction.[40] Allowing such interventions thus effectively defines the bottom 65 percentiles as "below normal." But once we take this step, it seems clear that the line has less to do with any statistical assessment of normality than with a sensible judgment that the risks of eyesight correction are relatively low compared to the benefits for everyone in the first 65 percentiles. If the normality line simply tracks such risk-benefit tradeoffs, then the medical treatment limit becomes meaningless, amounting to nothing more than an admonishment to act only when the benefits exceed the risks, which presumably anyone considering an enhancement would want to do without any regulatory limit.

The line provided by the medical treatment limit becomes even fuzzier when the disease or disability is defined in terms of conditions rather than percentiles. Consider the use of Ritalin and other drugs to treat attention deficit disorders. The American Psychiatric Association stated in its 2000 diagnostic manual that 3-7 percent of school-aged children have attention deficit disorders, which is a relatively high percentage given ordinary standards of normality. The percentage of children aged six to seventeen diagnosed with attention deficit rose from 6 percent to 8 percent from 1997 to 2006, reaching 10 percent for children aged twelve to seventeen, and 12 percent for all boys aged six to seventeen.[41] From 2003-2007, the percentage of children aged four to seventeen who had ever been diagnosed with an attention deficit disorder rose from 7.8 percent to 9.5 percent, with the rate reaching 13.2 percent for boys.[42] The diagnosis of attention deficit disorders has also been increasing in many other nations.

Similar issues have been raised about the use of Prozac or other antidepressants to treat depression and other mental disorders. From 1996 to 2005, the percentage of non-institutionalized U.S. persons aged six or older who were on an antidepressant prescription rose from almost 6 percent to over 10 percent, meaning 27,000,000 Americans were

39. Marc Kaufman, *FDA Approves Wider Use of Growth Hormone*, WASH. POST, July 26, 2003, at A12.

40. Maxwell J. Mehlman & Jessica W. Berg, *Human Subjects Protections in Biomedical Enhancement Research: Assessing Risk and Benefit and Obtaining Informed Consent*, 36 J.L. MED. & ETHICS 546 (2008).

41. *Diagnosed Attention Deficit Hyperactivity Disorder and Learning Disability: United States, 2004–2006*, CTRS. FOR DISEASE CONTROL, http://www.cdc.gov/nchs/data/series/sr_10/Sr10_237.pdf.

42. *Increasing Prevalence of Parent-Reported Attention-Deficit/Hyperactivity Disorder Among Children—United States, 2003 and 2007*, Morbidity and Mortality Weekly Report, CTRS. FOR DISEASE CONTROL & PREVENTION, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5944a3.htm?s_cid=mm5944a3_w.

receiving antidepressants by 2005.[43] The 2005 rate was 12 percent for whites, 13 percent for women, 17 percent for those who were divorced or widowed, and 22 percent for the unemployed. The number of total antidepressant prescriptions increased by 17 percent from 2005 to 2009, while the U.S. population increased by 5 percent; so the 2005 percentages are probably all about 12 percent higher today.[44] Elsewhere in the world, there has been a similar explosion in the prescription of antidepressants.

Many complain that this high and increased rate of diagnosing depression and attention deficit disorders reflects an unfortunate cultural tendency to over-medicalize ordinary human life. But perhaps the underlying cause is that the medical treatment limit *requires* calling something a disease or disability in order to get the medical intervention. After all, the rapid increase in diagnosis of depression and attention deficit disorders has occurred across varied cultures and coincides with the advent of drugs that could increase happiness or mental concentration. Perhaps the underlying phenomenon is thus that these drugs are believed to provide mood or cognitive benefits that exceed the health risks for a substantial segment of the population, and doctors are willing to slowly adjust notions of disease or disability in order to be able to prescribe these drugs to patients who would receive net benefits from them. If so, the problem of over-medicalization may be less cultural than legal: that the law requires diagnosing patients with a disease or disability in order to give them a drug that makes them better off. In the short run, this law may have the unfortunate effect of requiring physicians to misdescribe medical conditions and patients to feel bad or stigmatized for having a disease or disability. In the long run, it suggests that the medical treatment limit has a hard time holding in the face of perceptions that a broader range of persons can benefit from a medical intervention. Already, for example, research suggesting that interventions might slow or eliminate the aging process has led some to proclaim that aging itself is a disease.

Perhaps the treatment limit at least provides a crude rule that generally indicates when the benefits of biological intervention are likely to outweigh the health risks, even though that general presumption might be rebutted for particular interventions. But even at this crude level, such a tradeoff is necessarily dependent on the particular technological circumstances that determine the rewards and risks. Even if the crude tradeoff justified a medical treatment limit in the past, there is no reason to think it does so now or will continue to do so in the future. As the science advances, a new set of biological interventions will likely arise that inflicts less risk, or confers greater benefits on those in the normal range, which ultimately will change the crude risk-reward tradeoff.

My book thus concludes, in a discussion that Cohen echoes, that in the future we will look back on medicine having had three ages. The First Age of Medicine, which ended only in the early 1900s, was when medicine was so poorly developed that it was on average more likely to harm than help. The Second Age, the century from the early 1900s to early 2000s, was when scientific advances meant medicine could help more

43. Mark Olfson et al., *National Patterns in Antidepressant Medication Treatment*, 66 ARCHIVES OF GEN. PSYCHIATRY 848 (2009).

44. *Top Therapeutic Classes by Dispensed Prescriptions (U.S.)*, IMS HEALTH, *available at* http://www.imshealth.com/deployedfiles/imshealth/Global/Content/Corporate/Press%20Room/2012_U.S/Top_Therapeutic_Classes_Dispensed_Prescriptions_2012.pdf (updated May 2013).

than hurt, but generally only if it were confined (via the treatment limit) to cases where people suffered such egregious problems that there were very large benefits to set against the risks. In the coming century, we are likely to reach the Third Age, when medical progress will reach the point that medicine can often confer benefits on persons without any disease or disability that are large enough to offset the health risk. We are currently in the transition from the second to third of the Three Ages of Medicine, which at some point will result in the breakdown of the treatment-enhancement line and the open use of medical interventions to enhance normal attributes.

Indeed, there are a few areas where that is arguably already the case. Although acne is medically called a disease, that characterization seems strained for a condition that affects almost all children during puberty, and culturally no one feels it is necessary to conclude that their pimples have reached a state of disease or disability in order to justify a trip to the dermatologist. Likewise, while various forms of plastic surgery were originally developed in order to treat injuries or diseases, today they are widely used to achieve cosmetic benefits without legal prohibition. The plastic surgeon and patient may be more likely to go ahead with a nose job if it can also fix a deviated septum, but many are perfectly willing to go ahead if the nose is simply larger than desired. Here, even when the benefits are only cosmetic, the risks are low enough that we seem to have no problem allowing biological interventions without requiring a real disease or disability. If we are willing to lift the medical treatment limit to achieve cosmetic benefits when the risks are low, it seems unlikely we would be unwilling to lift that limit if low risk methods arise to increase mental ability or other desirable attributes.

But the problem goes deeper. Even if, despite these changing risk-benefit tradeoffs, we could hold the line on treating only the bottom percentiles, the medical treatment limit would fail to provide any long run constraint on biological interventions. After all, if we keep allowing any biological intervention that eliminates conditions that are in the bottom 1-2 percent of the then-current range, we will keep moving people out of that bottom 1-2 percent, which will just create a new set of people in the bottom 1-2 percent to treat. Once we treat them, there will be another new set of people to treat, and so on. In the fictional land of Lake Wobegon, it might be possible for everyone to be above average, but in the real world that is not possible. Likewise, we cannot live in a fantasy land where no one is in the bottom percentiles. The medical treatment limit will thus be an inevitable victim of medical progress, which will keep chipping away at the bottom percentiles and shifting the distribution of attributes higher and higher. In the long run, then, full success in medical treatment converges on allowing all biological enhancements.

Thus, the medical treatment limit cannot set any meaningful long-term constraint on efforts to remold human biology; it can only slow them down. If there is something truly wrong with some of those efforts, the medical treatment limit fails to stop them from eventually becoming pervasive. If there isn't anything truly wrong with those efforts, then there is no good reason to slow down their adoption.

Another reason the medical treatment limit is ultimately unsustainable is that scientific developments are likely to increasingly result in treatments that are also enhancing, which will further blur the enhancement-treatment line. This is already the case to

some extent. Lasik surgery may leave a nearsighted person with 20-15 vision. A nose job to fix a deviated septum may leave a big-nosed person with a nose more lovely than average. Beta-blockers themselves can be both treatment and enhancement when they are used by a shooter or musician with heart problems. Thus, even if otherwise effective, a medical treatment limit might merely funnel enhancement research into treatments that also enhance.

Treatment-enhancement overlaps are likely to be increasingly raised by better interventions, especially mechanical interventions. While biological treatments typically cannot leave the patient any better off than somewhere in the normal range, mechanical interventions have the potential to fix a disease or disability while leaving the patient more able than anyone that normal range. If disability-corrected persons are more able than normal persons, it seems unlikely we would deny the same correction to normal persons, especially because efforts to do so raise the strong possibility that people might deliberately disable themselves to get the enhancement.

Part of what makes the medical treatment limit unsustainable is that it assumes a status quo baseline (the normal range), without any persuasive explanation for why we should deem the status quo to be so desirable that it should prevent us from enjoying improvements above that baseline. Such a status quo baseline is, after all, historically contingent. People used to have much worse teeth, so that in the Medieval Age someone with cavities might well have been regarded as within the normal range, given how many rotten teeth others had. No sensible person thinks that this means dental care today should not treat cavities. Nor do I detect much yearning for the old status quo of shorter lives and heights, so I doubt we could sustain objections to a future of longer lives and taller heights.

Another problem with trying to sustain the medical treatment limit is that it draws many dubious distinctions because it defines the status quo baseline at such a low level. For example, given the definition of disability, the medical treatment limit would mean that an intelligence-enhancing drug that improved someone's IQ from 69 to 70 would be permissible because an IQ of 69 is below the normal range and thus qualifies as a disability. Indeed, the government would be obligated to fund use of that drug in any system that offers universal health care. However, using an intelligence-enhancing drug to improve an IQ from 70 to 100 would be affirmatively prohibited under the medical treatment limit, even if the health risk is low and the person pays for the drug himself, because the person started within the normal range of intelligence. It is hard to see what would justify that sort of distinction.

An even bigger difficulty with sustaining the medical treatment limit is that it is deeply ambiguous because it provides no theory to explain which set of persons we should use to define the relevant normal range. To begin with, should the normal range be based on the set of persons with one's own sex or ethnicity? Consider the FDA rule that approves the use of human growth hormone only for children who are in the bottom 1.2 percent of height.[45] This rule actually defines a separate bottom 1.2 percent for boys

45. Without FDA approval a drug cannot be sold at all, and drug manufacturers cannot market a drug for any unapproved uses. Although the FDA does not prohibit physicians from prescribing FDA-approved drugs

and girls—boys are eligible if without the hormone they would be shorter than 5'3", girls if they would be below 4'11". Thus, the fact that a girl would grow to 5'0" means she is denied access to a medicine even though the same predicted height would entitle a boy to it. This embraces an implicit normative claim favoring a height differential between men and women. The controversial nature of this normative claim can be seen by asking: would we do the same for different ethnic groups? Suppose it is the case that the bottom 1.2 percent is 5'1" for Latino men.[46] Would we say Latino men who would grow to 5'2" should be denied growth hormone, while non-Latino men who would grow to that height get it? It is hard to imagine the FDA would engage in such discrimination against Latinos, but such a distinction is hard to distinguish from the discrimination that the FDA mandates against women. If instead we do not allow such discrimination, but rather draw the same height line across all sexes and ethnicities, then it will be the case that a higher proportion of women and Latinos will be eligible for human growth hormone than men and non-Latinos. One might then argue that the line discriminates against men and non-Latinos.

If we allowed distinctions based on ethnicity, then the logic would seem to require further problematic line drawing based on nationality. Suppose, for example, we drew the Latino/non-Latino distinction described above. Would I be able to argue that, because I am of Argentinian descent and Argentinians are taller than the average Latino, the height line for my children should be higher? If so, then someone of Scandinavian descent should also be able to argue that, because they are taller than the average white person, they should get a higher height line. Actually, because I am one-fourth Danish, I could argue both.

Quite apart from distinctions based on nationality, a status quo baseline raises troubling questions about which nations to look to at all. The FDA defined its standard using the U.S. baseline, making the standard higher than it would be if the FDA had instead used a world baseline. But if a U.S. and foreign person would grow to the same short height, what is normatively attractive about saying the U.S. person should be free to use a human growth hormone denied to the foreigner? It is not clear whether we should define the baseline in terms of the average in the world, in one's own nation, in nations like one's own, or in developed nations.

One could raise similar problems based on family distinctions. For example, suppose Joe says that, although he is above the bottom 1 percent of U.S. males in height, he comes from a very tall family and is within the bottom 1 percent of his family, which makes him feel bad. Under a status quo baseline, he would seem free to argue that his normatively relevant status quo is his family, not his general ethnicity group. But if we did that, we would discriminate against persons who came from generally shorter families.

for other uses, doctors are less likely to do so without marketing, and in any event, medical ethics are commonly understood to make it improper to prescribe drugs or do procedures unless they treat a disease or disability, so that doctors generally follow the same definition as the FDA.

46. The fifth percentile for Latino men is 5'3" compared to 5'6" for Whites and 5'5" for Blacks, according to Halls.MD, Health Calculators and Charts, Height and Weight Charts, *available at* http://www.halls.md/index.htm.

It is not even clear why any status quo baseline should be judged in terms of such inborn traits or national residence at all. For example, in the NBA being below 5'10" would put you in the bottom 1 percent of players even though it is the average height for U.S. men.[47] Suppose Sam is 5'9" and in the NBA. Should he be able to argue that he should get access to human growth hormone because he is in the bottom 1 percent of NBA players? After all, in terms of his life chances, this may be a far more relevant group than national or ethnic averages. This sort of logic suggests all of us should be able to define the groups that we regard as normatively relevant when establishing our status quo situation, but then any rule breaks down.

The underlying problem in all the above cases is the same. The lines are hard to sustain because the medical treatment limit provides no real theory defining what it is about the status quo that should be regarded as so normatively attractive that it mandates prohibiting change. If we had such an underlying theory, we could advert to it directly rather than relying on the status quo. To the extent we instead rely on a status quo that is defined independently of any normative theory, then there will be many possible ways of deciding which set of persons constitutes the relevant status quo, and we will not have a sufficient normative theory for determining which set is the right one to use.

III. BARAK RICHMAN ON TYING HISTORY

Although I'm not quite dead yet, the single monopoly profit theory is. That single monopoly profit theory had for decades has been used to push back against antitrust liability for tying sales of one product to another. In prior work, I declared the death of this theory, showing that it depended on five assumptions that did not always hold, and that each relaxation of one of those assumptions meant that a different type of anticompetitive effect was possible.[48] This is the prior work of mine that Professor Barak Richman addresses in his contribution.[49]

While my approach was largely theoretical, Richman takes a historical approach. He finds that antitrust suits that forced IBM to unbundle various products and services opened up new markets for computer programming and software in a way that unleashed innovation and enormous economic benefits.[50] His history fits well with the economic theories of harm stressed in my prior work but extends somewhat further and adds some interesting implications.[51]

The economic theory of harm that is most directly connected to the history Richman develops is that firms may use ties to foreclose competition in a tied market (here programming and software) less for its own sake than in order to preserve the degree of

47. Two NBA players were less than 5"10" in 2004-05. *See 2004-05 NBA Player Survey Results,* NBA.com, http://www.nba.com/news/survey_height_2004.html#bottom. Since each of thirty teams had twelve players, than means they were in the bottom two out of 360.

48. Einer Elhauge, *Tying, Bundling Discounts, and the Death of the Single Monopoly Profit Theory*, 123 HARV. L. REV. 397, 403-20 (2009) [hereinafter Elhauge, *Tying*].

49. Barak D. Richman & Steven W. Usselman, *Elhauge on Tying: Vindicated by History*, 49 TULSA L. REV. 689 (2014).

50. *Id.* at 694-95.

51. *Id.*

market power they enjoy over the tying product (here hardware).[52] As Richman notes, although IBM did not seem to foresee how massive the software market might become, IBM when bundling did hold the view that the point of controlling the software was to sell its hardware. If other firms also provided software, then entry by rivals into the hardware markets would be much easier because buyers could combine hardware from those rivals with software from other IBM rivals. Stopping IBM's bundling would thus lower entry barriers to hardware in a way that would lessen IBM's future market power over that hardware, which is in fact what happened. Today, the PC market is highly competitive, which would not have been the case if IBM had continued to control software in a way that would have given buyers no software to run on non-IBM machines.

Richman's history also implicates the other economic theories of harm that I covered as well. As Richman's history reveals, part of IBM's motivation for bundling hardware with programming services and software was to extract more money out of its hardware. This relates squarely to the various theories I establish for how tying can be used to increase monopoly profits even if it does not alter the degree of market power in either the tying or tied products.[53] For example, IBM's tying of machines to overpriced punch cards could facilitate profit-increasing price discrimination because the rate of using cards correlated with how much buyers were likely to value the machines. Tying machines to programming services could achieve similar intra-product price discrimination to the extent that the usage of services correlated with buyer valuation of the machines, but also could accomplish inter-product price discrimination if buyer valuations of machines and services were not too positively correlated or could extract individual consumer surplus if purchasers buy multiple machines. Under all these theories, the motivation for the bundling does not turn on hobbling competitors in the tied markets: the bundling could be profitable for IBM even if IBM's tied market power remained unaltered. These theories thus fit well with Richman's observation that preventing competition in programming services and software did not seem to be central to IBM's motivation.

What Richman's IBM case study powerfully shows is that, even if a firm's motive for tying is to preserve tying market power or extract more consumer surplus from it, rather than to suppress competition in the tied market for its own sake, tying can in fact suppress competition in that tied market in a way that creates large harms to innovation and social welfare. The fact that a firm like IBM may not intend or even foresee such harms is little solace to society and provides no sound grounds to ignore such effects. This relates to two points I have made, though I think also extends beyond them.

The first point is that when explaining why ties that increase monopoly profits can decrease total welfare even if they do not increase the defendant's degree of market power in either market, my prior work assumed (to be conservative) that none of the additional profits would be dissipated. In fact, however, those additional profits will at least partially be dissipated by many factors, including most relevant here that implementing ties is actually costly. It requires sellers to incur expenditures to monitor compliance or

52. Elhauge, *Tying*, *supra* note 48, at 417-19.
53. *Id.* at 404-13.

design products to prevent noncompliance, and it often causes buyers to spend resources to avoid ties or to suffer the costs of inferior technologies designed to prevent such avoidance strategies.[54] These implementation costs will dissipate some of the increased profits from tying and thus make it even more likely that tying harms total welfare. The fact that the increased profits from tying might outweigh such implementation costs explains why IBM would have been motivated to prevent the unbundling of its machines from programming services and software even if unbundling offered a more efficient product design. It also supports the view, suggested by Richman, that without antitrust enforcement, it was not inevitable that efficient unbundling of those markets would have occurred.

The second point relates to the charge by some that preventing firms from using ties to extract the entire total surplus from their tying market power will deter them from creating the innovation that gave them that tying market power in the first place.[55] As I have explained in prior work, this charge misses the point that economics actually shows that innovation is optimized when innovators get a certain *fraction* of the total surplus created by their innovation, rather than all of it.[56] The reason is that we want to maximize the *difference* between the value of innovation and the cost of creating it, and if one gives innovators all of total surplus, then they will expend increasing costs on creating innovations until they dissipate the entire total surplus. Thus, we will get the optimal investment in innovation if antitrust law allows firms to get only ordinary monopoly profits from their tying market power, rather than allowing firms to use ties to extract all of total surplus. This point explains why the Supreme Court has rejected the argument that a firm with tying market power should be able to tie in order to prevent entrants into the tied market from free-riding on its investment in creating the tying product.[57] This point also explains why antitrust authorities were right to reject the IBM argument that it should be allowed to tie in order to prevent others from free-riding on its innovation.

But Richman's showing extends beyond these points because it shows that another important innovation-harming effect of tying is that it can prevent *follow-on* innovation in the tied market, whether or not that was the aim of the tying firm. This is not a harm that my prior work has considered. Its addition is an important contribution to the tying literature that seems consistent with recent literature on patent economics that shows that one of the most important harms from excessive patent protection is that it can produce a net reduction in innovation by precluding subsequent innovations by others.[58]

54. *See* Warren S. Grimes & Lawrence A. Sullivan, Illinois Tool Works, Inc. v. Independent Ink, Inc.*: Requirements Tie-Ins and Intellectual Property*, 13 SW. J.L. & TRADE AM. 335, 350-51 (2007); Barry Nalebuff, *Price Discrimination and Welfare,* 5 COMPETITION POL'Y INT'L 221, 232 (2009).

55. Dennis W. Carlton & Ken Heyer, *Extraction v. Extension: The Basis for Formulating Antitrust Policy Towards Single-Firm Conduct*, 4 COMPETITION POL'Y INT'L 285 (2008).

56. Elhauge, *Tying, supra* note 48, at 439-42.

57. Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 461, 484-85 (1992) (noting that Kodak argued that its tie was justified "to prevent ISO's [independent service organizations, the tied markets rivals] from free-riding on Kodak's investment in the copier and micrographic industry" and rejecting this argument because "[t]his understanding of free-riding has no support in our case law.").

58. For a theoretical model proving that this is possible, see generally Michele Boldrin & David K. Levine, *A Model of Discovery*, 99 AM. ECON. REV. 337 (2009). For empirical work showing that expanding patent protections have had net negative effects on patent filings and suppressed later innovations, see generally Josh

You may wonder what any of this tying analysis has to do with health care. After all, my prior work on tying and bundling extended to any industry, and Richman's article is about the computer industry. But tying and bundling are rife in the health care industry, and new forms of it are likely to increasingly raise issues in health care because Obamacare encourages not only using bundled payments to try to create some cost-reducing incentives, but also creating Accountable Care Organizations that combine what used to be different market functions into one quasi-integrated provider.[59] Richman's article is an important reminder that, as we pursue such bundled strategies in health care reform, we have to be careful to prevent bundling that amounts to anticompetitive ties, as he has stressed in other work.[60]

Lerner, *The Empirical Impact of Intellectual Property Rights on Innovation: Puzzles and Clues*, 99 AM. ECON. REV. 343 (2009); Fiona Murray et al., *Of Mice and Academics: Examining the Effect of Openness on Innovation*, Nat'l Bureau of Econ. Research, Working Paper No. 14819 (2009); Heidi L. Williams, *Intellectual Property Rights and Innovation: Evidence from the Human Genome*, Nat'l Bureau of Econ. Research, Working Paper No. 16213 (2010).

59. Elhauge, *Obamacare*, *supra* note 20.

60. *See* Barak D. Richman, *Concentration in Health Care Markets: Chronic Problems and Better Solutions*, AMER. ENTERPRISE INST. (June 13, 2012), *available at* http://www.aei.org/files/2012/06/12/-concentration-in-health-care-markets-chronic-problems-and-better-solutions_171350288300.pdf.