Anatomy and Atrophy of Medical Paternalism

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ABSTRACT

Since Ancient Greece, a guiding principle of Western medicine has been paternalism—the idea that doctors have intrinsically superior insights, patients should defer to their edicts, and this asymmetry is a desirable state of affairs. In the 20th century, new medical knowledge and technologies accumulated at an unprecedented rate, and medical paternalism arguably reached its zenith. Now, however, new technologies are eroding the doctor's privileged role by deconstructing, digitizing, and democratizing medical knowledge. Digital technologies and other breakthroughs offer unprecedented opportunities to save lives and cut costs. Along with self-interest, however, selective strains of risk aversion, technophobia, and egalitarianism among physicians are generating resistance to the new reality. This article catalogs the motives for and impact of medical paternalism, the reasons for its decline, and potential policy responses that would ease the transition.

JEL codes: I11, I13, I18, K2

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> Patients . . . should obey their surgeons implicitly in everything appertaining to their cure.
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> —*Henri de Mondeville*[1]

Medical paternalism is the idea that, in matters related to health, patients should defer to the advice and decisions of doctors because doctors possess—and should possess—intrinsically superior knowledge. This notion dates at least as far back as Egypt's high priest and chancellor Imhotep (ca. 2600 BCE), considered by some to be the earliest physician. The idea was refined and codified by the Greek physician Hippocrates (ca. 400 BCE). Owing to the specialization and sophistication of medicine, not to mention the formidable changes in pharmacological interventions, medical paternalism arguably reached its zenith in the 20th century—perhaps justifiably at that time.[2]

In the 21st century, however, new technologies are rapidly eroding the physician's privileged role by deconstructing, digitizing, and democratizing medical knowledge. These technologies offer unprecedented opportunities to save lives, reduce sickness, and ease pain. At the same time, they generate substantial risks against which 20th century regulation cannot adequately protect. To simultaneously tap our opportunities and navigate the risks, we must understand paternalism's history, motives, institutions, costs, and—perhaps most of all—its decline.

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1. Henri de Mondeville, *On the Morals and Etiquette of Surgeons*, as entitled and reprinted in Stanley Joel Reiser, Arthur J. Dyck, and William J. Curran, eds., *Ethics in Medicine: Historical Perspectives and Contemporary Concerns* (Cambridge, MA: MIT Press, 1977), 15.
2. The beginning of this article draws heavily from Eric Topol, *The Patient Will See You Now: The Future of Medicine Is in Your Hands* (New York: Basic Books, 2015).

A BRIEF HISTORY

As well as any, two documents from the fifth century BCE mark the transition from democratized medicine to paternalism—a process that only now is reversing itself. The Greek historian Herodotus described Mesopotamian medicine in terms that bear a striking resemblance to present-day online crowdsourcing:

> The following custom seems to me the wisest of their institutions. . . . They have no physicians, but when a man is ill, they lay him in the public square, and the passers-by come up to him, and if they have ever had his disease themselves or have known anyone who has suffered from it, they give him advice, recommending him to do whatever they found good in their own case, or in the case known to them; and no one is allowed to pass the sick man in silence without asking him what his ailment is.[3]

"One can argue that the driving principle of Hippocrates and his successors has been 'a little knowledge is a dangerous thing.'"

Hippocrates, a contemporary of Herodotus, penned the Hippocratic Oath,[4] and 2,500 years later, doctors still swear fealty to modern versions of it. The oath reflected a change in perception about the structure of medical knowledge. Unlike the Mesopotamians described by Herodotus, Hippocrates assumed physicians possessed information intrinsically superior to that of their patients. He also believed that this superiority warranted institutional measures to ensure the supremacy of doctor over patient. In other words, Hippocrates insisted that physicians' superior knowledge ought to be self-reinforcing because patients' knowledge was inferior. Medical institutions should strive

3. Herodotus, *The Histories* I:197 (ca. 430 BC). Cited in Clayton M. Christensen, Jerome H. Grossman, and Jason Hwang, *The Innovator's Prescription: A Disruptive Solution for Health Care* (New York: McGraw-Hill, 2009).
4. Ancient and modern versions of the Hippocratic Oath are found in Peter Tyson, "The Hippocratic Oath Today," *NOVA*, March 27, 2001.

to keep patients in the dark, ignorant of their own conditions and of the ingredients of their medicines.

One can argue that the driving principle of Hippocrates and his successors has been "a little knowledge is a dangerous thing."

About six centuries after Hippocrates, Western medicine institutionalized a sort of layered paternalism—ordinary clinical practitioners' standards were to be dictated and regulated by an elite cadre of physicians. The Greek physician Galen of Pergamon became the court physician of the Roman emperor Marcus Aurelius; he was a genius who founded or profoundly influenced at least half a dozen fields of modern medicine, including anatomy, physiology, pathology, pharmacology, and neurology. But the core of Galen's medical philosophy included now-discredited theories—notably the existence of bodily humors and the all-purpose virtues of bleeding patients—which solidified into iron orthodoxies. For 16 centuries, medical practitioners dared not question Galenism, which ruled Western medicine until the early 19th century.

One of the final victims of Galenism's reign was George Washington, whose physicians, following the prescriptions of antiquity, likely bled him to death just weeks before the beginning of the 19th century. Washington's contemporary and acquaintance (and sometimes adversary) Benjamin Rush was a powerful advocate of medical paternalism. A decade before Washington's demise, Rush, a signer of the Declaration of Independence, wrote, "Yield to [patients] in matters of little consequence, but maintain an inflexible authority over them in matters essential to life."[5]

Robert North offers a detailed description of Rush's paternalism, intolerance for dissent, and erroneous medical theories, which likely led to mass fatalities during epidemics and, eventually, to Rush's downfall.[6] Among other mistakes, Rush theorized that all fevers and illnesses were manifestations of a single cause. He monomaniacally favored purging and bloodletting and "experienced an almost religious epiphany that more extreme treatment would be curative."[7] In 1847, decades after Rush's career ended in disgrace over his practices, the American Medical Association codified paternalism in words that echoed Rush's:

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5. Benjamin Rush, "Observations on the Duties of a Physician, and the Methods of Improving Medicine: Accommodated to the Present State of Society and Manners in the United States" (lecture delivered at University of Pennsylvania, February 7, 1789), republished in Dagobert W. Runes, ed., *The Selected Writings of Benjamin Rush* (New York: Philosophical Library, 1947).
6. Robert L. North, "Benjamin Rush, MD: Assassin or Beloved Healer?," *Baylor University Medical Center Proceedings* 13, no. 1 (2000).
7. Ibid.

> The obedience of a patient to the prescriptions of his physician should be prompt and implicit. He should never permit his own crude opinions as to their fitness, to influence his opinions.[8]

There is irony in the fact that the centuries-long moral justification for medical paternalism rested on the assumption that doctors possessed intrinsically superior knowledge vis-à-vis their patients and that some identifiable cadre of medical elites possessed intrinsically superior information vis-à-vis other doctors. The irony lies in the fact that medical practice probably did patients more harm than good from ancient times until the early 20th century. Biochemist Lawrence Henderson has described 1910–1912 as the Great Divide, when "for the first time, a random patient with a random disease consulting a doctor chosen at random stands a better than 50/50 chance of benefiting from the encounter."[9] (To be fair, one could argue that, although doctors did damage during this period, they did less than laypeople would have done on their own.)

Lewis Thomas, one-time dean of the Yale and New York University medical schools and president of Memorial Sloan Kettering Institute, wrote that, when he trained at Harvard in the mid-1930s, the medical school largely trained physicians "not to meddle" with the course of disease:

> When I arrived at Harvard Medical School in 1933, nobody talked about therapeutics as though it were a coherent medical discipline, in the sense that pharmacology is today. To be sure, there were a few things to learn about: digitalis for heart failure, insulin, liver extract for pernicious anemia, vitamin B for pellagra, a few others. By and large, we were instructed not to meddle. Our task was to learn all that was known about the natural history of disease so that we could make an accurate diagnosis, and a reasonably probabilistic prognosis. That done, our function as doctors would be to enlist the best possible nursing care, explain matters to the patient and family, and to stand by.[10]

As Robert Graboyes notes, myriad regulations appeared in medicine before the Great Divide and certainly before the late 1930s[11] when, according to Thomas,

8. American Medical Association, *Code of Medical Ethics*, 1847, art. 2, § 6.
9. Richard Harris, *A Sacred Trust* (New York: New American Library, 1966), 5.
10. Lewis Thomas, *The Fragile Species* (New York: Simon and Schuster, 1996), 48.
11. Robert F. Graboyes, "Defying Gravity," *U.S. News & World Report*, June 12, 2015. This article discusses the charts and the history and causes of the notion that "health care is different" from other

this hands-off approach, called "therapeutic nihilism," gave way to modern medicine.[12] These regulations included the following:

- *Professional licensure.*[13] States determined who could and could not practice medicine and by what qualifications.
- *Scope-of-practice limits.*[14] Restrictions effectively carved out a physician monopoly over certain procedures by prohibiting nurses and other nonphysicians from practicing to the full extent of their knowledge and abilities.
- *FDA regulation.*[15] Initially charged with evaluating the safety of drugs, the agency's authority grew to include evaluating the safety of a broad range of medical devices and determining the efficacy of both drugs and devices.
- *Corporate practice of medicine doctrine (CPMD).*[16] CPMD forbade corporations from owning medical practices or employing physicians.
- *Certificate-of-need (CON) laws.*[17] CON laws gave states the power to prohibit new hospitals from competing with existing ones and to prohibit existing hospitals from adding new beds or equipment.
- *Medical school standardization.*[18] Following the 1910 Flexner Report, medical education was homogenized, effectively restricting the development of alternative medical philosophies or modes of instruction. (As an aside,

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economic endeavors—a notion that has been strongly reinforced by economists and others since Kenneth J. Arrow wrote "Uncertainty and the Welfare Economics of Medical Care," *American Economic Review* 53, no. 5 (1963).

12. Thomas, *Fragile Species*.

13. See Paul Starr, *The Social Transformation of American Medicine* (New York: Basic Books, 1982), 40, 44–45, 57–58. Milton Friedman's critique of professional licensure is encapsulated in "Milton Friedman—Curing American Health Care," YouTube video, 5:30, posted by Liberty Pen, August 24, 2009, https://www.youtube.com/watch?v=TdcaLReCG3Y#t=11.

14. Starr, *Social Transformation.*

15. For a history and critique of FDA regulation of medical devices, see Richard Williams, Robert F. Graboyes, and Adam Thierer, "US Medical Devices: Choices and Consequences" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, October 2015).

16. "Some state courts interpreted the rule against the 'corporate practice of medicine' to preclude medical cooperatives as well as profit-making medical corporations." Starr, *Social Transformation*, 305.

17. For a history and analysis of certificate-of-need legislation, see Thomas Stratmann and Jacob W. Russ, "Do Certificate-of-Need Laws Increase Indigent Care?" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, July 2014).

18. The American Medical Association's 1910 *Flexner Report* was almost certainly the most influential document in the history of American medical education. For a description and critique of post-Flexner medical pedagogy, see Christensen, Grossman, and Hwang, *Innovator's Prescription*, 339–44.

Abraham Flexner's goal of "fewer and better doctors" also resulted in the wholesale destruction of African American medical education.[19])

- *Insurance mandates.*[20] With the growth of health insurance after World War II, states skewed the practice of medicine by requiring insurers to cover certain procedures but not others.
- *Price controls.*[21] With the advent of Medicare and Medicaid, the federal government radically skewed medical practice patterns. If Medicare arbitrarily establishes high compensation for procedure A and low compensation (or no compensation) for procedure B, we are likely to see more A and less B, regardless of medical pros and cons. To a large extent, private insurance policies mimic the features of these public insurance programs. Some analysts argue that Medicare's system of pricing closely resembles the manner in which the Soviet government set prices for everything.[22]
- *Restraint on international medical trade.*[23] Medicare, for example, places significant obstacles to paying for goods and services obtained outside the United States. In addition, laws severely restrict the import of drugs and devices from other countries.

These laws and regulations formed the infrastructure of paternalism in 20th century America. All bolstered the primacy of licensed medical professionals over the delivery of care in America. In each, the moral justification rested on a presumption of asymmetric information—superior knowledge possessed by physicians (and other cognitive elites), and in particular by those at the top of the medical profession.

It's not difficult to argue for the wisdom of medical paternalism in the 20th century. Throughout the period, medical knowledge grew more complex and care became vastly more effective. For laypeople, and even for physicians outside the great centers of medical learning, keeping up with the rapid advances was costly, difficult, and at times impossible.

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19. A. Steinecke and C. Terrell, "Progress for Whose Future? The Impact of the Flexner Report on Medical Education for Racial and Ethnic Minority Physicians in the United States," *Academic Medicine* 85, no. 2 (2010).
20. The Council on Affordable Health Insurance, now defunct, published an annual report, *Health Insurance Mandates in the States*, until 2012.
21. See, for example, Uwe E. Reinhardt. "Medicare's Soviet Label," *Economix*, *New York Times*, November 12, 2010.
22. Ibid.
23. Department of Health and Human Services, "Medicare Coverage outside the United States," revised January 2016; FDA Division of Import Operations and Policy, "Information on Importation of Drugs," 1998.

We can see this in a survey of proposals to reform medical education from 1910 to 1993. The survey listed 19 reform proposals, each pointing to similar core objectives, one of which was "to cope with burgeoning medical knowledge." Medical schools struggled to keep up with the huge boom in medical knowledge during the 20th century, and the medical community assumed—not without reason—that the general population was even less capable of keeping up with the changes.[24] There is little doubt that during this period, physicians possessed immensely superior information compared with patients' meager and unsatisfactory knowledge. In response to this asymmetry, the regulatory state grew more powerful, enabling the medical and political hierarchies to enforce centralized control over medicine and to reinforce the doctor-patient asymmetry.

To be sure, centralized control over health care had its critics. In 1962, Milton Friedman argued against professional licensure—states (generally through autonomous medical boards) determining who could and could not practice medicine. He compared licensure to a medieval guild, concluding,

> I myself am persuaded that licensure has reduced both the quantity and quality of medical practice; that it has reduced the opportunities available to people who would like to be physicians, forcing them to pursue occupations they regard as less attractive; that it has forced the public to pay more for less satisfactory medical service, and that it has retarded technological development both in medicine itself and in the organization of medical practice.[25]

"Medical schools struggled to keep up with the huge boom in medical knowledge during the 20th century, and the medical community assumed—not without reason—that the general population was even less capable of keeping up with the changes."

24. Nicholas A. Christakis, "The Similarity and Frequency of Proposals to Reform US Medical Education," *Journal of the American Medical Association* 274, no. 9 (1995).
25. A classic critique of professional licensure is found in Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 1962), chap. 9.

Uwe Reinhardt agreed with the gist of Friedman's argument and extended its logic in arguing for expanded scope of practice by nonphysicians.[26]

But our purpose here is not to relitigate the previous century's practices. For better or worse, paternalism was a dominant feature of 20th century medicine, and there are reasons to defend that practice.

NEW CENTURY, NEW REGIME

The period since 1990 invites a comparison between information technology (IT) and medicine. In IT, Moore's Law described the dramatic increase in the power of communications and computing as the price of both plummeted.[27] To an individual in 1990, an iPad and its cost and capabilities would be unfathomable. In contrast, health care has evolved at a modest pace over this period.[28]

In our time, the comparison between health care and IT is crucial, but even more so is the interrelationship between these two fields. More than anything else, it is 21st century information technology that is leveling the field on which patients, physicians, and allied healthcare professionals dwell. Intelligent machines are commoditizing the knowledge that once resided exclusively in the minds of physicians—just as the mechanical loom crystallized the skills of weavers into "smart" machines 200 years ago.[29]

There are many recent examples of commoditized medicine that are smartphone-based. An electrocardiogram (ECG) can be created on the screen by simply placing one's fingers on a sensor that is smaller than a credit card. The rhythm strip is read by an embedded algorithm in the app (one example is Kardia Mobile by AliveCor[30]) for a rapid and accurate interpretation, preempting the need for a doctor. Should there be an abnormal reading, a PDF of the ECG can be sent to a doctor to get advice. Skin lesions and rashes can similarly be interpreted via smartphone app software. At least one study has shown the result to be more

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26. Uwe E. Reinhardt, "The Dubious Case for Professional Licensing," *Economix, New York Times*, October 11, 2013. See also Matthew Mitchell, Anna Mills, and Dana Williams, "Three Prescriptions for States to Improve Health Care" (Mercatus on Policy, Mercatus Center at George Mason University, Arlington, VA, January 2015).
27. Moore's Law states that the number of transistors that can fit in an integrated circuit doubles roughly every two years. First established in Gordon E. Moore, "Cramming More Components onto Integrated Circuits," *Electronics* 38, no. 8 (1965).
28. Robert F. Graboyes, "Fortress and Frontier in American Health Care" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, October 2014).
29. For an analogy, see the discussion of London cab drivers in Robert F. Graboyes, "Gigs, Jobs, and Smart Machines," *E21* (Manhattan Institute), April 26, 2016.
30. The device is available on the AliveCor website, www.alivecor.com.

accurate than readings by doctors.[31] The most common cause for a visit to the pediatrician is for a possible ear infection. But now that can be quickly diagnosed with a smartphone ear attachment and cloud-based algorithmic interpretation.[32]

These and many other examples of doctor disintermediation via mobile device hardware and software demonstrate the opportunity to avoid the cost of an office or emergency room visit. Home pregnancy tests were the inaugural DIY lab back in 1978, but it took more than 10 years after their validation and introduction for doctors to begin to accept them.[33] This reluctance reflects physicians' loss of control over the embedded path of lab testing, as well as loss of revenue from office visits and from testing in traditional, central labs.[34] We have seen the same pattern of physician resistance repeatedly, for example, with home HIV testing and consumer genomic testing. But virtually all routine labs can and will be performed by consumers in the future. Already, various apps allow patients to test for cholesterol, inflammation (C-reactive protein), vitamin D, fertility, sperm count,[35] influenza, testosterone, and blood glucose.[36] As mentioned earlier, such testing extends well beyond one-drop blood tests to most routine tests. Examples include an electrocardiogram, diagnosis of a skin lesion or rash, lung function test for asthma or chronic obstructive pulmonary disease, oxygen concentration in the blood for diagnosis of sleep apnea, and many more.

Simultaneously, technology is rapidly eroding the capacity of regulators to enforce paternalism. Previously, it was defensible for regulators to stand in the way of potentially unsafe innovations, as the general public had limited access to the information necessary to evaluate the safety of drugs, devices, and procedures. The Internet has radically changed that by making information superabundant. The consumer's challenge is no longer how to acquire information, but rather how to filter the masses of available information and judge its quality. In addition, inexpensive international travel makes it possible

31. Ben Lovejoy, "iPhone App Screens for Skin Cancer More Accurately Than Your Doctor, Shows Early Testing," *9to5Mac*, May 8, 2014. See also Jeannie Kever, "An iPhone App Offers Quick and Inexpensive Melanoma Screening," University of Houston, May 6, 2014.
32. The device is available on the Cellscope website, http://cellscope.com/.
33. Physician opposition was based both on self-interest and on concern that women lacked emotional strength to handle the tests and their implications. Pagan Kennedy, "Could Women Be Trusted with Their Own Pregnancy Tests?," *New York Times*, July 29, 2016.
34. Sarah Buhr, "CliniCloud's Smart Stethoscope and Thermometer Let Doctors Check Your Vitals from the Cloud," *TechCrunch*, February 12, 2015. Devices mentioned in Buhr's article are available on the Clinicloud website, https://clinicloud.com/.
35. Meghana Keshavan, "DIY Sperm Test to Hit the Market This Fall," *STAT*, June 20, 2016.
36. John R. Patrick, "Self-Diagnosis Is on the Way," *ADVANCE for Administrators of the Laboratory*, December 28, 2015.

for even people of modest means to purchase healthcare goods and services outside the United States.

MOTIVES FOR PATERNALISM

Medical paternalism arises from at least three different motives: selective versions of egalitarianism, technophobia, and elitism. The word *selective* is crucial, as there are seeming inconsistencies in medical attitudes on all three motives.

First, the egalitarian motive is evident in Canada's limits on out-of-pocket payments for nationally provided services. For decades, Canada has forbidden at least two types of healthcare transactions: out-of-pocket payments for certain services and payments to doctors in excess of state-mandated price controls.[37] The ethics of "one-tiered" versus "two-tiered" care are widely debated in Canada, as in this passage: "Access to essential care should be based on need and not ability to pay. If resources are constricted we should revisit what is essential but not allow a two-tier system for what are core services."[38] In this case, defining "what is essential" is an act of paternalism driven by egalitarianism. Egalitarian concerns, however, are clearly selective; medical professionals often take great pride in elite medical institutions that serve rarified clienteles or that possess equipment unavailable at most facilities.[39] While we have not found egalitarian concerns in writing in the United States, medical professionals have asked one author of this paper whether telemedicine should be reimbursed or even permitted. The questioners expressed concern over whether the poor and the wealthy have equal access to smartphones and laptops and whether the poor might use telehealth unwisely.

Technophobia, the second motive driving paternalism, is apparent in the genuine fears some physicians have about various practices involving technology. Despite substantial evidence of the safety and efficacy of telemedicine, for example, some medical authorities advocate serious limitations on the practice.[40] No doubt, the technology is a radical departure from millennia of face-to-face

37. The 2005 Supreme Court ruling in *Chaoulli v. Quebec (AG)* relaxed the prior prohibitions against private insurance in Quebec, but other egalitarian proscriptions remain in effect across Canada. 1 S.C.R. 791, 2005 SCC 35 (Can.).
38. Colleen M. Flood et al., "Top Ten Reasons against Two-Tier Medicine in Canada," *Edmonton Journal*, March 13, 2006.
39. For example, foreign heads of state frequent elite institutions such as the Mayo Clinic and the Cleveland Clinic.
40. Abby Goodnough, "Texas Medical Panel Votes to Limit Telemedicine Practices in State," *New York Times*, April 10, 2015.

doctor-patient contact, but we have seen similar shifts in numerous other industries (e.g., banking and finance). In addition, this technophobia is selective: while physicians may be deeply risk averse concerning telemedicine, they are deeply fond of certain other technologies, such as robot-assisted surgeries, medical scans (including CT, MRI, and nuclear scans), and proton-beam therapy for cancer—often without the requisite data to validate the use of these technologies.[41]

As for the third motive, elitism, some physicians are not reflexively opposed to certain practices, but they assume that only they—not patients (or even individual doctors)—can determine when and where these practices are appropriate. Again turning to telemedicine, the Texas Medical Board has been prominent in restricting this technology.[42] Physicians are arguably socialized to believe that their moral outlook on health is superior to that of laypeople. They may believe, for example, that healthcare spending ought to be more than individuals or electorates would choose; we see this, for example, in calls for mandatory insurance benefits. They may believe that nurse practitioners should only be used in ways approved of by medical authorities.

The intention of medical paternalism is to improve the lot of patients. Jay Katz cited Henri de Mondeville in *The Silent World of Doctor and Patient*:

> The surgeon . . . should promise that if the patient can endure the illness and will obey the surgeon for a short time he will soon be cured and will escape all the dangers which have been pointed to him; thus the cure can be brought about more easily and more quickly.[43]

The egalitarian, technophobic, and elitist motives all presume that physicians will make better decisions than patients. Implicitly, the presumption is that the physician is acting as an enlightened agent for patients, who lack sufficient information to make choices on their own behalf.

This paper defines medical paternalism as stemming from a sense of noblesse oblige. Our concern here is not about medical protectionism—raw self-interest—in which, say, physicians oppose new technologies or the expanded use of nonphysician providers because they pose threats to physicians' turfs

41. Eric Topol, *The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care* (New York: Basic Books, 2013), 192–93.
42. Lauren Silverman, "Texas Puts Brakes on Telemedicine—And Teladoc Cries Foul," *NPR Morning Edition*, June 2, 2015.
43. Jay Katz, *The Silent World of Doctor and Patient* (Baltimore: Johns Hopkins University Press, 1984), 9.

and incomes.[44] Sometimes it is difficult to separate altruism from self-interest, but we leave the nonaltruistic motive for other writings.

INSTITUTIONS OF PATERNALISM

Medical paternalism is enforced and preserved via at least three mechanisms: governmental powers, private entities, and social conventions.

We have previously mentioned governmental powers over medicine in America: the FDA; Medicare, Medicaid, the Affordable Care Act, and other insurance laws; professional licensure; scope-of-practice laws; the corporate practice of medicine doctrine; explicit price controls; and telemedicine restrictions.

Ostensibly, private entities such as medical societies and boards are often given formal or informal quasi-state authority to impose medical paternalism. In some states, for example, legislatures delegate powers such as licensing procedures, medical education, and telemedicine to professional societies. In Texas, it was the Texas Medical Board that blocked Teladoc, one of the leading national telemedicine companies, from providing medical consultations to residents in the state.[45] Insurers also reinforce paternalism by, for example, covering lab tests ordered by MDs but not tests requested individually by patients.

Medical paternalism may also derive from social conventions and moral suasion rather than from formal state or parastatal powers. At times, for example, patients have been discouraged from seeking second opinions as a matter of courtesy to their doctors. There may be no law, regulation, or professional prohibition regarding second opinions, but some physicians strongly telegraph their preferences, and patients generally acquiesce. While a protocol supporting

"There are myriad ways in which paternalism limits the supply of healthcare services."

44. In *Free to Choose* (New York: Harcourt, 1980), Milton and Rose Friedman referred to the American Medical Association as "one of the most successful [labor] unions in the country."
45. Silverman, "Texas Puts Brakes on Telemedicine."

second opinions in medicine has long been on the books at the American Medical Association,[46] in practice a significant proportion of doctors today still feel challenged and insulted by the request for one, and they do not follow the protocol. Even when doctors inform patients that they have a specialty bias of self-referral (e.g., surgeons tend to recommend surgery rather than other options), the disclosure actually *increases* the likelihood of getting an outside opinion.[47]

COSTS OF PATERNALISM

If one believes that medical paternalism leads to inferior outcomes, we can identify at least three distinct societal costs: a restricted supply of healthcare services using current technologies, a slower rate of technological innovation, and a substandard mix of expenditures—medical and nonmedical.

University of Chicago economist John Cochrane asked, "What's the biggest thing we could do to 'bend the cost curve,' as well as finally tackle the ridiculous inefficiency and consequent low quality of health-care delivery?" His answer was, "Look for every limit on supply of health care services, especially entry by new companies, and get rid of it."[48]

There are myriad ways in which paternalism limits the supply of healthcare services. Certificate-of-need laws and regulations limit the ability to establish new hospitals, expand existing ones, and increase the services available at a particular hospital.[49] Scope-of-practice laws and regulations limit the ability of nonphysician providers (e.g., nurse practitioners, nurse anesthetists, optometrists, pharmacists, and psychologists) to practice up to the limits of their training.[50] Telemedicine restrictions impede the ability to deliver care remotely. The corporate practice of medicine doctrine (a ban on corporations owning medical practices) discourages the adoption of efficient management

46. American Medical Association, *Code of Medical Ethics*, 2016, § 1.1.3; see also "Code of Medical Ethics Modernized for First Time in 50 Years," *AMA Wire*, June 14, 2016.
47. Sunita Sah, Angela Fagerlin, and Peter Ubel, "Effect of Physician Disclosure of Specialty Bias on Patient Trust and Treatment Choice," *Proceedings of the National Academy of Sciences of the United States of America* 113, no. 27 (2016).
48. John H. Cochrane, "After the ACA: Freeing the Market for Health Care," *Grumpy Economist,* October 19, 2012.
49. Thomas Stratmann and Matthew C. Baker, "Are Certificate-of-Need Laws Barriers to Entry? How They Affect Access to MRI, CT, and PET Scans" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, January 2016).
50. See Mitchell, Mills, and Williams, "Three Prescriptions"; Zach Weismueller, "Nurse Practitioners Can Make Health Care Cheaper and Doctors Want to Stop Them," *Reason.com*, December 3, 2013.

practices.[51] Professional licensure limits the number of physicians and nonphysician providers alike, at least in specific medical specialties or geographic areas. FDA regulations limit the use of preapproval drugs by the terminally ill. Limits on slots at medical schools discourage or prevent qualified aspirants from becoming physicians.

The FDA imposes high costs, a slow pace, and unpredictability on the process of developing and marketing new drugs and devices.[52] This situation slows or even derails innovations. And there is a cascade effect: With some probability, a new drug or device may precipitate successive innovations; conversely, a new drug or device that fails to reach the market is unlikely to yield additional generations of innovation. Institutional review boards (IRBs) are another constraint on physicians. Designed to thwart unethical research, these independent committees (appointed by universities or other research entities) require prior approval on human-subject research. The downside of IRBs is that they can discourage legitimate research by imposing higher costs, longer delays, and relative inflexibility on research.[53]

From a utilitarian standpoint, paternalism may lead to a suboptimal mix of expenditures. Mandatory health insurance coverage, for example, presumably increases health care's portion of gross domestic product. To the extent that tort law induces defensive medicine, it may also increase health care's share of the economy. Medicare pricing and other price controls likely skew the mix of goods and services that make up the healthcare sector. Insurance mandates likely skew health care toward mandated services, which may negatively deviate from consumer preferences.

DECLINE OF PATERNALISM

There is reason to believe that, after a 2,500-year reign, medical paternalism may be in a steep decline. Throughout its reign, and most clearly in the 20th century, medical paternalism was justified by asymmetric information: physicians massively invested in the acquisition of knowledge unavailable to their patients. This knowledge resided solely in the physician's mind and could only be transmitted slowly and expensively

51. Southern Medical Association, "The Corporate Practice of Medicine," *Southern Medical Blog,* January 13, 2016.
52. Alex Tabarrok, "Is the FDA Too Conservative or Too Aggressive?," *Marginal Revolution*, August 26, 2015.
53. Philip Hamburger argues that IRBs may violate free speech rights under the First Amendment. Philip Hamburger, "The New Censorship: Institutional Review Boards" (Working Paper No. 95, University of Chicago Public Law and Legal Theory Working Papers, 2005).

from teacher to student. Like pre–Industrial Revolution textile weaving, pre-digital medicine was an intuitive domain that was not reducible to algorithms,[54] a learned skill that could not be reduced to simple steps that laypeople could follow. For 200 years, one lesson has played out over and over in various sectors of the economy: Some tasks simply cannot be automated—until they can. Healthcare providers are seeing that lesson play out again and again in the digital age.[55]

As with weaving 200 years ago, medical algorithms are now proliferating. With the assistance of new telemetry, databases, smartphones, tablets, apps, and peripheral devices, nurses and patients—and even friends of patients—can competently perform tasks over which physicians (and other medical experts) once held monopolies. These make peer-to-peer advice and treatments possible—whether or not one thinks they are a good idea.

Furthermore, the institutions that traditionally encouraged and enabled medical paternalism are fading. Innovations are arguably proceeding at too fast a pace for regulators to maintain their grip. In addition to the speed of innovation, the nature of innovation is also changing. To a substantial degree, 21st century laws and regulations governed technologies that were highly visible and easily traceable. An MRI machine weighs 11 tons and costs over a million dollars. It is relatively inexpensive for regulators to monitor the usage of such machines. The same is not true of, say, medical apps spread peer-to-peer via Internet-borne, open-source software. As Eric Topol writes elsewhere,

> These connected medical devices—I call them the IoMT (Internet of Medical Things)—enable sharing not just with a physician or nurse, but with anyone: family members, such as an elderly individual with her caregiver daughter, or peers, such as a network of friends to set up a managed competition ("coopetition") for best physiologic metrics. And of course sharing could be with machines and algorithms to provide data processing and automated feedback to the individual. . . . All of these movements of self-generated data by smart, hyperconnected patients represent a serious challenge to medical paternalism.[56]

As Erik Brynjolffson and Andrew McAfee write, "Computers and other digital advances are doing for mental power—the ability to use our brains to understand

54. See Erik Brynjolfsson and Andrew McAfee, *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* (New York: W. W. Norton, 2014), Kindle edition, 170.
55. Christensen, Grossman, and Hwang, *Innovator's Prescription*, Kindle edition, location 323.
56. Eric Topol, *Patient Will See You Now*.

and shape our environments—what the steam engine and its descendants did for muscle power."[57]

As an example, telemedicine allows patients to decide when and where it is convenient to see a doctor; they are not limited to the doctor's office when the doctor has time. Using inexpensive auxiliary devices such as smartphones or tablets, patients can take temperature, blood pressure, and other metrics to self-diagnose or to share with a physician. With or without the presence of a doctor, apps are able to perform a broader and broader variety of medical analyses. Previously, we mentioned smartphone apps to analyze ear infections[58] and heart function available from AliveCor.com.[59] ResApp can diagnose pneumonia on the basis of a patient coughing into a smartphone.[60] Opternative.com can perform eyeglass refractions and fittings without visits to a professional's office. (An ophthalmologist does review the results after the fact.) Home genomics tests can analyze an individual's susceptibility to numerous genetic conditions (23andMe.com). New healthcare technologies include both new modes of treatment (and self-treatment) and new institutional structures for delivering care. All these new tools are providing patients with knowledge that had previously been the sole domain of doctors.

The Internet offers both patients and providers heretofore unimaginable ways of tapping into and aggregating varied sources of information. Oliver Sacks wrote of how the web has changed life for those with achromatopsia—a debilitating genetic condition that results in severe light sensitivity and total color blindness. Historically isolated and widely scattered, the world's achromatopes can now connect with other sufferers, share information, and compare notes.[61] Additionally, connectivity gave achromatopes the power to educate their own physicians, who typically had never met another achromatope or another physician with achromatopsia experience.[62] More broadly, we see medical crowdsourcing in sites such as PatientsLikeMe.com and WebMD.com. A *Washington Post* article detailed economist Arturo Porzecanski's struggle with the potentially fatal Clarkson's Disease and his efforts to connect patients with the disease worldwide via RareShare.org.[63] Physician and layperson communication via WhatsApp.com

57. Brynjolfsson and McAfee, *Second Machine Age*, 6.
58. CellScope website, http://cellscope.com/.
59. Topol, *Patient Will See You Now*, 5.
60. Charles Moore, "Narhex Life Sciences Commences ResApp Smartphone Cough Diagnostic App Clinical Trial at University of Queensland," *Lung Disease News*, April 16, 2015.
61. Oliver Sacks, *The Island of the Colorblind* (New York: Knopf, 1996).
62. See, for example, an achromatopsia website, http://www.achromatopsia.info.
63. Sindya N. Bhanoo, "Sharing the Pain: Rare Disease Puts an AU Economist in Touch with Fellow Patients around the World," *Washington Post*, February 10, 2009.

played a significant role in identifying Brazil's Zika virus outbreak, its association with microcephaly, and the means for coping with its aftermath.[64]

The democratization of medicine also conjures up healthcare knowledge in surprising ways. Patients exploring their own symptoms and treatments generate search engine data that reveal previously unseen patterns. Apple's HealthKit and ResearchKit rapidly produce research panels at astonishing rates, relative to traditional research methods. For example,

> On the first day the app was launched, Asthma Health was downloaded by 2,500 people. It would typically take researchers around 1–2 years to recruit this many subjects for a study. In the first month, 7,500 people with asthma had signed up.[65]

"Patients exploring their own symptoms and treatments generate search engine data that reveal previously unseen patterns."

The demise of medical paternalism promises startling changes in the process by which people acquire, preserve, and restore health. The Internet, artificial intelligence, and other technological advances are expanding the supply of healthcare services by enabling patients, nonphysician healthcare providers, and intelligent machines to do work that was once the exclusive province of doctors. Consider again the smartphone application that allows any individual to perform and interpret an ECG. If an individual experiences chest discomfort on an isolated ranch in the middle of the night, the options are no longer limited to (1) call in the rescue squad; (2) drive a long distance through the darkness to an emergency room; (3) call a physician and share an inexact description of symptoms; or (4) go back to bed and hope for the best. Eric Topol describes a time when a patient emailed him saying he was in atrial fibrillation and

64. Katie Worth and Catherine Osborn, "How Brazil's Favorite App Is Helping Doctors and Parents Cope with Microcephaly," *Public Radio International*, February 23, 2016.
65. James McIntosh, "Can Apple's ResearchKit Change the Face of Medical Research?," *Medical News Today*, June 11, 2015.

Topol realized that "[a] smart algorithm was now trumping one of my skills as a cardiologist."[66] Less paternalism means faster innovation, which in turn likely accelerates the decline of paternalism still further. It also means a shift in the mix of healthcare services and in the risks associated with that care.

James Surowiecki describes the ways in which diverse, decentralized groups of laypeople often surpass the judgment of homogeneous, centralized groups of expert managers, noting, "In the history of science and technology, top-down organization has always been more of an anomaly than the ordinary way of doing business."[67] In health care, we have systematically imposed that top-down model, which 21st century technologies are demolishing.

The logic of democratized health care reflects Tyler Cowen's description of "freestyle chess," a form of chess in which teams of players, armed with computers, compete with one another in a game of chess. As a rule, the best traditional chess players may not be particularly adept at freestyle competition. The best freestyle players may be those who are best at dealing with computer teams.[68] Similarly, for some medical endeavors, networks of laypeople, armed with smartphones and social media platforms, may provide more powerful insights into care than trained physicians do—which is not to say that physician input will not be valuable. In fact, freeing physicians from the rote, automatable tasks will likely give them time to provide even more valuable services in the future.

CONCLUSION

Replacing paternalistic medicine with democratized medicine—patients and other laypeople performing tasks previously limited to medical professionals—is a difficult notion to absorb and accept since, for the most part, we have neither contemporary experience with nor historical memory of such a world.[69] Democratized medicine is fast arriving and the question is how, not whether, to adjust to it.

In closing, we offer a brief list of policy recommendations to expedite this transition.

1. *Radically reconfigure Medicare's reimbursement methodologies.* The current system arguably serves the preferences of providers more than those of

66. Topol, *Patient Will See You Now*, 6.
67. James Surowiecki, *The Wisdom of Crowds* (New York: Anchor, 2005).
68. Tyler Cowen, *Average Is Over: Powering America beyond the Age of the Great Stagnation* (New York: Dutton, 2013).
69. Robert Graboyes describes the Internet's impact on centralized control of medicine in "Why We Need to Liberate America's Health Care," *Making $ense* (PBS), January 9, 2015.

patients and, in doing so, skews health care toward costly and excessively risk-averse practice patterns. Medicare pricing exerts a powerful influence over private insurance markets, so reform in this area would alter practice patterns outside Medicare as well.

2. *Expedite the approval process for drugs and devices.* The FDA's approval process is excessively costly, lengthy, and unpredictable. By contrast, the European Union has devolved these tasks to competing private agencies, with positive results. Within the United States, reform proposals include right to try (access for the terminally ill to not-yet-approved drugs), adaptive licensing (staged access to drugs in order of acuity), the free-to-choose option (granting physicians the right to prescribe drugs before full FDA approval), reduced interference with medical device innovation, and returning the FDA to its safety-only mission (leaving efficacy to the market).

3. *Allow greater flexibility for hospitals and parallel institutions.* At the state level, certificate-of-need laws inhibit competition, variation, and flexibility. Federal laws discourage specialty hospitals. Reducing or eliminating such provisions would allow more rapid innovation. A related option is to eliminate laws banning the corporate practice of medicine, which constrain novel structures for medical institutions.

4. *Loosen constraints on healthcare providers.* Currently, states unnecessarily decree who may practice and in what manner. Democratization would benefit from lowering barriers to entry such as medical licensure, scope-of-practice limits, and telemedicine prohibitions.

5. *Provide support and greater variation in medical education.* Since the 1910 Flexner Report, medical education in the United States has been homogeneous, reinforced by centralized, standardized accreditation processes. Cross-disciplinary programs (e.g., medicine and engineering) with varied curricular design will better prepare the healthcare workforce to accommodate democratized medicine.[70]

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70. For example, the Harvard-MIT Program in Health Sciences and Technology offers interdisciplinary degree programs related to medicine and engineering: "HST: Integrating Science, Engineering, and Medicine to Solve Problems in Human Health," Harvard-MIT Health Sciences and Technology, accessed November 21, 2016, http://hst.mit.edu/. Thomas Jefferson University's JeffDESIGN, "the first-of-its-kind for a US medical school, equips students to redesign healthcare systems, services, spaces and medical devices." "College within the College: JeffDESIGN," Thomas Jefferson University, accessed November 21, 2016, http://www.jefferson.edu/university/skmc/programs/cwic/tracks/design.html.

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Eric Topol, MD, has focused his research on transforming medicine through innovations, an expertise that he has carried over to dedicated education and training initiatives. He led many global clinical trials that brought progress in molecular biology to the clinic, including one of the first genetically engineered drugs (t-PA), a monoclonal antibody (abciximab), and a small-molecule clopidogrel (Plavix). Topol was the founder of a new medical school, Cleveland Clinic Lerner College of Medicine, and has trained more than 200 physician investigators. Many of his students have become chiefs of cardiology, and these now serve in five different continents. He was also the founder and director of the Scripps Translational Science Institute, which is supported by the NIH Clinical and Translational Science Award (CTSA) via the Scripps Research Institute. He has authored two books on the future of medicine: *The Creative Destruction of Medicine* and *The Patient Will See You Now*.

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