

AGAINST THE MAN OF SYSTEM

Innovative Dynamism
after Covid-19

Dr. Arthur M. Diamond, Jr.



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“The man of system...is apt to be very wise in his own conceit; and is often so enamoured with the supposed beauty of his own ideal plan of government, that he cannot suffer the smallest deviation from any part of it...

“He seems to imagine that he can arrange the different members of a great society with as much ease as the hand arranges the different pieces upon a chess-board. He does not consider that in the great chess-board of human society, every single piece has a principle of motion of its own, altogether different from that which the legislature might choose to impress upon it.”

- ADAM SMITH, THE THEORY OF MORAL SENTIMENTS, PART VI, SECTION II, CHAPTER II, PP. 233-4, PARA 17

EXECUTIVE SUMMARY

- As the pandemic grinds to an end, there is significant clamor for a bigger government to solve alleged crises in healthcare, climate change, semiconductors, infrastructure, and jobs.
- Many believe that China's state-centric policies are better suited than the West's to solve these crises. But central planning consistently fails and Chinese Communist Party (CCP) efforts to increase the role of the state will hold back their economy.
- Life has improved as a result of innovation, which occurs through the efforts of inventors and innovative entrepreneurs. Workers, on balance, benefit from a system of innovative dynamism. Policies can be crafted to encourage further entrepreneurship and innovation.
- Innovative entrepreneurs use serendipity, slow hunches, and trial and error experiments to end crises and create a flourishing economy. The path toward innovative solutions cannot be known in advance by central planners and regulators, and only can be created by the improvisation of entrepreneurs.
- The track record of centrally planned projects, whether the explosion of the R101 government-built dirigible in Britain, or the bank-

ruptcy of the government-subsidized Solyndra in the US, does not suggest that government central planning is better than entrepreneurial innovative dynamism.

- In the recent Covid-19 pandemic, central planners in China covered up the emergence of the virus and were slow to warn their own citizens, and the citizens of the world, of its virulence and fast spread. They may also be responsible for accidentally leaking the virus from a laboratory.
- The World Health Organization (WHO), the Centers for Disease Control (CDC) in the US, and Public Health England in the UK, for months ignored evidence that the virus could spread asymptotically and through aerosols and that it only very rarely could spread through infected surfaces. As a result, those who acted on the information from these authorities took measures that were of limited use (temperature checks and frequent surface disinfection) and failed to take measures that could have mattered more (earlier, quicker, targeted testing and better ventilation). Perhaps even worse, central planning organizations discouraged or banned the kind of nimble trial and error experiments that could have provided more useful therapies until vaccines could be developed.
- In respect to climate change, semiconductors, infrastructure, and jobs, a system of entrepreneurial innovative dynamism has resulted, and will continue to result, in faster and greater progress.

To sustain the innovative dynamism that allows us to flourish, we must make sure that:

- **We do not interfere with the process that allows entrepreneurs to innovate;**
- **We do not tax would-be entrepreneurs so much that they do not have the funds to pursue their hunches and conduct their nimble trial and error experiments;**
- **We do not regulate or centrally plan the path forward.**

ABOUT THE AUTHOR

Dr Arthur M. Diamond, Jr. earned graduate degrees in philosophy and in economics from the University of Chicago, where he also was awarded a Post-Doctoral Fellowship with economics Nobel Prize laureate Gary Becker. He served on the faculty of the Department of Economics at The Ohio State University and is currently Professor of Economics at the University of Nebraska Omaha. Diamond has published many journal articles on labor economics, economics of technology, and economics of entrepreneurship. His *Openness to Creative Destruction: Sustaining Innovative Dynamism* was published in 2019 by Oxford University Press.

INTRODUCTION

Eric Schmidt, when he was executive chairman of Google, understood that: “regulation prohibits real innovation, because the regulation essentially defines a path to follow.”¹

What is true of regulation, is even truer of central planning: it defines a path to follow. Since the advent of the pandemic in Britain and the US, there have been increasing calls for a bigger government, especially for a return to “industrial policy,” which is a vague, euphemis-

1 Crovitz, L. Gordon. “Information Age; Google Speaks Truth to Power; About the Growing Regulatory State, Even Google’s Eric Schmidt—a Big Supporter of the Obama Administration—Now Feels the Need to Tell It Like It Is.” *The Wall Street Journal* (Mon., Oct. 24, 2011): A13.

tic name for a type of central planning.²

It is common after a crisis or disaster, such as the current pandemic, to hear such calls for a centrally planned response. But the quickest and most effective responses are usually those of private sector citizens, entrepreneurs, and firms. An early US example occurred during the San Francisco earthquake and fire of 1906. As the fire approached his bank, Amadeo Peter Giannini, the founder of what became the Bank of America, hid bank funds in wagons that he navigated away from the chaos. Giannini soon brought some of the money back into town to make quick loans for rebuilding homes and businesses.³ When many central planners urged rent controls following World War II, Nobel Prize winners Milton Friedman and George Stigler argued that the San Francisco fire illustrated that recovery was quicker when left to nimble entrepreneurs than when left to central planners.⁴

The main alternative to a system of central planning has gone by a vari-

2 Ip, Greg. "West Dusts Off an Old Idea to Compete with China." *The Wall Street Journal* (Fri., July 30, 2021): A1 & A7. Siripurapu, Anshu. "Backgrounder; Is Industrial Policy Making a Comeback?" Council on Foreign Relations, Updated March 16, 2021. Available from: <https://www.cfr.org/backgrounder/industrial-policy-making-comeback>. A call for industrial policy from a former economic advisor to President Biden is: Bernstein, Jared. "The Time for America to Embrace Industrial Policy Has Arrived." Posted July 22, 2020. Available from: <https://foreignpolicy.com/2020/07/22/industrial-policy-jobs-climate-change/>. Concerns about calls for a return to industrial policy are expressed in: Lesh, Matthew. "Why British ARPA Is Destined to Fail." Posted Aug. 20, 2020. Available from: <https://capx.co/why-british-arpa-is-destined-to-fail/>. Kealey, Terence. "History Suggests the 'British ARPA' Will Be a Wasteful Failure." Posted Feb. 19, 2021. Available from: <https://capx.co/history-suggests-the-british-arpa-will-be-a-wasteful-failure/>.

3 Diamond, Arthur M., Jr. *Openness to Creative Destruction: Sustaining Innovative Dynamism*. New York: Oxford University Press, 2019, p. 111.

4 Friedman, Milton, and George J. Stigler. *Roofs or Ceilings? The Current Housing Problem*. Irvington-on-Hudson, New York: Foundation for Economic Education, 1946.

ety of names including “entrepreneurial capitalism.” That name is misleading because it wrongly implies that the main feature of that system is capital.⁵ Innovation is the main feature— the process by which the new and better replaces the old and good. Joseph Schumpeter called this process “creative destruction.” I prefer to call it “innovative dynamism” because the process is less destructive than Schumpeter’s name implies. The process of innovative dynamism usually replaces the old gradually, and the replacement is seldom total. In 1995, Microsoft founder Bill Gates predicted that online travel sites would replace travel agents.⁶ Twenty-five years later fewer are employed as travel agents, but as of May 2020, there still are 55,180 travel agents in the US⁷

Paradoxically, sometimes new technologies increase the demand for those who had worked with the old technology. The demand for those who illuminated books increased with the advent of printing.⁸ The demand for bank clerks increased with the advent of ATMs.⁹ More generally, many workers can seamlessly transition from the old technology to the new technology. A firm, like Studebaker, that switched from making wagons to making cars, still needed workers to make wheels and to keep the books.

In *Openness to Creative Destruction*, I argue that innovative dynamism is the source of the spectacular increase in human flourishing

5 McCloskey, Deirdre N. *Bourgeois Dignity: Why Economics Can’t Explain the Modern World*. Chicago: University of Chicago Press, 2010, p. 75.

6 Gates, Bill. *The Road Ahead*. New York: Viking Penguin, 1995, pp. 179-180.

7 U.S. Bureau of Labor Statistics, <https://www.bls.gov/oes/current/oes413041.htm>

8 Hilbert, Ernest. “Wise Men Fished There.” *The Wall Street Journal* (Sat., April 24, 2021): C9.

9 Bessen, James. *Learning by Doing: The Real Connection between Innovation, Wages, and Wealth*. New Haven, CT: Yale University Press, 2015, pp. 107-108.

that started roughly 250 years ago. I argue further that the agent of innovative dynamism is the entrepreneur. Because at the early fragile stages of innovation, the entrepreneur is alone in what they see and what they believe is possible, the early stages must almost always be self-funded. The need for self-funding implies that aspiring entrepreneurs should be allowed to accumulate funds, which implies low taxes. Taxes to support central planning subsidies take away money that could otherwise be spent by individual breakthrough entrepreneurs. The government can help by providing the rule of law that assures the safety of person and property. But when the government tries to do much more, defining the path forward through regulations or subsidies, it does more harm than good. One reason is that central planners will often yield to the temptation to define a path that pleases friends and cronies. But a more fundamental reason is that the central planners cannot know the best path forward.

If central planners cannot predict the best technology, then what should we do if we want the economic growth that helps us to flourish?

We do not interfere with the process that allows entrepreneurs to innovate. We do not tax would-be entrepreneurs so much that they do not have the funds to go into their kitchens, attics, or garages to pursue their hunches and conduct their nimble trial and error experiments. We do not regulate or centrally plan the path forward.

1. HOW ENTREPRENEURS INNOVATE

Those who call for central planning are often well intentioned. They often want to promote innovation and economic growth, among other worthy goals. To judge the realistic prospects of their well-intentioned policies requires first understanding how innovations occur.

Entrepreneurs who bring us innovations do not know in advance how they will do it. In many cases entrepreneurs start with inchoate “slow hunches” that they gradually clarify and develop.¹⁰ They often carry with them problems to be solved, and unlike most of us, they do not ignore serendipitous events that might help them solve their problems. Often they also use nimble trial and error experiments to achieve their innovations.

10 Johnson, Steven. *Where Good Ideas Come From: The Natural History of Innovation*. New York: Riverhead Books, 2010, pp. 77-78.

When Nick Steinsberger’s fracking team mistakenly injected too watery a mixture into the frack, he had every reason from scientific theory and from experience to expect poor results.¹¹ Instead the output of natural gas was much greater than usual. Serendipity. Others would have shrugged and moved on; others told *him* to shrug and move on. But he would not let it go. Against the strong skepticism of the firm’s top fracking expert, and at some risk to his career, he conducted trial and error experiments during subsequent fracks, to see if the “fluke” gas output could be repeated and improved. “Slick-water fracturing” was born.¹²

Perhaps it was no accident that Nick Steinsberger worked for Mitchell Oil. George Mitchell was a rough-hewn outsider who had persevered in the use of trial and error to develop early fracking techniques. He, and other fracking pioneers like Harold Hamm, used funds from earlier efforts to fund later efforts. He was not significantly funded by government and complained bitterly about not getting a dime from venture capitalists.

US President Barack Obama, in the 2012 State of the Union address, claimed that the federal government deserves credit for developing fracking. The claim is likely based on comments made by one-time Mitchell geologist Dan Steward, who praised 1979 research by the Department of Energy in the Appalachian Basin that showed shale rock could hold substantial natural gas. But Steward later expressed frustration that his comments were being used to reduce the credit given to his former boss, the entrepreneur George Mitchell: “George probably could have done it without the government. The govern-

11 Zuckerman, Gregory. *The Frackers: The Outrageous Inside Story of the New Billionaire Wildcatters*. New York: Portfolio/Penguin, 2013, p. 78.

12 Zuckerman, Gregory. *The Frackers: The Outrageous Inside Story of the New Billionaire Wildcatters*. New York: Portfolio/Penguin, 2013, p. 78.

ment would not have done it without George.”¹³

Before the fracking revolution, the central planning experts in academia and government were predicting increasing scarcity of energy and asking us to prepare for a future of lowered expectations. Their path forward was bleak. But they could not know what Nick Steinsberger would see and they could not know that Nick Steinsberger would refuse to forget what he had seen, would refuse to shrug and move on. The path forward could not be known in advance, could not be planned, because it involved seeing the significance of a serendipitous event and courageously pursuing it through trial and error experiments.¹⁴

To help us flourish, central planners would have to be able to tell which new ideas are waiting to be born and which of those would turn out to be good and which bad. To do that, they would have to be able to predict what consumers will want, what serendipitous events will occur, and what trial and error experiments will reveal. They would have to be able to predict who will have the courage and perseverance to see the serendipity and do the trial and error. Like most economic and business forecasters, central planners make their predictions by extrapolating. But even the most econometrically sophisticated tools of extrapolation are unable to predict changes of taste or innovations in goods and processes.

Conscientious central planners might try seeking the forecasts of academic experts, but the experts cannot predict the best path for-

13 Steffy, Loren. “How Much Did the Feds Really Help with Fracking?” Posted Oct. 31, 2013. Available from: <https://www.forbes.com/sites/lorensteffy/2013/10/31/how-much-did-the-feds-really-help-with-fracking/?sh=69bfdafe3edf>.

14 Pirie, Madsen. *Trial & Error & the Idea of Progress*. London: Adam Smith Institute, 2015.

ward either. Economic historian, and Nobel Prize winner, Robert Fogel pointed out that economic forecasters systematically and consistently under-predicted the 20th century growth of western economies.¹⁵ That is because their data were historical and their technique was some version of extrapolation. The data did not include innovations that had not yet occurred. Those innovations could and did matter. Fogel even quoted Nobel Prize winner Simon Kuznets as suggesting that in a free and innovative economy, the best forecasts may come from science fiction writers rather than extrapolating economists.¹⁶

Apple co-founder Steve Wozniak, the inventor of the first widely successful personal computer, was one of the best engineers of his time. Yet he claimed that even the best engineer can only predict technology no further than two years into the future.¹⁷

Because of the uncertainty of serendipity and trial and error, inventors and entrepreneurs cannot fully predict even what they themselves will create. But predicting the success of their project depends on knowing more than that; it also depends on knowing what *other inventors* and entrepreneurs will create. Appreciating this, Ron Adner advises that entrepreneurs benefit from having a “wide lens” to see as much as they can of what is happening offstage from their project, because unexpected offstage inventions and events are sure to affect

15 Fogel, Robert W. “Reconsidering Expectations of Economic Growth after World War II from the Perspective of 2004.” IMF Staff Papers 52 (2005): 6-14.

16 Fogel, Robert W. “Reconsidering Expectations of Economic Growth after World War II from the Perspective of 2004.” IMF Staff Papers 52 (2005): 13.

17 Wozniak, Steve, and Gina Smith. *iWoz: Computer Geek to Cult Icon: How I Invented the Personal Computer, Co-Founded Apple, and Had Fun Doing It*. New York: W. W. Norton & Co., 2006, p. 293.

their project's success.¹⁸

The engineer who invented the butterfly keyboard was hailed for his creativity on the front page of the business section of the *Wall Street Journal*.¹⁹ Laptop screens were expensive, so laptops were small. Their small keyboards were hard to type on. When IBM's small laptop, with butterfly keyboard, was opened, the keyboard inside would unfold like the wings of a butterfly, providing the typist with a full-sized keyboard to type on. Job done. But meanwhile some other engineers, offstage, were improving the screen technology, making bigger screens a lot cheaper.

As screen technology improved IBM made, and consumers bought, bigger screened laptops. With the bigger screened laptops came bigger keyboards. The job consumers needed the butterfly keyboard to do, no longer needed to be done. The butterfly keyboard's time in the sun was short.

The butterfly keyboard was a small innovation. But it illustrates the uncertain and unpredictable path toward innovations and how one innovation is leapfrogged by the next. How could a central planner plan the path toward a butterfly keyboard, and all the other paths toward all the other innovations that create a dynamic economy?

During the pandemic, there have been increasing calls for central planning. To respond to these calls we need to evaluate whether central planning will speed innovations that promote widespread flourishing. I propose to evaluate the renewed calls for central plan-

18 Adner, Ron. *The Wide Lens: A New Strategy for Innovation*. New York: Portfolio, 2012.

19 Hays, Laurie. "In the Lab: Abstractionist Practically Reinvents the Keyboard." *The Wall Street Journal* (Mon., March 6, 1995): B1 & B7.

ning on the basis of whether central planning will speed innovations that will allow widespread flourishing. A few of the findings of my *Openness* book will be useful. So will the past and recent record of attempts to centrally plan. Those will need to be compared with the record of past and recent innovations from the system of innovative dynamism.²⁰

20 I acknowledge that this Briefing Paper would be improved if it included a higher proportion of examples from outside of the United States.

2. THE FAILURE OF CENTRAL PLANNING

Many who support central planning ignore the problem of planners who reward special interest cronies. When they compare central planning to innovative dynamism, they compare central planning at its ideal best, with innovative dynamism at its warts-and-all worst.²¹ In our actual real world, the central planner faces the constant temptation to regulate and subsidize a path forward that is in the special interest of the planner's cronies.²²

But the most fundamental reason central planning fails, arises from the epistemology of entrepreneurship sketched in the previous section. Even when the central planner is an intelligent, well-educated, hard-working saint she cannot know the best path forward in

21 Wolf, Charles, Jr. *Markets or Governments: Choosing between Imperfect Alternatives*. 2nd ed. Cambridge, MA: The MIT Press, 1993.

22 Krugman, Paul R. "Targeted Industrial Policies: Theory and Evidence." In *Proceedings - Economic Policy Symposium*. Federal Reserve Bank of Kansas City, 1983, pp. 123-155. In recent years Krugman has been more willing to experiment with industrial policy.

advance. That path needs to be created or discovered by the innovative entrepreneur who is alert to serendipitous events and who pursues hunches or nimble trial and error experiments. For central planning to succeed, the central planner would need to already know not only the entrepreneur's articulate local knowledge, but also what the entrepreneur either knows inarticulately or has yet to discover.²³ But it is impossible for the central planner to have this knowledge, especially since, as Don Lavoie noted, much of the local knowledge is tacit, lying "deep in the minds of millions of persons," and hence inaccessible to any central planner.^{24,25}

With innovations, not even the entrepreneur knows with certainty which projects will work and which ones will not. And the uncertain knowledge that does exist is asymmetric. The entrepreneurs will have better knowledge than those from whom they seek funding, be they venture capitalists, banks, or national governments. As I emphasize in *Openness*, there are a couple of reasons.

The first is that the entrepreneurs who have immersed themselves in their project have informal knowledge about it that is tacit or difficult to articulate. The second is that some aspiring, or fraudulent, entrepreneurs will be tempted to misrepresent their estimates of the likelihood of success. An aspiring or fraudulent entrepreneur is more likely to exaggerate or lie to potential funders than they are to exaggerate or lie to themselves.

23 The classic source on local knowledge is: Hayek, Friedrich A. "The Use of Knowledge in Society." *American Economic Review* 35, no. 4 (Sept. 1945): 519-30.

24 The classic source on tacit knowledge is: Polanyi, Michael. *The Tacit Dimension*. Garden City, New York: Doubleday & Co., 1966.

25 Lavoie, Don. *National Economic Planning: What Is Left?* Washington, DC: Cato Institute, 1985, p. 78.

Many historical examples support the theoretical reasons we expect central planning will usually fail. But a few famous exceptions include the Manhattan Project, the development of radar, and the moonshot. I attribute these exceptions mainly to the mission orientation, and sublimation of usual motivations, that sometimes occurs in intense war and cold war situations, as well as to the fact that the basic science in each case was already known, and the path forward involved incremental advances.²⁶

Radar was developed in the Rad Lab at M.I.T. under the direction of Alfred Lee Loomis and others. Jennet Conant writes that Loomis believed that it was only under the pressure of the war that he had been willing to set up such a lab, and that it was only under the pressure of war that “a large, centralized, government-controlled laboratory” could succeed.²⁷ Loomis’s past experience had been as an entrepreneur. But, while holding his nose (he described government-run technology as “anathema” to him),²⁸ he joined the government to get a process moving that had been “mired in bureaucracy.”²⁹

Some point to the Defense Advanced Research Projects Agency (DARPA) in the US and the Ministry of International Trade and

26 This point was made, for instance, by Dusty Rhoads, the first head of the Sloan-Kettering anti-cancer research effort, as quoted in: Conant, Jennet. *The Great Secret: The Classified World War II Disaster That Launched the War on Cancer*. New York: W. W. Norton & Company, 2020, p. 232.

27 Conant, Jennet. *Tuxedo Park: A Wall Street Tycoon and the Secret Place of Science That Changed the Course of World War II*. New York: Simon & Schuster, 2002, pp. 278-279.

28 The “anathema” quote is from Conant, Jennet. *Tuxedo Park: A Wall Street Tycoon and the Secret Place of Science That Changed the Course of World War II*. New York: Simon & Schuster, 2002, p. 278.

29 Conant, Jennet. *Tuxedo Park: A Wall Street Tycoon and the Secret Place of Science That Changed the Course of World War II*. New York: Simon & Schuster, 2002, p. 157.

Industry (MITI) in Japan as exemplars of successful central planning. Most famously, DARPA is sometimes credited with developing the Internet. But Bob Taylor, the former administrator of the DARPA networking initiative denied that DARPA should be so credited, and he himself, along with many innovative engineers, voted with their feet for the private sector when they joined Xerox PARC, where many of the technologies most crucial to the Internet, including Ethernet, were developed.³⁰ Japan's MITI did enhance innovation in Japan, but it did so by advocating lower taxes rather than by picking technologies to subsidize.³¹ For example, MITI picked for subsidy an inferior technology for high-resolution television but did not pick the major technological advance of the second half of the 20th century, the personal computer.³²

The high growth rates of the Chinese economy are often cited as another example of the success of central planning. Some calls for more central planning in the West are based on a fear of economic dominance based on China successfully pursuing central planning. The economic success of China should not in itself be a cause for concern. Economic flourishing is not a zero-sum game. If China found ways to become more productive and innovative by adopting a system of innovative dynamism, then the rest of the world would stand to gain by being able to trade for more and better goods and services.

30 Hiltzik, Michael A. *Dealers of Lightning: Xerox PARC and the Dawn of the Computer Age*. New York: HarperBusiness, 1999. See also: Kealey, Terence. "History Suggests the 'British Arpa' Will Be a Wasteful Failure." Posted Feb. 19, 2021. Available from: <https://capx.co/history-suggests-the-british-arpa-will-be-a-wasteful-failure/>.

31 Gilder, George. *Recapturing the Spirit of Enterprise: Updated for the 1990s*. New York: ICS Press, 1992, pp. 155-158.

32 Callon, Scott. *Divided Sun: MITI and the Breakdown of Japanese High-Tech Industrial Policy, 1975-1993*, *Studies in International Policy*. Stanford, California: Stanford University Press, 1995.

But if the West imitates China's central planning in the mistaken belief that it is helping them to flourish, we risk binding our entrepreneurs in ways that limit their ability to bring us greater productivity and innovation. So it is worth considering whether recent central planning has improved the economy of China. For many years China has reported high levels of economic growth at about 6% per year. Unofficial sources of data suggest that the actual growth rate is closer to 3% per year.³³ What growth is achieved is through increasing levels of government and bank debt.³⁴ This is used to invest in real estate, infrastructure, and other public works projects that do little to benefit ordinary Chinese citizens.³⁵

In 1982, the Chinese Communists implemented one of their most audacious central plans: banning every member of the CCP from having more than one child. In 2021, everyone sees the economic harms of the plan and the CCP are fumbling to reverse it.³⁶ If the plan had been in effect in 1964, the year of Alibaba founder Jack Ma's birth, China's central planning would have deprived the country of its most celebrated entrepreneur.³⁷

Partly the Chinese growth rate is an artifact of misleading numbers.

33 Bird, Mike, and Lucy Craymer. "Private Data Show Sharper China Slowdown." *The Wall Street Journal* (Mon., Sept. 9, 2019): A1 & A10.

34 Stevenson, Alexandra, and Cao Li. "China's Complex Debt Problem." *The New York Times* (Mon., Nov. 11, 2019): B1-B2.

35 Stevenson, Alexandra, and Cao Li. "China's Gain Is Hardly Felt by the People." *The New York Times* (Fri., April 16, 2021): B1 & B3.

36 Goldman, Russell. "Beijing's Attempts to Control Growth." *The New York Times* (Tues., June 1, 2021): A10. (The online version of the article has the title: "From One Child to Three: How China's Family Planning Policies Have Evolved.") Wang, Vivian. "More Children? No Way, Families in China Say." *The New York Times* (Weds., June 2, 2021): A6.

37 I first heard this point made by Peter Jacobsen in his "More than Labor" presentation at the 2021 APEE meetings on April 12, 2021.

Partly it reflects that a central planning regime can achieve substantial growth by imitating what is being done in more economically advanced countries. But once the central planning regime catches up, it is no longer able to sustain growth.³⁸ Increased regulations and decreased freedom of speech are leading some of China's most prominent entrepreneurs, including Jack Ma, to retire or leave the country.³⁹ Even those who do not directly give up, will achieve less in an economy where entrepreneurial trial and error and self-funding are increasingly constrained.⁴⁰

Apart from the few successes, and the alleged successes that are actually full or partial failures, the history of central planning is mostly one of clear failures. Sometimes history gives us something approaching a natural experiment to compare the effectiveness of central planning versus innovative dynamism. Samuel Langley's device that crashed into the Potomac was funded by central planners; the Wright Brothers' device that flew and landed at Kitty Hawk was self-funded. James Watson's projected 15-year effort to sequence the genome was funded by central planners.⁴¹ Craig Venter's push to get the job done in three years was funded by an entrepreneurial

38 Phelps, Edmund S. *Mass Flourishing: How Grassroots Innovation Created Jobs, Challenge, and Change*. Princeton, New Jersey: Princeton University Press, 2013, pp. 191-192.

39 Zhai, Keith. "Head of China's Giant E-Commerce Firm Quits." *The Wall Street Journal* (Thurs., March 18, 2021): B4. See also: Buckley, Chris. "Chinese Entrepreneur Was Model of Success, Then She Got Too Close to Critics of the Party." *The New York Times* (Tues., Feb. 9, 2021): A10.

40 Smick, David M. *The World Is Curved: Hidden Dangers to the Global Economy*. New York: Portfolio Hardcover, 2008.

41 National Institutes of Health. "Understanding Our Genetic Inheritance; the U.S. Human Genome Project: The First Five Years FY 1991-1995." *Departments of Health and Human Services; Energy*, April 1990, p. ix.

startup.⁴²

Central planners tend to try to duplicate the last big thing. For example, everyone wants to create the ‘next Silicon Valley.’ According to entrepreneur and venture capitalist Marc Andreessen, what we need are not 50 Silicon Valleys, but rather 50 *kinds* of Silicon Valley.⁴³ He suggests that we might benefit from a “Biotech Valley, a Stem Cell Valley, a 3-D Valley or a Drone Valley” but that central planners, far from encouraging such developments, have “erected huge regulatory hurdles” to many of them.⁴⁴ The royal family of Dubai has made a substantial investment in creating a Silicon Valley in Dubai, attracting technology companies to locate offices there, but so far they have little new innovation to show for their investment.⁴⁵

Firms and individuals are voting with their feet against states in the US that more actively manage or plan the economy. For example, productive or entrepreneurial firms and individuals have been exiting California, including HP Enterprise, Schwab, Oracle, Peter Thiel, and Elon Musk.⁴⁶ This is tied, not so much to differences in taxes, but to differences in other expenses that are the result of California’s increasingly regulatory, central planning state.⁴⁷

42 Shreeve, James. *The Genome War: How Craig Venter Tried to Capture the Code of Life and Save the World*. 1st ed. New York: Alfred A. Knopf, 2004.

43 Bilton, Nick. “Disruptions; Forecasting the Next Big Moves in Tech.” *The New York Times* (Mon., May 19, 2014): B8.

44 Bilton, Nick. “Disruptions; Forecasting the Next Big Moves in Tech.” *The New York Times* (Mon., May 19, 2014): B8.

45 Senor, Dan, and Saul Singer. *Start-Up Nation: The Story of Israel’s Economic Miracle*. revised pb edition ed. New York: Twelve, 2011, pp. 200-201.

46 On Thiel’s departure, see: MacMillan, Douglas. “Thiel Isn’t Alone in Tech Departure.” *The Wall Street Journal* (Tues., Feb. 20, 2018): B4.

47 Rubin, Richard, and Theo Francis. “Lower Costs Draw Tech Firms to Texas.” *The Wall Street Journal* (Thurs., Dec. 17, 2020): B1-B2.

Calls for increased central planning are based on claims that a system of innovative dynamism is failing to relieve urgent crises. The crises are 1. the pandemic itself, 2. energy and climate change, 3. the scarcity of semiconductors, 4. deficient infrastructure, and 5. the scarcity of jobs. The question we answer in the following pages is: when the crises are based on genuine problems, are they better solved by the nimble innovations possible in a system of innovative dynamism or in the bureaucratic and often crony-driven mandates and subsidies of government central plans?

3. PANDEMIC CENTRAL PLANNING: CURE OR CAUSE?

We still have much to learn about Covid-19, and especially much to learn about the role of central planning in its origin and spread. A group of 26 scientists from diverse fields and countries issued an Open Letter arguing that the possibility of Covid-19 originating from

a Wuhan lab deserves further investigation.⁴⁸ Nicholas Wade, for 30 years one of the main science reporters for *The New York Times*, made a strong argument that Covid-19 emerged from a lab in Wuhan.⁴⁹ A group of 18 distinguished scientists published a letter in the prestigious journal *Science* calling for deeper investigation of the possibility.⁵⁰ Three researchers at the Wuhan lab sought treatment at a Wuhan hospital at the time when Covid-19 is thought to have started spreading.⁵¹ Mainstream scientists and journalists who once dismissed as a conspiracy theory the claim that Covid-19 came from a Wuhan lab, now urge that the claim be taken seriously.⁵² The possibility exists that health central planners in Beijing and Washington, D.C. funded gain-of-function research on bat coronaviruses at the

48 Butler, Colin D., Bruno Canard, Henri Cap, Y. A. Chan, Jean-Michel Claverie, Fabien Colombo, Virginie Courtier, Francisco A. de Ribera, Etienne Decroly, Rodolphe de Maistre, Gilles Demaneuf, Richard H. Ebright, André Goffinet, François Graner, José Halloy, Milton Leitenberg, Filippa Lentzos, Rosemary McFarlane, Jamie Metzl, Dominique Morello, Nikolai Petrovsky, Steven Quay, Monali C. Rahalkar, Rossana Segreto, Günter Theißen, and Jacques van Helden. “Open Letter: Call for a Full and Unrestricted International Forensic Investigation into the Origins of Covid-19.” March 4, 2021. The Open Letter is reported in: Page, Jeremy, Betsy McKay, and Drew Hinshaw. “Who Delays Release of Virus Origin Report.” *The Wall Street Journal* (Fri., March 5, 2021): A8.

49 Wade, Nicholas. “Origin of Covid — Following the Clues; Did People or Nature Open Pandora’s Box at Wuhan?” *Medium.com* (posted May 2, 2021). Available from: <https://nicholaswade.medium.com/origin-of-covid-following-the-clues-6f03564c038>.

50 Gorman, James, and Carl Zimmer. “Another Group of Scientists Calls for Further Inquiry into Origins of the Coronavirus.” *The New York Times* (Fri., May 14, 2021): A7.

51 Gordon, Michael R., Warren P. Strobel, and Drew Hinshaw. “Report on Wuhan Lab Fuels Covid-19 Debate.” *The Wall Street Journal* (Mon., May 24, 2021): A1.

52 McKay, Betsy, Drew Hinshaw, and Jeremy Page. “The Wuhan Lab Leak Debate: Disused Mine at Center Stage.” *The Wall Street Journal* (Tues., May 25, 2021): A1 & A12.

lab.⁵³

Consider the bitter irony if it turns out that Covid-19 did in fact start in a lab funded by health central planners. Then the after-effects of a scourge on humanity funded and released by central planners would be used to argue for the need for *more* central planning.

Some have argued that China's central planners handled Covid-19 well by imposing stringent and prolonged lockdowns which resulted in the re-opening of the Chinese economy when Covid-19 rates fell. But the claims of the effectiveness of China's central planning against Covid-19 are highly dubious, because the Chinese central planners were slow to tell the rest of the world about the severity and spread of the illness, and tried to spread lies about its origin.⁵⁴ They suppressed and punished those who presented contrary evidence.⁵⁵ When Dr. Li Wenliang warned colleagues of the virulence and contagiousness of a dangerous new virus, the authorities forced him to sign a statement stating that his warning had been "illegal."⁵⁶

Days later he died of Covid-19. An anonymous online spreadsheet documents at least 586 other Chinese citizens who were punished by the authorities for speaking out on Covid-19.⁵⁷ After the award-

53 Qin, Amy, and Chris Buckley. "Chinese Scientist under Pressure as Lab-Leak Theory Flourishes." *The New York Times* (Tues., June 15, 2021): A1 & A8.

54 Wong, Edward, Julian E. Barnes, and Zolan Kanno-Youngs. "Local Officials Hid Dangers from Beijing, Says U.S. Report." *The New York Times* (Thurs., Aug. 20, 2020): A5.

55 Wang, Vivian. "Wuhan Citizen Journalist Faces Trial for Posts in Pandemic." *The New York Times*, First Section (Sun., Dec. 27, 2020): 15.

56 Yuan, Li. "Online Revolt in China as a Doctor Is Lionized." *The New York Times* (Sat., Feb. 8, 2020): B1 & B4.

57 Yuan, Li. "Spreadsheet on Censorship Shows China's Human Toll." *The New York Times* (Sat., Feb. 27, 2021): B1 & B3.

winning author Fang Fang published a memoir showing us the human costs of the stringent lockdowns, Chinese media refused to publish her articles and books and she received death threats online.⁵⁸ A large and sophisticated censorship apparatus has been deployed by the Beijing central planners to censor the bad news about Covid-19 both from their own citizens and from the world.⁵⁹

The early Chinese mismanagement of the Covid-19 outbreak might be excused as a one-off exception, were it not for evidence that such mismanagement was a consistent pattern.⁶⁰ For example, shortly before mishandling Covid-19, China's central planners failed to act quickly and effectively to quell an epidemic of African swine fever that eventually resulted in the death of about one fourth of the pigs in the world.⁶¹ Reporters for *The New York Times* concluded that "the epidemic shows the limits of China's emphasis on government-driven, top-down solutions to major problems, sometimes at the expense of the practical."⁶² When the SARS-1 virus emerged in China in November 2002, the Chinese central planners did not

58 Yuan, Li. "Beijing Turned a Tragedy to the Party's Advantage." *The New York Times* (Sat., Jan. 23, 2021): A11. See also: Fang, Fang. *Wuhan Diary: Dispatches from a Quarantined City*. Translated by Michael Berry. New York: HarperVia, 2020.

59 Zhong, Raymond, Paul Mozur, Jeff Kao, and Aaron Krolik. "'Be Sleek and Silent': How China Censored Bad News About Covid." *The New York Times*, First Section (Sun., Dec. 20, 2020): 1 & 14.

60 Rosenthal, Elisabeth. "Why Is Data on Coronavirus So Limited?" *The New York Times* (Sat., Feb. 29, 2020): A27. See also: Yuan, Li. "In China, Virus Spurred Rush of Blame Shifting." *The New York Times* (Weds., Feb. 5, 2020): A1 & A9.

61 Bradsher, Keith, and Ailin Tang. "China Flubs Effort to Halt Lethal Turn of Pig Illness." *The New York Times* (Thurs., Dec. 26, 2019): B1 & B6.

62 Bradsher, Keith, and Ailin Tang. "China Flubs Effort to Halt Lethal Turn of Pig Illness." *The New York Times* (Thurs., Dec. 26, 2019): B1.

report it to the WHO central planners until February 12, 2003.⁶³

The problem of Chinese central planning is not primarily a Chinese problem; it is primarily a central planning problem. For example, in a couple of front-page exposés (6/28/20, 7/6/20), *The New York Times* documented how the World Health Organization (WHO) ignored the local knowledge of the doctors fighting Covid-19 in clinics and hospitals, and as a result presented guidance as highly certain that at best was only highly debatable.⁶⁴

First, the WHO downplayed asymptomatic transmission for several months after Dr. Camilla Rothe observed and documented in late January 2020 an asymptomatic Chinese businesswoman who had transmitted Covid-19 to a German colleague at meetings in Munich.⁶⁵ Dr. Rothe and colleagues shared their discovery through a note published online in the *New England Journal of Medicine*. Local knowledge of asymptomatic transmission continued to grow, but as of early June 2020, the WHO was still telling the public that asymptomatic transmission was “very rare.”

Since reasonable researchers in 2020 disagreed on the extent of asymptomatic transmission, the WHO should have admitted the limits of its knowledge rather than have had the conceit to claim a cer-

63 Christakis, Nicholas A. *Apollo’s Arrow: The Profound and Enduring Impact of Coronavirus on the Way We Live*. New York: Little, Brown Spark, 2020, p. 40.

64 This paragraph, and the following three, are quoted, with very light editing, from my article: Diamond, Arthur M., Jr. “When I Knew More Than Hayek.” American Institute for Economic Research (Dec. 31, 2020). Available from: <https://www.aier.org/article/when-i-knew-more-than-hayek/>.

65 The information in this paragraph, and the next paragraph, is mostly based on: Apuzzo, Matt, Selam Gebrekidan, and David D. Kirkpatrick. “How the World Missed Covid’s Symptom-Free Carriers.” *The New York Times*, First Section (Sun., June 28, 2020): 1 & 10-11.

tainty that they did not possess. Those who believed the WHO's guidance continued to use temperature checks as a way to protect against the transmission of the virus. But if asymptomatic transmission was common, then an infrared temperature gun was more of a talisman than a prophylactic.

Second, the WHO also downplayed aerosol transmission until early July 2020, waiting until after 239 international scientists sent them an open letter reviewing the evidence.⁶⁶ The WHO's earlier guidance suggested that Covid-19 was only transmitted through larger droplets that would travel no more than six feet, and would only stay airborne for a short time after they were exhaled. Aerosols can travel much more than six feet and stay in the air much longer. Those who believed the WHO's guidance continued to maintain distancing of only six feet as a way to protect against the transmission of the virus. But if aerosol transmission was common, then distancing by only six feet also served little epidemiological purpose.

Evidence also began to accumulate at least by July 2020 that contamination from infected surfaces was rare. Yet as of early 2021, the WHO and the CDC were still sending mixed messages, sometimes recommending "frequent disinfection of surfaces."⁶⁷ Harvard epidemiologist complained "There are bizarre policies that haven't

66 The information in this paragraph is mostly based on: Mandavilli, Apoorva. "Scientists Insist Airborne Spread Is a Threat as the W.H.O. Wavers." *The New York Times* (Mon., July 6, 2020): A1 & A5.

67 Lewis, Dyani. "Covid-19 Rarely Infects through Surfaces. So Why Are We Still Deep Cleaning?" *Nature* 590 (Feb. 4, 2021): 26-28. The mixed messaging of the CDC is discussed in pp. 26-27 and the mixed messaging of the WHO is discussed on p. 28. See also: Thompson, Derek. "Hygiene Theater Is a Huge Waste of Time; People Are Power Scrubbing Their Way to a False Sense of Security." *The Atlantic* (July 27, 2020). Available from: <https://www.theatlantic.com/ideas/archive/2020/07/scourge-hygiene-theater/614599/>

changed or adapted.”⁶⁸

Quick and accurate Covid-19 tests could have been crucially useful early-on to do contact tracing and limit spread while vaccines were being developed. But the CDC developed flawed test kits, and the Food and Drug Administration (FDA) in the US would not allow competent hospitals and non-government labs to develop their own tests.⁶⁹ Public Health England in the United Kingdom similarly limited access to testing early in the pandemic by centralising control and shunning support from business, universities and charities.⁷⁰ The Strategic National Stockpile in the US prepared for the wrong crisis, stockpiling huge supplies of Anthrax vaccine, but stockpiling few masks and few of the nasal swabs needed for Covid-19 tests.⁷¹ The National Health Service in the United Kingdom similarly failed to stockpile adequate personal protective equipment (PPE).⁷² In the US

68 Barber, Gregory. “It’s Time to Talk About Covid-19 and Surfaces Again.” *Wired* (Oct. 10, 2020). Available from: <https://www.wired.com/story/its-time-to-talk-about-covid-19-and-surfaces-again/>

69 Christakis, Nicholas A. *Apollo’s Arrow: The Profound and Enduring Impact of Coronavirus on the Way We Live*. New York: Little, Brown Spark, 2020, pp. 107-108.

70 hMatthew Lesh, “Testing Times: The Urgent Need to Decentralise COVID-19 Diagnostic Testing in the United Kingdom” (London, UK: Adam Smith Institute, April 2, 2020), <https://www.adamsmith.org/research/testing-times>.

71 On the massive stockpiling of Anthrax vaccine and the lack of stockpiling of N95 masks, see: Hamby, Chris, and Sheryl Gay Stolberg. “U.S. Stockpiled Anthrax Vaccine but Neglected Needs for a Virus.” *The New York Times*, First Section (Sun., March 7, 2021): 1 & 18-20. On the lack of stockpiling of medical nasal swabs, see: Lewis, Michael. *The Premonition: A Pandemic Story*. New York: W. W. Norton & Company, Inc., 2021, p. 251.

72 Andrew MacAskill. “Watchdog criticises poor planning that left UK without enough PPE as COVID-19 struck.” *Reuters*, <https://www.reuters.com/article/uk-health-coronavirus-britain-ppe-idUSKBN285007>

case, the cause was partly due to crony corruption,⁷³ but in both the US and UK cases, the cause was at least partly due to the uncertainty of what crisis would hit and when.

The short-lived US Ebola outbreak in 2014 could have reduced the uncertainty and served as a wake-up call to US and UK central planners about inadequacies in the PPE supplies. During that outbreak, on the popular CNN programme, Anderson Cooper 360, nurse Briana Aguirre expressed anger that her hospital in Texas did not provide adequate PPE, resulting in two of her fellow nurses being infected with Ebola. The PPE had been on order for two weeks. Aguirre told Anderson Cooper: “I’m sure I could have ordered that on Amazon Prime and had it in two days.”⁷⁴

After the Covid-19 pandemic began, much PPE was nimbly provided by private sources. In the 3rd quarter of 2020, face masks made by small and home businesses were 11% of Etsy’s gross-merchandise sales.⁷⁵ For a few months starting in March 2020, local communities banded together, in one case recruiting over 2,000 volunteers to make over 140,000 masks.⁷⁶ The Amish are not quick to adopt new technologies, but they were quick to pivot their sewing and craft

73 Stolberg, Sheryl Gay, and Chris Hamby. “Revolving Cast of Influencers.” *The New York Times*, First Section (Sun., March 7, 2021): 19.

74 Cooper, Anderson, interviewer. “Nurse Blasts Hospital Over Ebola Response.” *On Anderson Cooper 360*. (Oct. 17, 2014). Available from: <https://www.youtube.com/watch?v=ht7CZZfXRLY>.

75 Burton, Amber. “Sales Platforms Etsy, Shopify Thrive from Small Businesses.” *The Wall Street Journal* (Thurs., Dec. 24, 2020): B4. See also: Phillips, Matt, and Gillian Friedman. “Masks Help Etsy Catch Wall St.’s Eye.” *The New York Times* (Weds., Dec. 9, 2020): B1 & B4.

76 Ducey, Marjie. “Two Women Who Led Team That Made 140,000 Masks Will Return to Gardening - Starting in March, Masks for Medicine Organizers Drew over 2,000 Volunteers to Sew Items for Health Workers.” *Omaha World-Herald* (Mon., July 13, 2020): 1A-2A.

activities to making masks and other PPE.⁷⁷

Many established firms also pivoted. Over the span of only a couple of weeks, True Value Co. retooled a couple of paint-filling lines to make them into lines that filled jugs with FDA-approved hand sanitizer, and Ford Motor Co. quickly made face shields at one of its factories.⁷⁸ In the UK, household appliances company Dyson retooled to develop ventilators,⁷⁹ a Mercedes F1 team made CPAP devices⁸⁰ while beer maker Brewdog made hand sanitiser.⁸¹ Note well: it was the resilience of citizens and firms, and not the strategic reserves of the central planners, that filled the sudden demand for masks and other PPE.

To mitigate future unknown crises, central planners try to predict the kind, size, location, and timing of future crises, so they can make plans to prepare for them. Alternatively, in a system of innovative dynamism, entrepreneurs are allowed to practice the skills and character traits that enable them to improvise and innovate to mitigate whatever crisis arrives.

77 Williamson, Elizabeth. "In Ohio, Amish Families Pivot to Make Medical Gear." *The New York Times* (Fri., April 10, 2020): A9.

78 Ip, Greg. "Health Crisis Awakens Spirit of Private-Sector Innovation." *The Wall Street Journal* (Fri., April 17, 2020): A1 & A9.

79 Dawkins, David. "Billionaire Sir James Dyson to Design and Build Hospital Ventilators as British Entrepreneurs Fight Coronavirus Crisis." *Forbes* (March 25, 2020). Available from: <https://www.forbes.com/sites/daviddawkins/2020/03/25/billionaire-james-dyson-to-design-and-build-hospital-ventilators-as-british-entrepreneurs-fight-coronavirus-crisis/?sh=7badf9a37607>

80 Mahase, Elisabeth. "Covid-19: Mercedes F1 to Provide Breathing Aid as Alternative to Ventilator." *BMJ* 368 (2020): m1294.

81 Batha, Emma. "Gin Makers Bottle Hand Sanitiser for Vulnerable as Coronavirus Spreads." *Reuters*, (March 19, 2020). Available from <https://www.reuters.com/article/health-coronavirus-gin-sanitiser-idUKL8N2BC4QV>.

New York governor Andrew Cuomo claimed in March 2020 that his state had a desperate need for 30,000 ventilators and chided the federal government for not centrally planning to supply more ventilators at a national level.⁸² Taxpayer money was spent acquiring and distributing ventilators even as those with local knowledge in hospitals were learning that ventilators were less useful than originally claimed.

The recovery rate for those put on ventilators with severe Covid-19 was even lower than the already-low recovery rate for those put on ventilators with severe influenza. So physicians with local knowledge in the trenches, following their hunches and trial and error experiments, found that many patients who would die on ventilators, could be saved by less invasive approaches such as the use of oxygen or the use of continuous positive airway pressure (CPAP) devices, previously used by those suffering sleep apnea.

Physicians often shared news of these approaches, not through directives from the WHO, the FDA, or the CDC, but through social media.⁸³ Faster progress against Covid-19 required making use of the informal knowledge of medical entrepreneurs, by heeding what physicians fighting Covid-19 had learned from serendipitous discoveries and the pursuit of trial and error improvisation.

One of the lessons of my *Openness* book is that the citizens of entre-

82 McKinley, Jesse, and Shane Goldmacher. "Crisis Lifts Cuomo from Also-Ran to Must-See." *The New York Times* (Weds., March 25, 2020): A1. Sanger, David E., Zolan Kanno-Youngs, and Ana Swanson. "A Slow Response, Measured in Nonexistent Tests, Masks and Ventilators." *The New York Times* (Weds., March 25, 2020): A9. Jacobs, Andrew, Neal E. Boudette, Matt Richtel, and Nicholas Kulish. "Calls Grow for Government to Take Control of Ventilator Supply." *The New York Times* (Thurs., March 26, 2020): A16.

83 O'Brien, Rebecca Davis. "Doctors Improvise, Share Treatments." *The Wall Street Journal* (Fri., April 10, 2020): A9.

preneurial countries have nurtured their resilience, their initiative, and their ability to make adjustments in their economic lives. These same traits that were nurtured in our economic lives are available to provide spillover benefits in our responses to crises.⁸⁴ The ability and willingness of individuals to act responsibly to protect themselves and their neighbors should not be underestimated. As the seriousness of the pandemic became better known, but before mandates, individuals voluntarily increased their social distancing.⁸⁵ The main driver of “shelter in place” was the individual’s decision to hunker down, not the mainly unenforced and unenforceable central planners’ mandates.⁸⁶

During the period when vaccines were being developed, a variety of plausible, low risk, low cost, interventions were available to varying degrees. Different observational studies suggested that those tak-

84 Diamond, Arthur M., Jr. *Openness to Creative Destruction: Sustaining Innovative Dynamism*. New York: Oxford University Press, 2019, pp. 111-112.

85 Christakis, Nicholas A. *Apollo’s Arrow: The Profound and Enduring Impact of Coronavirus on the Way We Live*. New York: Little, Brown Spark, 2020, p. 86.

86 Goolsbee, Austan, and Chad Syverson. “Fear, Lockdown, and Diversion: Comparing Drivers of Pandemic Economic Decline 2020.” *Journal of Public Economics* 193 (Jan. 2021), Available from: <https://doi.org/10.1016/j.jpubeco.2020.104311>.

ing vitamin-D,⁸⁷ zinc,⁸⁸ hydroxychloroquine,⁸⁹ or famotidine (the active ingredient in Pepcid AC)⁹⁰ had fewer, or less severe, cases of Covid-19. Each of these was inexpensive, and usually had low-risk and few side effects. In the US, citizens were free to choose vitamin D and zinc, which are lightly regulated supplements, or famotidine, which had been earlier approved for over-the-counter (non-prescription) sale. But the FDA banned the use of other drugs for Covid-19 patients, even though they had long been used, with a high degree of safety, for other indications.

Individuals are in a position to know their own costs and benefits. Old men with underlying conditions had a greater risk of dying from Covid-19 than 20-year-olds with no underlying conditions. So it was rational for an old man to seriously consider taking one or more of

87 Daneshkhan, Ali, Vasundhara Agrawal, Adam Eshein, Hariharan Subramanian, Hemant Kumar Roy, and Vadim Backman. "Evidence for Possible Association of Vitamin D Status with Cytokine Storm and Unregulated Inflammation in Covid-19 Patients." *Aging Clinical and Experimental Research* 32, no. 10 (2020): 2141-58. See also: Thakkar, Vatsal G. "Vitamin D and Coronavirus Disparities." *The Wall Street Journal* (Fri., April 17, 2020): A15.

88 Brewer, Joseph, Juan Luis Gomez Marti, and Adam Brufsky. "Potential Interventions for Sars-Cov-2 Infections: Zinc Showing Promise." *Journal of Medical Virology* 93, no. 3 (March 2021): 1201-03. See also: Finley, Allysia. "Trump Takes Zinc. Maybe You Should Too." *The Wall Street Journal* (Tues., Oct. 6, 2020): A17.

89 Risch, Harvey A. "Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients That Should Be Ramped-up Immediately as Key to the Pandemic Crisis." *American Journal of Epidemiology* 189, no. 11 (Nov. 2020): 1218-26.

90 Freedberg, Daniel E., Joseph Conigliaro, Timothy C. Wang, Kevin J. Tracey, Michael V. Callahan, Julian A. Abrams, and Group Famotidine Research. "Famotidine Use Is Associated with Improved Clinical Outcomes in Hospitalized Covid-19 Patients: A Propensity Score Matched Retrospective Cohort Study." *Gastroenterology* 159, no. 3 (2020): 1129-31. See also: Creswell, Julie. "A Shortage of Relief That's Only Adding to the Heartburn." *The New York Times* (Sun., Dec. 9, 2020): B1.

the low-cost, low-risk plausible medicines or supplements. Those of us in the US who believed these supplements might help, and valued our right to choose them, owe thanks to former Senator Orrin Hatch. There was a movement to bring supplements under the aegis of the FDA. Without Hatch's strong and persistent opposition, the movement might have succeeded, so that vitamin-D and zinc might not have been an option against Covid-19.⁹¹

The success of innovative dynamism depends mainly on entrepreneurs. But it also depends on venturesome consumers who are willing to buy and try early versions of products, to bear greater risks in order to test products for the rest of us.⁹² Vaccines are expensive to develop, because of the high regulatory costs of mandated randomized double-blind clinical trials, and because when they are effective, they are used only once by each patient, reducing the revenue from them.

The long-term solution is to loosen the regulatory burden, thereby reducing the costs. During the Covid-19 pandemic, if government central planners had allowed consumers to take vaccines after Phase 2, or to speed Phase 3 with "human challenge trials,"⁹³ vaccines would have been widely available months earlier, saving tens of thousands of lives, and shortening economy-killing lockdowns.⁹⁴ Over

91 Hatch, Orrin. "Letters to the Editor: What the FDA Doesn't Want Known." *The Wall Street Journal* (Thurs., Oct. 21, 1993): A19.

92 Bhidé, Amar. *The Venturesome Economy: How Innovation Sustains Prosperity in a More Connected World*. Princeton, NJ: Princeton University Press, 2008.

93 In "human challenge trials" healthy volunteers are given the vaccine and then are deliberately exposed to the virus.

94 Diamond, Arthur M., Jr. "Free to Choose: Human Challenge Trials for Vaccines." (July 20, 2020). Available from: <https://www.aier.org/article/free-to-choose-human-trials-for-vaccines/>.

30,000 such citizens volunteered to participate in human challenge trials.

But that is politically hard, and so in the short-run crisis of the pandemic, a plausible second best was the strategy of President Trump's Operation Warp Speed of paying in advance for a large number of doses purchased contractually from private firms. The UK took a similar approach through the Vaccine Taskforce led by venture capitalist Kate Bingham.

The problem is not that central planning systems are full of bad people and innovative dynamism systems are full of good people. Good and bad people exist in each kind of system. The problem is that when a good (or lucky) person has an insight in a system of innovative dynamism, they are free to implement their insight. In a system of central planning, they must stick to the plan.

Many examples can be found in Michael Lewis's *Premonition*. Lewis documents the struggles of a group of Covid-19 activists/experts (nicknamed the "Wolverines") who understood what was happening with Covid-19, had plausible proposals for action, and could not move forward through the impasse of US central planning. One of the leaders of the Wolverines, Dr. Charity Dean, started out as an idealistic would-be central planner, but after her experience with how central planning actually worked during the pandemic, voted with her feet for the private sector, co-founding in August 2020 the Public Health Company which aims to provide governments and firms with data, forecasts, and advice to help contain potential pandemics.⁹⁵ Some of the other Wolverines joined her as employees or advisors to the Company.

⁹⁵ Lewis, Michael. *The Premonition: A Pandemic Story*. New York: W. W. Norton & Company, Inc., 2021, pp. 299-300.

One of the common costs of central planning is that planning edicts often produce effects that are the opposite of what the planners had intended. In a famous passage, Adam Smith said that the central planner thinks of humans as pieces on a chessboard that can be moved according to the planner's will.⁹⁶ But in human society, each person among us, even the lowliest pawn, has their own plans and motive power. *The New York Times* reported in grim detail the unintended consequences when India's Prime Minister Narendra Modi locked down the major cities of India.⁹⁷ Tens of millions of poor migrant workers, who lived day to day, were suddenly without jobs. In early May 2020, they packed like sardines into trains to return to their villages, spreading Covid-19 on the trains, and seeding it into their villages. Another central planning failure with respect to the Covid response.

96 Smith, Adam. *The Theory of Moral Sentiments*. 6th ed, Oxford: Clarendon Press, 1976 [1st ed. 1759; 6th ed. 1790], pp. 233-234.

97 Gettleman, Jeffrey, Suhasini Raj, Sameer Yasir, Karan Deep Singh, and Atul Loke. "Rails Spread Virus as Workers Fled India's Cities." *The New York Times* (Weds., Dec. 16, 2020): A1 & A12-A13.

4. ENERGY AND CLIMATE CHANGE

Is climate change an urgent crisis or a potentially serious problem to be monitored and solved? In *Openness* I argue that as innovative dynamism has flourished, air and water pollution have abated. Climate change is more complicated. In general, the globe has warmed by a degree or two over the past century and very possibly may warm by another degree or two over the next century. The complex mathematical models usually used to make forecasts on climate change yield a wide range of possible outcomes, depending on which highly uncertain assumptions are made.⁹⁸

Climate change brings costs for many, but also brings benefits for some. For instance, more and better wine grapes can now be grown

98 See the recent book by President Obama's Former Under Secretary for Science: Koonin, Steven E. *Unsettled: What Climate Science Tells Us, What It Doesn't, and Why It Matters*. Dallas, TX: BenBella Books, 2021.

in Britain than before.⁹⁹ Economists tend to estimate that the total costs are greater than the total benefits. But as I noted earlier, Robert Fogel argues that economists forecast based on sophisticated extrapolation that does not take full account of humans' ability to adapt and innovate.

If the costs increase more quickly and are sufficiently high, this same ability to adapt and innovate can find geoengineering solutions to reduce climate change. Several innovations are currently under study, including various methods for sequestering carbon dioxide and a plausible solar radiation management (SRM) project from physicist and information technologist Nathan Myhrvold to spray a benign aerosol into the atmosphere to block some of the rays of the sun.¹⁰⁰

Mission oriented innovative entrepreneurs who have a proven track-record of success would be more likely than central planners to create the best path forward. "Best" means quickly, safely, efficiently, and with minimal side effects and minimal imposition on the rights and property of others. Jeff Bezos announced in 2020 that he would commit \$10 billion to fight climate change.¹⁰¹ New York University climate economist Gernot Wagner estimates that SRM to offset our current amount of climate change would cost about \$2.25 billion per

99 Naik, Gautam. "Warmer Climate Gives Cheer to Makers of British Bubbly; Thanks to Milder Summers, England Takes Some Air Out of France's Famous Tipple." *The Wall Street Journal* (Tues., May 11, 2010): A1 & A18.

100 Levitt, Steven D., and Stephen J. Dubner. *Super Freakonomics*. New York: Penguin Books, 2010, pp. 180-203. Porter, Eduardo. "Economic Scene; To Curb Global Warming, Science Fiction May Become Fact." *The New York Times* (Weds., April 5, 2017): B1 & B4. Fountain, Henry. "A Volcanic Idea for Cooling the Earth." *The New York Times* (Tues., Feb. 6, 2018): D3.

101 Jenkins, Holman W., Jr. "Business World; How Bezos Can Influence Climate." *The Wall Street Journal* (Weds., Feb. 26, 2020): A15.

year.¹⁰² So Jeff Bezos, all on his own, could take care of more than four years of the effects of climate change, making another large contribution to human flourishing.

Viewing climate change as an urgent crisis, central planners throughout the world have mainly responded by mandating a reduction in carbon dioxide emissions through either less consumption, or consumption that makes use of reduced carbon energy technologies. Reduced consumption takes away goods that help humans flourish. How can central planners tell those sweltering in developing countries that they are not allowed to seek the comfort of air conditioners?¹⁰³

The other option, to mandate green energy, has been implemented by central planners trying to pick the best green technologies and firms, and then providing them substantial subsidies. This is the option currently being pushed most vigorously, so I examine its past track record and future prospects at greater length.

Some of the most instructive examples of US central planning have been attempts to pick the best technologies and firms in the energy sector. The central planner's creation in 1980 of the Synthetic Fuels Corporation is widely viewed as a mistake.¹⁰⁴ More recently, the

102 Smith, Wake, and Gernot Wagner. "Stratospheric Aerosol Injection Tactics and Costs in the First 15 Years of Deployment." *Environmental Research Letters* 13, no. 12 (2018). Available online: <http://dx.doi.org/10.1088/1748-9326/aae98d> See also: Wagner, Gernot. *Geoengineering: The Gamble*. Cambridge, UK: Polity, 2021.

103 Diamond, Arthur M., Jr. *Openness to Creative Destruction: Sustaining Innovative Dynamism*. New York: Oxford University Press, 2019, pp. 57-58.

104 Taylor, Jerry, and Peter Van Doren. "It's a Syn." *National Review* (June 11, 2007). Available from: <https://www.nationalreview.com/2007/06/its-syn-jerry-taylor/>

Obama administration created the 2009 green energy initiative through which the US Department of Energy made trillions of dollars of loans to alternative energy firms, mostly for solar energy.

Some of the failures from The Obama 2009 green investment initiative, and parenthetically the federal dollars lost, include: Abound Solar (\$400 million), Fisker Automotive (\$193 million), and A123 Systems (\$132 million).¹⁰⁵ Abound Solar declared bankruptcy in 2012; Fisker Automotive and A123 Systems in 2013. The dollars in parentheses do *not* include the many millions of tax dollars lost from sources other than the American Recovery and Reinvestment Act of 2009 (ARRA), including funding from individual states, and funding from the US Export-Import Bank.

But the poster child for the 2009 green energy initiative was the solar panel firm Solyndra, which defaulted on a \$535 million loan from the US government when it went bankrupt in 2011.¹⁰⁶ President Obama gave a glowing prediction of Solyndra's success in a speech he gave when he toured their plant in May 2010.¹⁰⁷

105 Andrzejewski, Adam. "Remembering "Solyndra" – How Many \$570m Green Energy Failures Are Hidden inside Biden's Infrastructure Proposal?" Forbes.com. Posted April 12, 2021. Available from <https://www.forbes.com/sites/adamandrzejewski/2021/04/12/remembering-solyndra--how-many-570m-green-energy-failures-are-hidden-inside-bidens-instructure-proposal/?sh=4555b46e2672>.

106 Rattner, Steven. "Handle Big Government with Care." The New York Times (Tues., April 13, 2021): A23.

107 Lipton, Eric, and John M. Broder. "In Rush to Assist a Solar Company, U.S. Missed Signs." The New York Times (Fri., Sept. 23, 2011): A1.

Joe Biden, then Vice President, in a video chat on the occasion of the ground-breaking of Solyndra’s now-shuttered plant, said:

“Once your facility opens there will be about 1,000 permanent new jobs here at Solyndra and in the surrounding business community, and hundreds more to install your growing output of solar panels throughout the country. It’s important; it’s important because these jobs are going to be permanent jobs.”¹⁰⁸

Solyndra declared bankruptcy in 2011.¹⁰⁹

Some have claimed that due diligence would reveal that the Solyndra business model was flawed from the start. A New York Times story published online reported that “for the nine months ending in October 2009, Solyndra made panels for \$6.29 a watt but sold them for \$3.42 a watt, according to its Securities and Exchange Commission (SEC) filing.”¹¹⁰ So perhaps the central planners were incompetent.

Alternatively, the central planners may have funded Solyndra in order to reward a political crony. Billionaire George B. Kaiser was a major fundraiser for Obama’s 2008 presidential campaign and also

108 Stewart, Jon. “That Custom-Tailored Obama Scandal You Ordered Is Finally Here.” Segment of The Daily Show with Jon Stewart, Comedy Central (Sept. 15, 2011). Available from: <https://www.youtube.com/watch?v=Qtt1uKgL8pw&t=143s>.

109 Lipton, Eric, and John M. Broder. “In Rush to Assist a Solar Company, U.S. Missed Signs.” The New York Times (Fri., Sept. 23, 2011): A1.

110 Sullivan, Colin. “Did Solar Startup’s Financial Crunch Catch the White House Napping?” (Weds., July 7, 2010). Available from: <https://archive.nytimes.com/www.nytimes.com/gwire/2010/07/07/07greenwire-did-solar-startups-financial-crunch-catch-the-93819.html?pagewanted=all>.

backed a foundation that was the top investor in Solyndra. Obama administration officials admitted that they met with Kaiser several times but denied that the meetings had anything to do with Solyndra.¹¹¹ In 2012, presidential candidate Mitt Romney identified the federal funding of Solyndra as an example of “crony capitalism.”¹¹²

Those who defend the government’s role in the Solyndra debacle, say that the problem was neither crony capitalism nor inadequate due diligence, but rather the “unexpected dumping of Chinese government-subsidized panels at prices 70 percent below market.”¹¹³ Another possibility is that Solyndra’s product design was based on a couple of ex ante plausible hunches, that turned out to be mistaken.¹¹⁴ In 2009, almost all solar panels made use of silicon, whose price had substantially increased. At that point Solyndra’s design, which did not use silicon, seemed to be a competitive advantage. By the time that Solyndra went bankrupt, in 2011, the price of silicon had crashed, turning an early advantage into a later disadvantage.

Another of Solyndra’s innovations was that its product had a cylindrical design, in contrast to the flat design used by most of its competitors’ solar panels. The designers believed the innovative shape

111 Lipton, Eric, and John M. Broder. “In Rush to Assist a Solar Company, U.S. Missed Signs.” *The New York Times* (Fri., Sept. 23, 2011): A1 & A21.

112 Geman, Ben. “Solyndra: What a Mess.” *National Journal: Web Edition*, (Aug. 26, 2015). Available from: <https://infoweb.newsbank.com/apps/news/document-view?p=WORLDNEWS&docref=news/158BDE3EB2561FA8>.

113 Geman, Ben. “Solyndra: What a Mess.” *National Journal: Web Edition*, (Aug. 26, 2015). Available from: <https://infoweb.newsbank.com/apps/news/document-view?p=WORLDNEWS&docref=news/158BDE3EB2561FA8>.

114 Most of the information in the next couple of paragraphs is adapted from: Wald, Matthew L. “Solar Firm Aided by U.S. Shuts Doors.” *The New York Times* (Thurs., Sept. 1, 2011): B1 & B3.

would be easier to install, but they did not foresee how much more expensive it would be to manufacture. Barry Cinnamon, then-CEO of competitor Westinghouse Solar said “they made a bad bet”. Ken Zweibel, then-director of George Washington University’s Solar Institute, said Solyndra used “a wild-card technology” that had “questionable attributes”.¹¹⁵

We will probably never know exactly how much Solyndra’s failure was due to crony corruption, how much to incompetence of central planners, and how much to fundamental uncertainty about a new innovation’s costs and appeal to consumers, and about what will happen on the periphery of Adner’s “wide lens” — in this case the Chinese solar panel firms’ production and pricing decisions and changes in the price of silicon.

If the only problems were corruption and incompetence, then optimists about central planning could say that in the future they will hire only the noble and competent. That would be a daunting task, but the fundamental problem of uncertainty would remain. Compared with central planners, innovative entrepreneurs who have immersed themselves in their projects will have the local and tacit knowledge that enables them to reduce the uncertainty and increase the odds of success. It would not have been a problem if Solyndra had tried and failed on private funds, like most businesses, the issue arises when the state stepped in to ‘pick a winner’ (in fact a loser) using taxpayer funds.

The same challenges arise in deciding whether the most promising new car technology will take the form of electric, hybrid, or hydrogen. Companies like Tesla, Nissan, and Mitsubishi bet that their elec-

115 Wald, Matthew L. “Solar Firm Aided by U.S. Shuts Doors.” *The New York Times* (Thurs., Sept. 1, 2011): B3.

tric vehicles (EVs) will “leapfrog” the Toyota hybrids.¹¹⁶ Toyota disagrees.¹¹⁷ This is another example where central planners cannot know which technology will be best — because they cannot know which inventors and entrepreneurs will succeed in making their products cheap and appealing.

Even the inventors and entrepreneurs themselves do not fully know, because they are not in control of all of the issues that will determine whether their products are cheap and appealing. For example, in the case of cars, what succeeds will depend in part on what breakthroughs occur in the discovery, generation, extraction, storage, or transmission of electricity, oil, natural gas, and hydrogen.

The US Energy Department central planners picked electric as the best car technology and backed their pick with \$5 billion of the taxpayers’ money to subsidize EVs and develop better batteries.¹¹⁸ One hundred and thirty million dollars was spent on paying for EV charger stations.¹¹⁹ The problem is that consumers have bought few EVs in most of the US, so many of the car charger stations have been seldom used.¹²⁰ Even with gas prices as high as \$4 a gallon, it was

116 Reed, Stanley, and Jack Ewing. “Hydrogen Is One Answer to Climate Change. Getting It Is the Hard Part.” *The New York Times* (Sat., July 17, 2021): B1 & B5.

117 Dooley, Ben, and Hisako Ueno. “Japan All in on Hybrids over Electric.” *The New York Times*, (Weds., March 10, 2021): B1. Tabuchi, Hiroko. “Maker of Prius Now Resisting Emissions Push.” *The New York Times* (Mon., July 26, 2021): A1 & A9. Landers, Peter. “Toyota Doubles Down on Hybrid Technology.” *The Wall Street Journal* (Thurs., May 13, 2021): B3.

118 Hagerty, James R., and Mike Ramsey. “Charging Stations Multiply but Electric Cars Are Few.” *The Wall Street Journal* (Mon., Oct., 17, 2011): B11.

119 Hagerty, James R., and Mike Ramsey. “Charging Stations Multiply but Electric Cars Are Few.” *The Wall Street Journal* (Mon., Oct., 17, 2011): B11.

120 Hagerty, James R., and Mike Ramsey. “Charging Stations Multiply but Electric Cars Are Few.” *The Wall Street Journal* (Mon., Oct., 17, 2011): B1 & B11.

much more expensive for a consumer to drive a mile in the electric Ford Focus than in the gas Ford Focus.¹²¹

With gas likely to remain relatively cheap, due to the entrepreneurial fracking innovation that was unforeseen by the experts both in and out of government, it is looking as though the centrally planned investment in EVs may be another example of central planners failing to pick the best technology for the near future. As inventors invent, entrepreneurs innovate, and resource constraints change, the best technology will eventually shift, possibly toward EVs. But mandating a movement to a future best, when it is not a current best, has high opportunity costs, reducing other goods and services that could better promote human flourishing. If we tax citizens in order to subsidize a not-currently-best technology, then the opportunity cost includes that those citizens will have fewer funds with which to head to the garage and work on their own innovations.

A final example of the failure of central planning to pick the best energy-related technology is from the state of Israel, which has been much praised as a hotbed of entrepreneurial innovation.¹²² Central planners founded the Israel Corporation (aka Israel Corp) in 1968, and the government retained 27% ownership as of 2007. In that year, Israel Corp became the “lead investor” in “Better Place,” holding 33% of equity.¹²³

121 Berman, Bradley. “Behind the Wheel; 2012 Ford Focus Electric; the Battery-Driven Car Just Got a Lot More Normal.” *The New York Times*, SportsSunday Section (Sun., May 6, 2012): 12.

122 Gilder, George. *The Israel Test*. Minneapolis, MN: Richard Vigilante Books, 2009. Senor, Dan, and Saul Singer. *Start-Up Nation: The Story of Israel’s Economic Miracle*. New York: Twelve, 2009.

123 Israel Corp. “Holdings: Better Place.” 2008. Available from: <https://web.archive.org/web/20090921093650/http://www.israelcorp.com/Holdings/Transportation/BetterPlace.aspx>.

Better Place aimed to sell battery switching services for EVs. The startup received much favorable press. Shimon Peres, a former prime minister of Israel, endorsed Better Place.¹²⁴ So did an entrepreneurship expert, and advisor to Mitt Romney,¹²⁵ Ron Adner who wrote a thought-provoking book showing that a wide lens is required to make plausible predictions about which technology will succeed.¹²⁶ None of these people were ignorant fools, yet they all made the same false prediction. We have seen that it is the nature of the innovation process that even those closest to it often get it wrong.

Even now that it has failed, not all agree why. Better Place promised to do a job that many wanted done. It had a plausible business model and a credentialed and charismatic entrepreneur founder. Better Place aimed to make the earth greener by making EVs more appealing to consumers. Instead of waiting several hours to recharge their EVs, consumers would pull into a Better Place station, and in a few minutes have their depleted battery extracted and a fully charged replacement battery installed.

So why did Better Place fail? For it to succeed, it needed more than a charismatic founder and a plausible business plan. It needed great marketing.¹²⁷ In particular, it needed a major EV maker to redesign their cars with batteries that met Better Place's specs, and it needed huge funding to build out a network of battery replacement stations

124 Senor, Dan, and Saul Singer. *Start-Up Nation: The Story of Israel's Economic Miracle*. New York: Twelve, 2011, pp. 3-4.

125 Dan Senor advised Romney and discussed Better Place in his co-authored book: Senor, Dan, and Saul Singer. *Start-Up Nation: The Story of Israel's Economic Miracle*. New York: Twelve, 2011, pp. 1-10.

126 Adner, Ron. *The Wide Lens: A New Strategy for Innovation*. New York: Portfolio, 2012.

127 Thiel, Peter, and Blake Masters. *Zero to One: Notes on Startups, or How to Build the Future*. New York: Crown Business, 2014, pp. 161-162.

across the country.¹²⁸ An EV maker, and the EV maker's customers, had to be convinced that Better Place would have enough scale and enough staying power, so that a driver could find battery exchange stations anywhere they wanted to drive, and that they could count on finding such stations into the future.

The business plan might have worked at scale, but there was not enough to sustain the startup while it was built to scale.

If global temperatures increase high enough and fast enough to overwhelm our ability to adapt and innovate, then we still should not empower the central planners to try to pick the best technology solutions. They do not know the best technologies and they are always tempted to pick based on the interests of their cronies. Instead we should consider geoengineering solutions, or at least a carbon tax that provides an incentive to reduce emissions without defining the path by which that will be done. Central planners would not need to try to pick the best geoengineering solution. Jeff Bezos has pledged \$10 billion to improve the environment. He could use those funds to implement what he judges to be the best geoengineering solution.¹²⁹

128 Renault made a limited number of their Fluence Z.E. model that included Better Place's battery switching technology.

129 Jenkins, Holman W., Jr. "How Bezos Can Influence Climate." *The Wall Street Journal* (Weds., Feb. 26, 2020): A15.

5.

SEMICONDUCTORS

In the US, the Biden administration supports Senate Majority Leader Chuck Schumer’s Endless Frontier Act that passed the Senate in June 2021, including \$52 billion to subsidize research and manufacturing of semiconductors, a proposal that surprisingly has bipartisan support.¹³⁰ (As of November 11, 2021 the Act awaits action in the House.) Semiconductor subsidies are intended to counter 1.) Chinese plans for world dominance of technology and 2.) the current scarcity of various semiconductor chips.

Xi Jinping, General Secretary of the CCP, has become increasingly blunt and “bellicose”¹³¹ in promoting his plans for China’s dominance of the world economy, as he earlier foreshadowed in his Made

130 Seib, Gerald F. “Capital Journal; China Looms over Infrastructure Plan.” *The Wall Street Journal* (Tues., April 6, 2021): A4. Overly, Steven. “Frustration Builds over Stalled China Competition Bill.” *POLITICO*, (Oct. 25, 2021). Available from: <https://www.politico.com/newsletters/weekly-trade/2021/10/25/frustration-builds-over-stalled-china-competition-bill-798425>

131 Buckley, Chris, and Keith Bradsher. “Xi Issues a Warning to the World: China’s Rise Can’t Be Stopped.” *The New York Times* (Fri., July 2, 2021): A1.

in China 2025 plan.¹³² Despite Xi Jinping's stated goals, China is not a major producer of advanced chips. In an extended exposé in 2019, *The Wall Street Journal* documented many instances of Huawei's industrial espionage to steal semiconductor intellectual property from firms and entrepreneurs around the world.¹³³ If China were not significantly behind, or were readily capable of catching up, would they go to such extensive efforts to steal cutting edge technology?

US central planners feared the growth of Huawei's sales of 5G telecom equipment and moved to ban China from importing 5G-related chips. One result was that before such a ban would take effect, Huawei increased its demand for such chips, and stockpiled a large inventory, thus contributing to the current scarcity of chips.¹³⁴ Some US tech experts argue that the central planner's worry about Huawei is misdirected. Huawei is an efficient manufacturer of current-generation 5G chips, but is not a leader in chip innovation. Even more telling, future innovation is likely to occur more on the software side than the hardware side of 5G.¹³⁵ The US has a solid lead on the software side.

China's central planning has favored semiconductor production,

132 Sanger, David E., Catie Edmondson, David McCabe, and Thomas Kaplan. "In Rare Show of Unity, Senate Is Poised to Pass a Bill to Counter China." *The New York Times* (Thurs., June 7, 2021): A10.

133 Yap, Chuin-Wei, Dan Strumpf, Dustin Volz, Kate O'Keeffe, and Aruna Viswanatha. "China's Tech Champion—or Serial Thief?" *The Wall Street Journal* (Weds., May 25, 2019): B1 & B6-B7.

134 Wu, Debby, Sohee Kim, and Ian King. "The World Is Short of Computer Chips. Here's Why." *Washington Post* (Weds., Feb. 17, 2021). Available from: https://www.washingtonpost.com/business/why-the-world-is-short-of-computer-chips-and-why-it-matters/2021/02/17/92dd139e-716b-11eb-8651-6d3091eac63f_story.html.

135 Cowhey, Peter, and Susan Shirk. "The Danger of Exaggerating China's Technological Prowess." *The Wall Street Journal* (Sat., Jan. 9, 2021): C3.

without much effect. Responding to Xi's central planning push, official figures claimed that chip-related firms in China grew by 58,000 in the first ten months of 2020.¹³⁶ Many of these firms have stalled, including one visited by government broadcasters that had many huge, idle machines, some still wrapped in plastic. Commentary in the *China Economic Weekly* observed "there have been some stunning absurdities that defy logic and common sense."¹³⁷ The worst policy the West can adopt is to follow China in its folly.

Besides worries of Chinese chip dominance and the links between the likes of Huawei and the Chinese state, semiconductor subsidies are mainly motivated by current chip scarcities, which seem especially acute for chips in cars. During the pandemic, car companies incorrectly guessed that car demand would fall substantially and remain low. Instead demand did not fall as much as expected, and rebounded more quickly than expected.¹³⁸ Usually in markets, when demand for a good increases, the price rises, inducing existing firms to fairly quickly produce more, and new firms to enter the industry.

Unfortunately the short run quantity of chips supplied cannot easily be increased because chip fabrication plants take time to plan and build. In the case of car chips, a lag in entry by new chip producers also is partly due to past choices made by car manufacturers. Because of past chip reliability problems, car manufacturers required that

136 Zhong, Raymond, and Cao Li. "China's Frenzy to Master Chip Manufacturing." *The New York Times* (Mon., Dec. 28, 2020): B1-B2.

137 As quoted in: Zhong, Raymond, and Cao Li. "China's Frenzy to Master Chip Manufacturing." *The New York Times* (Mon., Dec. 28, 2020): B2.

138 Wu, Debby, Sohee Kim, and Ian King. "The World Is Short of Computer Chips. Here's Why." *Washington Post* (Weds., Feb. 17, 2021). Available from: https://www.washingtonpost.com/business/why-the-world-is-short-of-computer-chips-and-why-it-matters/2021/02/17/92dd139e-716b-11eb-8651-6d3091eac63f_story.html

chip producers go through a certification process that takes up to 24 months.¹³⁹ This makes the chips more reliable but makes the industry less flexible when there are supply or demand shocks.

Intel and other chip firms have made substantial commitments to increase their chip capacity.¹⁴⁰ Car manufacturers are taking other steps in the medium run to reduce the chances that chips in the future will be as scarce as they are now. Toyota is stepping away from the just-in-time supply model that it introduced decades ago, by increasing their inventories of key parts.¹⁴¹ Other firms are following suit.

The marketplace will resolve this problem in the medium run and it is not clear how the central planners' proposed subsidies would help resolve it any quicker. Any effects of current US semiconductor central planning will not take effect for many months. What reason is there to think that central planners will have a better plan to reduce scarcity than will Intel and other chip firms? These firms already, without subsidies, have access to considerable capital to build the plant capacity that they predict will be needed. The firms may be wrong but are more likely to be right than the central planners.

The prospects for innovative dynamism in the chip industry cur-

139 Rodgers, T.J. "Government Won't Fix Chip Shortage." *The Wall Street Journal* (Thurs., April 29, 2021): A17.

140 Tilley, Aaron. "Intel Bets Billions on Rising Chip Demand." *The Wall Street Journal* (Sat., July 17, 2021): B1 & B14.

141 McLain, Sean. "Auto Makers Hit Brakes on Just-in-Time Manufacturing." *The Wall Street Journal* (Thurs., May 4, 2021): A1 & A10. See also: Goodman, Peter S., and Niraj Chokshi. "Why the World Has Run Short of Everything." *The New York Times* (Weds., June 2, 2021): A1.

rently look bright.¹⁴² The number of startups and funding from venture capital firms are growing. The greater quantity and diverse sources of demand, may dampen the past volatility and cycles in the industry, while new tools allow smaller teams to design chips more quickly.

142 Clark, Don. "No Shortage of New Ideas About Chips." *The New York Times* (Sat., May 8, 2021): B1 & B3.

6.

INFRASTRUCTURE

When I was a student at the University of Chicago, I noticed that when students and faculty wore down a path through the grass between buildings, the university would eventually pave the path. At another university I noticed that when students and faculty wore down a path through the grass between a parking lot and a building, the university built a fence to keep us off the path. At the University of Chicago, the infrastructure was meant to help people go where they wanted to go. At the other university, the infrastructure was meant to force people to go where the officials wanted them to go.

Whether government infrastructure is good or bad depends largely on whether its goal is to enable or to constrain. Private firms, through the signal of profits or losses, have better information and greater incentives, to build infrastructure that enables. In comparison to private firms, governments can more easily build bridges to nowhere that please cronies who in turn help the government stay in power.¹⁴³

143 A long list of bridges to nowhere can be found at: https://en.wikipedia.org/wiki/Bridge_to_nowhere

Of the problems that stimulated calls for more central planning, deficient infrastructure seems the most plausible and most widely accepted. But we underestimate how much useful infrastructure is built in a system of innovative dynamism and overestimate how much is built through central planning. Fuel pipelines were originally privately built and many still are, until central planners stop them. (The Keystone Pipeline is currently suing the US central planners for breach of contract from their cancelation of the pipeline.¹⁴⁴)

Elon Musk has founded the private Boring Company to develop his innovative tube transportation system.¹⁴⁵ His partially private SpaceX firm has the audacious goal of building the infrastructure to take us to Mars.¹⁴⁶ Telephone and internet infrastructure has widely been privately built in the US. As of 2019, private firms had laid almost 750,000 miles of internet cable between the world's continents.¹⁴⁷ Privatized airports are better managed than public airports.¹⁴⁸ Railroads were first built as private ventures, and a new private railroad has started operating in Florida in recent years.¹⁴⁹

144 The Editorial Board, "The Keystone XL Goes to Court." *The Wall Street Journal* (Fri., July 9, 2021): A14.

145 Bosman, Julie, and Mitch Smith. "Musk Unveils Chicago Vision: Downtown to O'Hare in 12 Minutes." *The New York Times* (Thurs., June 14, 2018): A18.
Penn, Ivan. "Elon Musk Unveils First Mile of Tunnel, but Boring Co. Faces a Long Journey." *The New York Times* (Thurs., Dec. 20, 2018): B7.

146 Pasztor, Andy. "Musk Offers Vision of Mars Flights." *The Wall Street Journal* (Weds., Sept. 28, 2016): B3.

147 Satariano, Adam. "Underwater Freeways for Your Puppy Posts." *The New York Times* (Tues., March 12, 2019): B1 & B6-B7.

148 Tierney, John. "'Third World' U.S. Airports? That Insults the Third World; Private Managers Make Terminals Sparkle and Hum the World Over. Here We're Stuck with LaGuardia." *The Wall Street Journal* (Sat., Jan. 21, 2017): A15.

149 Jenkins, Holman W., Jr. "Business World; a Private Railroad Is Born; All Aboard Florida Isn't Looking for Government Operating Subsidies." *The Wall Street Journal* (Weds., Jan. 15, 2014): A17.

On the other hand, infrastructure projects built by central planners have often failed. When Japan invested \$6.2 trillion in infrastructure between 1991 and 2008, they acquired a crushing debt, but did not acquire the desired increase in dynamism and economic growth.¹⁵⁰ In the US, Robert Moses was viewed as the hero of centrally planned infrastructure — builder of New York’s highways, bridges, and housing developments. But gradually more came to agree with Jane Jacobs that Moses often misunderstood how cities worked, and as a result defined a path forward that did more harm than good.¹⁵¹ That past central planners’ highway building was often a mistake is acknowledged in President Biden’s current “infrastructure” plan which actually includes tearing up some highways and has been criticized for tearing up too few.¹⁵²

In China, infrastructure investments boost GDP numbers without greatly benefiting the Chinese people. China’s highly touted high speed trains have sometimes been shoddily built through a corrupt process of contracting.¹⁵³ Although most of them work, they have hugely increased China’s national debt, and run half full because

150 Glaeser, Edward L. “If You Build It . . . : Myths and Realities About America’s Infrastructure Spending.” *City Journal* 26, no. 3 (Summer 2016):25-33.

151 Jacobs, Jane. *The Death and Life of Great American Cities*. New York: Random House, 1961. See also: Flint, Anthony. *Wrestling with Moses: How Jane Jacobs Took on New York’s Master Builder and Transformed the American City*. New York, NY: Random House, Inc., 2009. Kanigel, Robert. *Eyes on the Street: The Life of Jane Jacobs*. New York: Alfred A. Knopf, 2016. Bertaud, Alain. *Order without Design: How Markets Shape Cities*. Cambridge, MA: The MIT Press, 2018.

152 Popovich, Nadja, and Denise Lu. “Can Removing Highways Fix America’s Cities?” *The New York Times* (Sat., May 29, 2021): A10-A11.

153 Dean, Jason, and Jeremy Page. “Trouble on the China Express; the Wreck of a High-Speed Train Has Enraged the Chinese Public and Focused Attention on the Corruption and Corner-Cutting Behind the Country’s Breakneck Economic Growth.” *The Wall Street Journal* (Sat., July 30, 2011): C1-C2.

most Chinese are too poor to afford tickets.¹⁵⁴ Chinese central planners have built apartments that are empty and grandiose monuments that are unappreciated, including an \$11.4 million 295-foot brass statue of a puffer fish.^{155 156} Much of the debt to finance the infrastructure built by central planners is held by Chinese local governments whose finances then become less transparent and more fragile.¹⁵⁷ Perhaps it is in the interests of our citizens to allow China to win the competition for who has the largest brass puffer fish?

From the need to make profits, for-profit firms receive timely and useful information to help them decide if they are on the right path.¹⁵⁸ But where the externalities and transaction costs are too high for worthy projects to be undertaken by for-profit firms, non-centrally-planned non-profit civic organizations often have provided the best solutions. Nobel Prize winner Elinor Ostrom provided a useful detailed case study on organizations managing common pool resources, such as water.¹⁵⁹

154 Spegele, Brian, and Bob Davis. "High-Speed Train Links Beijing, Shanghai; Cornerstone of China's Rail Expansion Illustrates Megaprojects' Speed Bumps." *The Wall Street Journal* (Weds., June 29, 2011): A11.

155 Fong, Dominique. "China's Ghost Towns Haunt Its Economy." *The Wall Street Journal* (Sat. June 16, 2018): C3.

156 Buckley, Chris. "As China Vows Austerity, Giant Brass Fish Devours \$11 Million." *The New York Times*, First Section (Sun., Oct. 13, 2013): 6. See also: Bradsher, Keith. "As China Battles Poverty, Colossal Projects Draw Ire." *The New York Times* (Fri., Nov. 27, 2020): A8.

157 Orlik, Tom. "Post-Stimulus: Who Pays for China's Bad Loans?" *The Wall Street Journal* (Thurs., June 23, 2011): C14.

158 Boettke, Peter J., and Christopher J. Coyne. "Context Matters: Institutions and Entrepreneurship." *Foundations and Trends in Entrepreneurship* 5, no. 3 (2009): 135-209.

159 Ostrom, Elinor. *Governing the Commons*. Cambridge, UK: Cambridge University Press, 1990.

In cases where we cannot imagine a creative way to reduce transaction costs for providing widely and highly demanded infrastructure through the private sector, hybrid policies have been devised that provide some of the benefits of private infrastructure. For instance, governments could contract with private firms to design and manage highways, which could be funded through revenue bonds and user fees.¹⁶⁰ This would enable and incentivize greater efficiency and innovation, and would increase the odds that highways go where drivers want them to go, at a price drivers are willing to pay.

An early natural experiment supporting this approach occurred in Britain in the late 1920s.¹⁶¹ A Conservative Government contracted with Vickers, Ltd. to build a large dirigible called the “R100.” When a Labour Government came to power, the Secretary of State for Air ordered the Royal Air Force to build a large dirigible with identical contractual specifications to the R100. The government-built airship was called the “R101.” The R100 made a successful flight from England to Canada in late July 1930. Not to be outdone and wanting publicity to improve his chances to be named the Viceroy of India, the Secretary of State for Air ordered a flight of the R101 to India in September 1930.¹⁶² In limited tests, the R101 team had trouble con-

160 Poole, Robert W., Jr. *Rethinking America’s Highways: A 21st-Century Vision for Better Infrastructure*. Chicago: University of Press, 2018. See also: Geddes, Richard R. *The Road to Renewal: Private Investment in the U.S. Transportation Infrastructure*. Washington, D.C.: AEI Press, 2011. Poole’s much earlier book (Poole, Robert W., Jr. *Cutting Back City Hall*. New York: Universe Books, 1980) has been credited with influencing the privatization policies of Margaret Thatcher. (Blundell, John. *Margaret Thatcher: A Portrait of the Iron Lady*. New York: Algora Publishing, 2008, pp. 100-101.)

161 The account given in this paragraph is based on: Squires, Arthur M. *The Tender Ship: Government Management of Technological Change*. Boston, Massachusetts: Birkhauser, 1986, pp. 3-10.

162 Squires, Arthur M. *The Tender Ship: Government Management of Technological Change*. Boston, Massachusetts: Birkhauser, 1986, p. 10.

trolling the craft.

But with the Secretary of State for Air on board, the R101 headed for India on October 4, 1930. The R101 soon crashed and burned in northern France, killing most of those on board, including the Secretary of State for Air. All but one of the R101's officers had bought extra life insurance before the flight.¹⁶³ Nevil Shute, who was part of the R100 team, speculated on the motives of those in the Aircraft Inspection Department who had issued a Certificate of Airworthiness before the R101's flight. He suggested that they knew well that their careers would suffer if they disappointed the Secretary of State for Air.¹⁶⁴

163 Squires, Arthur M. *The Tender Ship: Government Management of Technological Change*. Boston, Massachusetts: Birkhauser, 1986, p. 7.

164 Shute is quoted in Squires, Arthur M. *The Tender Ship: Government Management of Technological Change*. Boston, Massachusetts: Birkhauser, 1986, p. 9. See also: Shute, Nevil. *Slide Rule: The Autobiography of an Engineer*. Cresskill, NJ: The Paper Tiger, Inc., 1982.

7. JOBS

The recent calls for central planning often claim as a key benefit the creation of more and better jobs. As we saw in the case of Solyndra, such claims often prove false. Instead, the most reliable creator of jobs is an unfettered system of innovative dynamism. Innovative dynamism has in the past, and can still in the future, produce a robustly redundant labor market in which a person who loses or leaves his job can fairly quickly and easily obtain another job as good or better.¹⁶⁵

The main net creators of jobs are what are sometimes called “gazelles”: often young, entrepreneurial, fast-growing firms.¹⁶⁶ John Haltiwanger and colleagues have documented that in recent years in the US, gazelles have been fewer, and less healthy, in the sense of creating fewer new jobs.¹⁶⁷ They take this as a sign that the US economy has become less dynamic and hypothesize that one reason is likely

165 Diamond, Arthur M., Jr. “Robustly Redundant Labor Markets.” Working Paper, 2021.

166 Henrekson, Magnus, and Dan Johansson. “Gazelles as Job Creators: A Survey and Interpretation of the Evidence.” *Small Business Economics* 35, no. 2 (Sept. 2010): 227-44.

167 Decker, Ryan A., John Haltiwanger, Ron S. Jarmin, and Javier Miranda. “Where Has All the Skewness Gone? The Decline in High-Growth (Young) Firms in the U.S.” *European Economic Review* 86 (July 2016): 4-23.

the burden of regulations on job creating firms.¹⁶⁸ They plausibly argue that growing labor market regulations may do the most harm.

In contrast, Oren Cass implies that the regulations of the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) may do the most harm, at least if we focus on job outcomes for the least well-off. These agencies most impact manufacturing industries, and job opportunities for the least well-off are most likely to occur in manufacturing.¹⁶⁹ So an increase in EPA and OSHA regulations differentially affects the least well-off.

In the US during the pandemic, less well off workers moved toward less expensive cities with robustly redundant labor markets, such as Salt Lake City and Austin; and away from more expensive cities that lack such labor markets, such as San Francisco and New York City.¹⁷⁰ The new boomtowns were lighter on lockdowns and regulations, and so were more welcoming to the entrepreneurial gazelles that create more and better jobs.

168 Davis, Steven J., and John Haltiwanger. "Labor Market Fluidity and Economic Performance." In *Re-Evaluating Labor Market Dynamics*. Kansas City: Federal Reserve Bank of Kansas City, 2015, pp. 17-107. See also: Bailey, James B., and Diana W. Thomas. "Regulating Away Competition: The Effect of Regulation on Entrepreneurship and Employment." *Journal of Regulatory Economics* 52, no. 3 (Dec. 2017): 237-54.

169 Cass, Oren. *The Once and Future Worker: A Vision for the Renewal of Work in America*. New York: Encounter Books, 2018.

170 Dougherty, Danny, Hannah Lang, and Kim Mackrael. "The New American Boomtowns." *The Wall Street Journal* (Sat., April 10, 2021): B1 & B8-B9.

CONCLUSION

During the economic crisis of 2008, former Obama Chief of Staff Rahm Emanuel famously commented that “You never want a serious crisis to go to waste”.¹⁷¹ In 2020, he repeated a version of his comment in a discussion of the pandemic.¹⁷² Emanuel suggests pursuing his central planning agenda during a crisis, assuming that in the confusion and fear of a crisis we will trade our liberty for the presumed security of big government’s central plans.

He assumes we will forget Benjamin Franklin’s admonition that “those who would give up essential liberty, to purchase a little temporary safety, deserve neither liberty nor safety.”¹⁷³ But a crisis can work another way. Mancur Olsen saw that a crisis allows, perhaps even requires, citizens to sweep away the layers of special interest

171 Emanuel, Rahm. “Rahm Emanuel on the Opportunities of Crisis.” Video clip from The Wall Street Journal CEO Council: 2008, Shaping the New Agenda. Posted to YouTube, (Weds., Nov. 19, 2008). Available online: https://www.youtube.com/watch?v=_mzcbXilTkk

172 Emanuel, Rahm. “Let’s Make Sure This Crisis Doesn’t Go to Waste.” The Washington Post, Posted online on (Weds., March 25, 2020). Available online: <https://www.washingtonpost.com/opinions/2020/03/25/lets-make-sure-this-crisis-doesnt-go-waste/>

173 Bartlett, John. *Familiar Quotations*. Boston: Little, Brown and Company, 1955, p. 331.

rent seeking that constrain both liberty and innovation.¹⁷⁴ This was certainly the case after the economic crisis in the UK during the 1970s. When innovative dynamism has been sustained following past pandemics, pessimism has turned to optimism, fear has turned to confidence, and new innovations have led to a flourishing society.¹⁷⁵

The pandemic has left us uncertain about much that we took for granted. Uncertainty can cause stress. Some seek relief from stress in the comfort of food, others in the comfort of big government. But if we are to flourish in the long run, we do not need central plans that build fences to keep us on the old paths. We need a system of innovative dynamism that allows our entrepreneurs to nimbly improvise toward new and better paths forward.

174 Olson, Mancur. *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*. New Haven: Yale University Press, 1982.

175 Christakis, Nicholas A. *Apollo's Arrow: The Profound and Enduring Impact of Coronavirus on the Way We Live*. New York: Little, Brown Spark, 2020, p. 250.