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## The Central Assumptions of Patent Law: A Response to Ana Santos Rutschman's *IP Preparedness for Outbreak Diseases*

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### ABSTRACT

Professor Rutschman is right to question whether the patent system is prepared to address the unique challenges posed by outbreak diseases like Ebola and Zika. But her proposed dormant license and her call for increased “preparedness” both imply an optimism that regrettably I cannot share. The patent system’s failures in this setting are foundational. The solution is not to make small, thoughtful improvements at the edges; the solution instead is to recognize that, in this setting, government funding, prize systems, and other innovation-producing mechanisms should fully displace the normally attractive market-based patent regime.

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## INTRODUCTION

The patent system is designed to answer the difficult question of how society should allocate resources as between the many research activities that are within imaginable reach. Obviously, the system often serves this purpose well. Yet, in *IP Preparedness for Outbreak Diseases*, Ana Santos Rutschman details a heartbreaking example of apparent patent system failure: The patent system, even as augmented by both government spending and private philanthropy, failed to adequately coordinate research and development activities relevant to the recent Zika and Ebola outbreaks. So why did the patent system stumble in this instance? And are there general intuitions that can be used to preemptively identify situations where the patent system is unlikely to be an effective and socially desirable means by which to coordinate research endeavors?

My answer to these questions is straightforward. For the patent system to be both effective and socially attractive, two conditions must hold. First, because the patent system relies on market transactions to both pay for and prioritize research projects, the patent system can be effective only if private purchasers of goods and services can, through their aggregated spending decisions, accurately signal to inventors and investors the social value associated with patent-eligible work. Private spending, in other words, must be a good proxy for social value, with private purchasers as a group neither significantly overpaying nor significantly underpaying for patented achievements.

Second, even when private spending is a good proxy for social value, the patent system is attractive only if the costs associated with the use of this pricing system are small enough that, on balance, the patent system compares favorably to other approaches that might be less accurate but also less costly. For example, the government can raise money through general taxation and then encourage inventive activity by offering specific grants. Such an approach is error-prone, in part because government decisionmaking is susceptible to bias, corruption, and incompetence. But this approach has an offsetting advantage: Government-funded research can be released to the public at no further charge, thus obviating the need for a pricing regime that might, for example, deny access to anyone who cannot afford to pay the market-clearing price.

My articulation of these two considerations is not necessarily inconsistent with Rutschman's analysis of the Zika and Ebola outbreaks. In the end, we agree that the patent system is a deeply imperfect mechanism by which to address the challenge posed by outbreak diseases,<sup>1</sup> and we agree that the patent system can be improved in this context by introducing government funding, relying on private philanthropy,<sup>2</sup> and also adopting some situation-specific adjustments to the patent system's normal market mechanisms.<sup>3</sup> I write, however, because I worry that Rutschman is too optimistic in her assessment of how the patent system might ultimately be fixed. Put bluntly, the problem here is not merely a problem about a lack of "preparedness" in the sense of being a problem that could be solved if only society were to embrace a few procedural adjustments prior to the next crisis. Rather, because neither of the patent system's core conditions are plausibly satisfied in this context, the patent system instead strikes me as a wholly inappropriate mechanism by which to fund, prioritize, and otherwise coordinate society's response to outbreak diseases. Below, I explain more fully why, and I sketch some implications.

### I. PRIVATE PURCHASES AS A PROXY FOR SOCIAL VALUE

Start with the first condition: The patent system can be effective only if private purchasers of goods and services can, in the aggregate, signal with reasonable accuracy the social value associated with any given patented achievement. Inventors Lorraine Moore, Mark Moore, and Cely Giron likely learned this lesson the hard way in the late 1990s when they successfully petitioned the government for what became U.S. patent number 5,934,226. The patent covers a "diaper for an uncaged bird" and features "an enclosed pouch for receiving and containing excrement," as well as "decorative designs" and an optional leash.<sup>4</sup> Moore, Moore, and Giron presumably invested their own resources to develop this technology, and they possibly convinced some unfortunate independent investor to back the effort. But when the product came to market, the patent system surely did its job: Deafening silence at stores across the country surely communicated to these and future inventors that "diapers for birds" are not a national priority.

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1. Ana Santos Rutschman, *IP Preparedness for Outbreak Diseases*, 65 UCLA L. REV. 1200, 1215–1216 (2018).

2. *Id.* at 1216–C17.

3. Rutschman specifically argues in favor of a dormant patent license that would become immediately effective in the event of a public health emergency. *See id.* at 1253–65.

4. *See* U.S. Patent No. 5,934,226.

Price signals like these are central to a well-functioning patent system. A patent is neither a cash grant nor any sort of financial guarantee. It is instead a legal right that allows the patentee to enter relevant markets and reap whatever value that particular patentee has sown. If purchasers are willing to pay top dollar for a patented invention, the patentee earns those monies. If purchasers are willing to pay little or nothing at all, that is what the patentee must accept. The system in this way funds and prioritizes research activity, offering market-determined ex post rewards as a way of encouraging and calibrating private ex ante investments.<sup>5</sup>

But this approach allocates resources effectively only if individual purchasing decisions in the aggregate correlate well to social value. And, in Rutschman's examples, they don't. Frame the question bluntly: Can an Ebola or Zika victim—or a potential Ebola or Zika victim—accurately signal the value of a cure, vaccine, or treatment through that person's willingness to pay? Of course not. Many of the communities most likely to be ravaged by these diseases are populated by people without the wealth necessary to incentivize investors to engage in privately funded inventive activity. Many of those individuals also lack the information they would need to accurately quantify the relative benefits associated with different possible interventions. Indeed, quite the opposite, medical professionals who did intervene in countries ravaged by Ebola frequently reported that the local peoples feared medical intervention and did not trust the outsiders who were there to help.<sup>6</sup>

There is an externality problem here, too: Each individual's own willingness to pay will systematically underestimate social value because medical interventions benefit not only the individual but also the community. After all, as individuals are cared for, their neighbors are protected both from the spread of disease and from the consequences of a disease destroying a community's social and political infrastructure. Add to this the practical reality that the

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5. Scholars broadly celebrate the fact that the patent system allows the market to value inventions rather than asking the government to do so directly. See, among many examples, Giles S. Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 402 (1960) (noting that "one of the beauties of the patent system" is that the value of each invention "is measured automatically by the popularity of the contribution"). *But see* Tun-Jen Chiang, *The Paradox of IP*, 30 HARV. J.L. & TECH. 9, 9–12 (2017) (arguing that market signals are inevitably influenced by legal rules and court decision-making).
  6. See, e.g., Adam Nossiter, *Fear of Ebola Breeds a Terror of Physicians*, N.Y. TIMES (July 27, 2014), <https://www.nytimes.com/2014/07/28/world/africa/ebola-epidemic-west-africa-guinea.html> (describing as a "secondary crisis" the "fear of aid workers" and noting instances where villagers would "flee at the sight of a Red Cross truck" or threaten aid workers with knives and slingshots).

social value of any medical intervention is contingent on dozens of variables. A vaccine, for example, is only valuable to the extent that there are adequate roads to deliver the medicine and knowledgeable doctors ready to administer it. Thus, a pricing regime would have to be enormously complicated before it could reliably signal the value of a vaccine or any other technology in isolation. And then there is the incommensurability problem: While it is relatively easy to think about whether an iPad is worth its \$350 price tag, it is nearly impossible for most people to conceptualize the dollar value of possibly enjoying an extra day of good health.

The implication here is simple: When it comes to selecting a mechanism by which society might coordinate its research response to outbreak diseases, the patent system is simply a terrible choice. The central tenet of the patent system is that private purchasers operating within a market environment can, through their combined willingness to pay, efficiently fund and direct inventive activity. In the context of outbreak disease, that condition does not remotely hold.

## II. THE COST OF MARKET PRICES

Turn now to the second consideration: Even in situations where individual spending decisions can combine to create accurate market signals, the patent system is socially attractive only if the costs associated with that pricing regime are small enough that, on balance, the patent system compares favorably to other, less accurate mechanisms. The main problem here is that patents empower patentees to charge prices above the level of marginal cost. A patented drug, for example, might cost a penny to produce, but, because the drug is covered by a patent, the patentee might maximize profit by charging fifty dollars per pill. The mismatch here is intentional; a large markup is how patentees are paid for both the costs of research and the risk inherent in pursuing patent-eligible innovation. But high markups are costly from a social welfare perspective, because they mean that buyers who are willing to pay the marginal cost associated with a patented good or service, but unwilling or unable to pay the markup cost, will be denied access.

A second problem comes from the fact that patent licensing is not frictionless. In situations where a patent holder can bring the relevant goods and services directly to interested buyers, the only relevant transaction is the pricing interaction discussed above. But in the more common situation where the patent holder needs partners to create, improve, and ultimately deliver the relevant goods and services, a larger web of licenses and contracts must be

hammered out before the patented achievement can actually be put into widespread use. Those negotiations burn money and take time.

As applied to outbreak diseases, the implication is again clear: When it comes to choosing a mechanism by which to fund and coordinate research activity in this context, the patent system is a wholly inappropriate choice. Denying some buyers access to a patented good or service is a necessary evil in many markets. And the costs and delays associated with patent transactions might similarly, in many situations, be an appropriate price to pay in exchange for the benefits the patent system makes possible. But when high prices threaten to deny victims access to life-changing treatments, and when the normal delays associated with hard-nosed negotiation literally translate into lost lives, it is hard to believe that the patent system's benefits truly outweigh its costs.

### III. WHAT TO DO

None of these concerns are news to Rutschman. Indeed, she understands these problems and both explicitly and implicitly speaks to them in her Article. Because individual purchase decisions are deeply imperfect proxies for social value, Rutschman applauds the fact that nonmarket actors like the U.S. government, the Canadian government, and private philanthropic organizations all stepped forward to help fund Zika and Ebola research. Because delay is so costly in this context, Rutschman proposes the creation of a dormant license that, when triggered, would eliminate the need for certain types of licensing negotiations. But, at some point, Frankenstein is simply a monster. That is, when the patent system is no longer relying on private purchasers to fund and prioritize inventive activity, and the patent system is similarly replacing market negotiations with some sort of pre-negotiated externally imposed dormant license, the patent system is no longer a patent system. Why not, then, take the next natural step and consider whether an entirely different approach might be the better option?<sup>7</sup>

Such an approach could be a straightforward system of direct government funding combined with explicit government decisionmaking. General tax revenues could provide the cash necessary to pursue research endeavors under this approach, and government agencies like the National Institutes of Health

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7. For an inspiring, longer consideration of this topic, see WILLIAM W. FISHER III & TALHA SYED, *INFECTION: THE HEALTH CRISIS IN THE DEVELOPING WORLD AND WHAT WE SHOULD DO ABOUT IT* (forthcoming Stanford Univ. Press 2017), at <https://cyber.harvard.edu/people/tfisher/Infection.htm> (last updated Mar. 7, 2016).

and the Department of Homeland Security could pick projects and calibrate investments.<sup>8</sup> More clever forms of government intervention might be promising, too. In 1714, for example, the British government famously announced a large cash prize that would be awarded to the first person to discover and reveal a practical method by which ships could accurately navigate the then-precarious seas. The prize did not specify much about what technology should be pursued; British lawmakers understandably had no clue. The prize instead set a goal, established a value, and then, much like the patent system, allowed competitive forces to fill in the details.<sup>9</sup>

For current purposes, then, my point is simply this: The patent system is an elegant mechanism by which to direct inventive activity, but its allure turns on assumptions about the market's ability to measure social value and the acceptable social costs of market mechanisms. In the context of outbreak diseases, neither of those assumptions holds. The patent regime is thus, in my view, something worse than merely unprepared to address outbreak diseases. It is, instead, entirely the wrong mechanism by which to fund, prioritize, or coordinate society's innovation response.

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8. As other scholars routinely point out, using tax revenue to fund innovation can be more efficient than using government-granted patent monopolies. See, e.g., Michael Kremer, *Patent Buyouts: A Mechanism for Encouraging Innovation*, Q.J. ECON. 1137, 1140 (1998); Suzanne Scotchmer, *On the Optimality of the Patent Renewal System*, 30 RAND J. ECON. 181, 181 (1999). The problem with this theoretical argument is that, in reality, the government is extremely vulnerable to error, bias, and waste. For this reason, I have argued that government spending might be best effectuated by acting through the market. For example, the government could give cash vouchers that would then be deployed by real marketplace actors. See Douglas Gary Lichtman, *Pricing Prozac: Why the Government Should Subsidize the Purchase of Patented Pharmaceuticals*, 11 HARV. J.L. & TECH. 123 (1997).
  9. For a more detailed telling of this story, see DAVA SOBEL, *LONGITUDE: THE TRUE STORY OF A LONE GENIUS WHO SOLVED THE GREATEST SCIENTIFIC PROBLEM OF HIS TIME* (1995). For a comprehensive discussion of the economics of prize systems, see Michael Abramowicz, *Perfecting Patent Prizes*, 56 VAND. L. REV. 115 (2003); Benjamin N. Roin, *Intellectual Property versus Prizes: Reframing the Debate*, 81 U. CHI. L. REV. 999 (2014).