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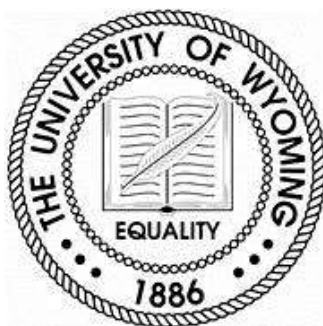
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**LEGISLATIVE COMMITTEE REFORM AND NEW FEDERAL
GOVERNMENT APPROACHES TO SOLVE THE PACING
PROBLEM AND THE COLLINGRIDGE DILEMMA**

Submitted in partial fulfillment of the requirements of the honors college

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Dedicated to Caleb.

DISCLAIMER

Anna Muzzarelli, a student at the University of Wyoming, conducted research and gained experience by interning for the City of Laramie, the 2018 Legislative Budget Session for the state of Wyoming, and under Senator Michael B. Enzi in the United States Senate.

This thesis paper was submitted in partial satisfaction of the requirements of the Honors College. The general arguments and views expressed in this paper are in no way associated with the University of Wyoming or the aforementioned individuals, governmental authorities or offices.

ABSTRACT

While scientific and technological advancements progress exponentially, the structure of the United States Federal Government committees has remained relatively unchanged since the mid-19th century. Being a key filter for issues that come to Congress, I believe that structural reform can expediate the legislative process and thus improve the American Government's ability to cope with a rapid influx of new issues, while still using reactionary policies. Proactive legislation should be avoided to protect the private sector's ability to innovate modern advances. It is also imperative that jurisdictional boundaries are clarified and enforced within committees and subcommittees to properly allocate resources and improve specialization. Specifically, subcommittees should be given more responsibility and be more segmented and limited to 4-8 sitting legislators. Additionally, laws requiring single purpose bills should be enacted to minimize the barriers to new legislation and improve Congress's ability to react to a rapidly changing scientific and technological environment.

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I. INTRODUCTION

Thomas Jefferson said: “Laws and institutions must go hand in hand with the progress of the human mind. As that becomes more developed, more enlightened, as new discoveries are made, new truths disclosed, and manners and opinions change with the circumstances, institutions must advance also, and keep pace with the times.” This thesis will address the American legislative system’s ability to cope with rapidly evolving scientific and technological advancements. Through an analysis of the feasibility of reactionary versus proactive government approaches, and an analysis of federal government structure, I hope to provide a solution to the Pacing Problem and the Collingridge Dilemma. Furthermore, this thesis will analyze the dilemma of balancing freedom of markets and industry with the practical business approach of preventative maintenance through an analysis of the United States Government structure with Nonprofit business practices. I will bring insight to the problem through firsthand experiences in local, state, and federal government; I will also explore recent technological advancement examples such as vaping, genetic research developments, smart car innovation, and 3D printing. Furthermore, this will be an analysis of application in new context and the feasibility of reactionary policy. Throughout this exploration I will have the mission statement of the founding fathers in mind: the Preamble.

A. HISTORICAL BACKGROUND AND CONTEXT

The past is littered with examples of technological development that puts pressure on the American law-making process. The introduction of cell phones is one such example;

the first cell phone made for commercial purposes was approved by the FCC in 1983.¹ Lawmakers are still addressing the ramifications of cell phone use. Today, texting while driving is still a large problem despite lawmakers' best efforts.² According to data from the Center of Disease control, there have been no significant statistical differences in the last 8 years in texting and driving related accidents, despite many attempts to criminalize texting and driving.³ This is but one example of lawmakers' reactionary policies failing to address rapidly arising issues. In recent years there have been more and more technological advancements, yet in my experience as an intern in the Wyoming legislature, Wyoming's texting and driving laws are still significantly lacking compared to their peer state legislatures, even in 2021. While the world's first text was sent in 1992, but the first laws in the United States about texting were passed in 2005. Wyoming did not pass their own laws until 2010. My experience in state and federal government prompted the question: Is modern American government capable coping with and adapting to the significant changes in technological and scientific advancement?

B. METHODOLOGY AND RESEARCH OVERVIEW

Research was conducted using both primary and secondary sources. These consisted of interviews, archival research, and first-hand experiences and observational research in various governmental internships. Specifically, United States Legislative branch member

¹ Fox News. "The First Mobile Phone Call Was Placed 40 Years Ago Today." *FoxNews.com*, FOX News Network, 20 Dec. 2014, www.foxnews.com/tech/the-first-mobile-phone-call-was-placed-40-years-ago-today.

² Naylor, Brian. "Cell Phone Bans Don't Decrease Accidents, Study Says." *NPR*, NPR, 29 Jan. 2010, www.npr.org/templates/story/story.php?storyId=123084040.

³"Distracted Driving." *Centers for Disease Control and Prevention*, U.S. Department of Health and Human Services, 2 Mar. 2021, www.cdc.gov/transportationsafety/distracted_driving/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fmotorvehiclesafety%2Fdistracted_driving%2Findex.html#problem.

interviews were conducted in Washington D.C; and the focus was on the members of the following federal committees:

- Senate Committee on Commerce, Science and Transportation,
- the Senate Subcommittee on Communications, Technology, Innovation and the Internet
- the Senate Subcommittee on Science, Oceans, Fisheries, and weather,
- the Senate subcommittee on transportation and Safety
- the House Subcommittee on Research and Technology

Additionally, the Senate Library and the Library of Congress were instrumental in archival research. Internships in the Wyoming Legislative Budget Session of 2018, the City of Laramie City Manager’s office, and under U.S. Senator Enzi’s office fueled observational first-hand research. Any additional research was secondary and tertiary research as outlined in the bibliography.

C. MISSION STATEMENT

The objective of the U.S. government and this thesis project is to adhere to the original United States Preamble, which outlines the purpose of the U.S. constitution as follows:

“We the people of the United States, in order to form a more perfect union, establish justice, ensure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.”

Additionally, present goals are to protect free markets and thus a capitalistic economy, protect consumers and the private sector, and protect the majority of the population while doing the least harm to the minority.

II. SCIENTIFIC AND TECHNOLOGICAL ADVANCEMENT ISSUES

A. INDIVIDUAL ISSUES

1. E-CIGARETTES AND VAPING DEVICES

In recent years, vaping devices have gained popularity as they are often marketed as a safer alternative to smoking cigarettes. This misconception is often adopted by younger markets: The Surgeon general reported that vaping products' use has more than tripled since 2011. Additionally, the Surgeon General reported that one of the most “commonly cited reasons for using e-cigarettes ... [is the] ... low perceived harm”.⁴ Though it is FDA approved, there are still gray areas within vaping and e-cigarette use research. Much of the danger stems from unknown long-term effects. For comparison, smoking has been thoroughly studied, and has been recognized as a strong health concern since the 1940s.⁵ Manufacturers are now required to show carcinogen warnings and advertisements about cigarettes are more regulated in order to educate the public. Furthermore, the manufacturing process of cigarettes is heavily regulated and requires thorough quality assurance measures. While cigarettes are certainly not recommended by

⁴ U.S. Department of Health and Human Services. E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General—Executive Summary. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2016.

⁵ Proctor, Robert N. “The History of the Discovery of the Cigarette-Lung Cancer Link: Evidentiary Traditions, Corporate Denial, Global Toll.” *Pubmed.gov*, U.S. National Library of Medicine, 22 Jan. 2013, pubmed.ncbi.nlm.nih.gov/22345227/#:~:text=Cigarettes%20were%20recognised%20as%20the,conspiracy%20to%20salvage%20cigarette%20sales.

the surgeon general, regulation of the manufacturing process keeps the product predictable and consistent. In other words, buyers know what they are getting. Vaping products do not require nearly as many restrictions: the quality varies and is another gray area in which public knowledge is severely lacking. An inexpensive disposable vape pen can be purchased for less than ten dollars; shockingly, a reusable permanent device can be purchased for less than twenty dollars. Dr. Newman, a foremost expert on e-cigarette regulation, noted that “Devices are poorly made and leak toxic nicotine juice on users. Cheap batteries explode in people’s pockets. There are no child safety features. Customs and importation are not controlled. Sales are not policed or properly taxed.”⁶

Though it contains nicotine and must be accordingly labeled in compliance with the FDA, the additional effects of vaping products are still not as universally understood as are the consequences of smoking. The temperature that the filters in the devices must reach in order to vaporize the contained liquid also causes the emission of toxic metals such as nickel, chromium and lead. Such metals when absorbed into the lungs have been linked to Alzheimer’s and Pulmonary Toxicity. The medical community is struggling to catch up with the release of vaping products to the public. Though the practice limited to those over 18, there is still a lot unknown about the devices, liquids, and long-term effects; yet it has been released to the public anyway. Vaping products are advertised as not causing second-hand smoke. A simple Google search produces various vaping products’ websites that swear by the marketing tactic that others cannot suffer from second-hand smoke. Third party sources, however, claim otherwise. Yet vaping laws are

⁶ Sly, David. “Lack of Evidence Hampers e-Cigarette Regulation.” *Scimex*, Flinders University, 6 May 2019, www.scimex.org/newsfeed/lack-of-evidence-hampers-e-cigarette-regulation.

virtually non-existent across most states beyond rudimentary applications from cigarette laws.⁷ While it is often public common courtesy to follow non-smoking laws as applied to vaping, there is still the issue of unanswered questions in terms of what is known about vaping technologies.

A “band-aid fix” has been applied since the e-cigarette’s inception. Essentially, vaping products have been categorized as a tobacco product in order assign its governance, and therefore the responsibility of its management, to tobacco laws and the Food and Drug Administration.

“In May of 2016, the FDA issued what is called the ‘Deeming Rule’ which essentially ‘deemed’ vape products to be under the FDA's purview and subject to the same regulations that already covered tobacco products. The rule gave vapor products four avenues to stay in business:

1. Predicate Tobacco Product
2. Substantial Equivalence
3. Exemption from Substantial Equivalence
4. Premarket Tobacco Application

Any vape products that didn't successfully navigate one of these four pathways would have to be pulled off the market.”⁸

The FDA has jurisdiction over vaping products; in an effort to deal with the arising issue quickly, legislators have deemed that they are regulated under tobacco products. This is contradictory, as they use no form of tobacco and utilize technologies that are not a consideration in tobacco or smoking regulation laws. This introduces potential harm because there is misinformation and dangers that are not prevented by borrowed tobacco and smoking laws.

⁷ James, Nelson. “Vaping Laws For All 50 States.” *Signs.com*, 9 Oct. 2018, www.signs.com/blog/vaping-laws-for-all-50-states/#washington.

⁸ “Important Judicial Ruling Every Vaper Needs to Know About.” *Kai's Virgin Vapor*, 17 May 2019, www.kaisvirginvapor.com/blogs/news/important-judicial-rulling-every-vaper-needs-to-know-about.

Tobacco use has a long-standing history, though cigarette use is relatively new within the scope of tobacco products. Figure 7 illustrates the direct correlation of the rise of cigarettes and the rise of lung cancer death rates in the years following.⁹ Given this relationship, imagine the millions of lives that could have been saved with the proper research, understanding and regulation at its introduction in 1900. Comparing this to today, one can see there are similarities between the introduction of cigarettes and various forms of vaping and e-cigarettes. Both were steadfastly approved without proper extensive research and left to the market to decide by trial and error. Though the market adjusts for itself, the amount of people in the experimental crossfire is staggering and should not be accepted as a reasonable price of the free market.

2. GENETIC RESEARCH ISSUES

Genetic research issues are a good example of the successes in merging traditional and progressive values about preventative maintenance to protect the general welfare. Under the Federal Drug Administration (FDA), the Office of Biotechnology activities (OBA), the Office of Human Research Protections (OHRP), and the National Institute of Health (NIH) regulation, the medical and genetic research community has a lot of moving parts and thus requires a highly developed means of communication. This communication between private business and public federal organization prevents catastrophe, but still allows for free development and market power. By developing and establishing an open line of communication for legal advice, medical ethics consultations, etcetera. preventative maintenance is taken without restricting possible or unknown development.

⁹ Jha, Prabhat. "The Hazards of Smoking and the Benefits of Cessation: A Critical Summation of the Epidemiological Evidence in High-Income Countries." *ELife*, ELife Sciences Publications, Ltd, 24 Mar. 2020, elifesciences.org/articles/49979.

Human genome mapping has come a long way in the last couple decades. While a full human genome sequence could be mapped for \$100 million in 2000, today's advances have brought the cost of the process down to less than .001% of the cost.¹⁰ Privacy issues that have been a concern in the past few years still apply, except in this case marketers could have direct access to complex physiological information. Again, one can see the marketing issues and advantages, but there are still a host of new privacy issues presented.

3. SMART CAR FAILURES

Technological advancements tend to hit the judicial system the hardest. Because congress is slow to adapt, it is up to the judicial system to make judgements based on reapplication of existing law. This is evidenced by recent legal actions taken in the wake of smart car related crashes injuries, and fatalities. In such crashes, the obvious question to ask is: who is at fault? Is it the maker of the car? Could it be the maker of the computer system that the company used to program/make the car? And, is the driver still at fault? This unclear legal area lacks thorough legislation and leads to inconsistent rulings and thus inefficient justice.

The smart car development process is also a good example of the dangers of limiting the private market. The hypothetical perfected self-driving smart car could potentially save 38,000 lives every year and prevent 4.4 million automotive accident-related injuries every year in the United States.¹¹ While the technology has not yet been

¹⁰ Wetterstrand, Kris A. "The Cost of Sequencing a Human Genome." *Genome.gov*, National Human Genome Research Institute, 7 Dec. 2020, www.genome.gov/about-genomics/factsheets/Sequencing-Human-Genome-cost.

¹¹"Road Safety Facts." *Association for Safe International Road Travel*, 19 Apr. 2021, www.asirt.org/safe-travel/road-safety-

developed to this level, lawmakers certainly cannot help the innovative process through overregulation. This issue further illustrates the issues with proactive reform approaches. In a statement to the Los Angeles Times, James Owens, the Deputy Administrator for the National Highway Traffic Safety Administration, said: “We do not want regulations enacted long before the development of automated technologies to present an unintended and unnecessary barrier to innovation and improved vehicle safety.”¹²

Self-driving cars could very much be a reality in coming years. The American Vision of Safer Transportation through Advancement of Revolutionary Technologies (AV START) is another supportive argument for not meeting the issues of technological development with more regulation. In 2017, smart car developers actually required that some of the innovation regulations be lifted.¹³ Obviously, remedying the situation by removing laws adds more to the legislative work flow, just as creating new laws does. In other words, the addition of new laws, or the proactive approach of instituting regulatory laws to make innovation safe can potentially double the work load of legislators as well as be detrimental to private sector development.

This involvement of multiple parties is mirrored in relative government interactions; many agencies together, conflicting motives and approaches and differing levels of authority. The Center for Democracy and Technology works to promote American values and freedoms in new technological developments. They have a

facts/#:~:text=More%20than%2038%2C000%20people%20die,for%20people%20aged%201%2D54.

¹² Bloomberg. “Federal Rule Change Would Exempt Self-Driving Cars from Crash Standards.” *Los Angeles Times*, California Times Publication, 14 Jan. 2021, www.latimes.com/business/technology/story/2021-01-14/federal-rule-change-would-exempt-self-driving-cars-from-crash-standards.

¹³ <https://olivermcgee.org/u-s-congress-advances-smart-vehicle-start-legislation-u-s-roadways/>

particular interest in privacy matters, preventing exploitation of these resources and other transparency issues. While it is only a membership organization, it advocates for these issues and speaks to the difficulties of the interaction between advancement and democracy. For instance, Joseph Jerome, a past policy counselor, claims that some of the issues that arise from governmental organizations like the National Highway Traffic Safety Administration (NHTSA) and the Federal Trade Commission (FTC) are made more difficult because the specialists that the government has put in place have no jurisdictional regulatory power over these arising issues.¹⁴ While the concept of adding more regulation from different direct sources is clearly not the answer, in order to promote innovation and development in the private sector, essentially there are excess resources within these other publicly funded organizations that are not benefiting the cause.

4. 3D PRINTING

A facilitated regulation process could actually help private corporations. Instead of cautiously waiting for government approval, or worse, releasing new technology to the public and opening themselves up to liability, governmentally-funded research and adaptation could benefit their developmental processes. For example, in the field of aviation, 3D printed products could save time and money for building planes for use in the private sector and militant force, yet private organization face difficulty working under regulatory agencies. The very first FAA approved critical plane part was recently

¹⁴Jerome, Joseph. "Test Driving Privacy and Cybersecurity: Regulation of Smart Cars." *Center for Democracy and Technology*, 18 Nov. 2016, cdt.org/insights/test-driving-privacy-and-cybersecurity-regulation-of-smart-cars/.

approved in 2020.¹⁵ However, 3D printing has faced a lot of difficulty in terms of innovation in this field, despite the desire for a source of parts like this. Some planes have parts that are difficult to replace, which leads to monumental wastes of resources when it can no longer function. The ability to manufacture alternative parts for older planes could be beneficial to the environment and save many planes from being retired simply because the parts are unavailable. This again raises the question: how can government regulate this development for safety without restricting the free market? By establishing a more expedient organization to federal government, legal issues in developing new technology would be easier to navigate and companies would suffer less hindrance from slow processes.

This is evidence of current legislative approaches to developing technology; current legislation, operatives and agencies are stretched thin to encompass new developments. As with e-cigarette judicial rulings, terms and application may not be fit for these developments. How can the Federal Aviation Association be equipped to envelop this new division of technology? Consider the fact that under this umbrella lies manufacturing regulation, quality regulation, consumer safety, etcetera. The fact is that multi-political issue task forces and agencies are unproductive. Their plates are full and common management techniques would caution against this approach for productivity's sake.

¹⁵ Lynch, Kerry. "Honeywell Gains FAA Nod for 3D-Printed Flight-Critical Part." *Aviation International News*, 20 Aug. 2020, www.ainonline.com/aviation-news/defense/2020-08-20/honeywell-gains-faa-nod-3d-printed-flight-critical-part.

B. IMPEDIMENTS

1. STATE BOUNDARY INCONSISTANCIES

Cryptocurrencies were first addressed in Wyoming in 2018, almost 10 years after the conception of Bitcoin, and long after it was on its way to becoming an underground economy in the state.¹⁶ Colorado had a similar timeline, passing its first laws in 2019.¹⁷ However, New York managed to regulate the new currency as soon as 2015.¹⁸ This is an example of how different states' individual policies may vary and how this complicates the issue further. Uneven development across state jurisdictional lines disrupts commerce. Interstate commerce becomes more difficult, which is why issues that involve technology, especially because of the internet of things, can cross state and jurisdictional lines so easily. This is why many of the developing problems should be addressed at a federal level. State regulations are not uniform and clear across the United States and legal issues arise when guidelines are not developed enough.

2. TIME CONSTRAINTS

Congress passes fewer and fewer laws as time goes on (figure 2). This trend is inconvenient considering the escalated growth of technological and scientific advancements. Furthermore, changing the system even a nanometer is virtually out of the

¹⁶Frankenfield, Jake. "Bitcoin." *Investopedia*, Dotdash Publishign Company, 26 Apr. 2021, www.investopedia.com/terms/b/bitcoin.asp#:~:text=Launched%20in%202009%2C%20bitcoin%20i,s,system%2C%20known%20as%20a%20blockchain.

¹⁷ Vendituoli, Monica. "Gov. Polis Signs Colorado's First Blockchain-Related Bill into Law." *Bizjournals.com*, Denver Business Journal, 7 Mar. 2019, www.bizjournals.com/denver/news/2019/03/07/colorado-first-blockchain-related-law.html.

¹⁸ "How the Laws & Regulations Affecting Blockchain Technology and Cryptocurrencies, like Bitcoin, Can Impact Its Adoption." *Insider Intelligence*, Business Insider, 27 Jan. 2021, www.businessinsider.com/blockchain-cryptocurrency-regulations-us-global#:~:text=In%20June%202015%2C%20New%20York,already%20passed%20them%20into%20law.

question. Senator Enzi attempted to simply change the name of a committee in 2019 and faced immense resistance from other legislators. This minute example illustrates the stagnant nature of American government in a nutshell. Change is not common because trying to protect tradition and free market takes precedent over the idea that the government could possibly change for the better.

A legislator's job is high-stress and high-stakes. Though the average person in the private sector is allowed some mistakes, for those at the federal level of government, the tolerance is miniscule. This is understandable because their actions and decisions affect the livelihoods of millions, or potentially billions if one considers potential effects on foreign countries. The scope of the effects is incomprehensibly huge and poor decisions could potentially be catastrophic. It's understandable why legislators, as human beings, may tread carefully when contemplating large changes. However, large changes may instead force the government to change. The Pacing Problem is looming, and technological evolution is accelerating by more and more.¹⁹ Figure 6 shows multiple technological and scientific fields experiencing exponential growth, and they are projected to continue on in this upward trend.

3. PRIVACY ISSUES AND CONSTITUTIONAL RIGHTS VIOLATION

One of the most common issues that arises from digital interactions are privacy issues. Facebook is the prime example of this, not only because the company has had a exorbitant amount of privacy issues since its inception, but because it is a prime example

¹⁹ Berman, Alison E, and Jason Dorrier. "Technology Feels Like It's Accelerating - Because It Actually Is." *Singularity Hub*, Singularity University, 10 July 2019, singularityhub.com/2016/03/22/technology-feels-like-its-accelerating-because-it-actually-is/.

of the government's reactionary approach to regulation. In an interview, a legislative assistant commented on Facebook's initial privacy issue weigh-ins in Washington D.C:

"The first hearing I ever went to was a hearing about the first time Facebook had been brought in front of the US government, I was supposed to cover it. Senator Rockefeller was the chair of the commerce committee at the time. I remember him sitting there, he was clearly confused about the difference between comments and messages and the publicity of it all. Rockefeller was 92, and in a wheelchair, and I was like, 'this is the guy making the decision on tech policy?'" It really opened my eyes to how the government handles issues in tech regulation" - Anonymous Legislative Assistant

Slow adaptation is the norm for the United States Government. And this is not necessarily a bad thing. Slow to change is in some ways a safeguard to protect against rapid drastic change and thus radical government influences. Though slow changes obviously also pose problems: slow adaptations to political issues hinders the government's ability to keep pace with technological and scientific advances. Thus, the solution must be to meet in the middle; rather than change to a proactive approach that could do more harm than good, restructuring around reactionary policy that is more responsive can maintain constitutional values while keeping the Federal government from being obsolete.

a. CURRENT PUNITIVE MEASURES

Facebook is a good example of current punitive measures issues in place for 21st century developments. In the past, Facebook has faced little reprimand from government. It is difficult to regulate something that has tendrils in every country and is not governed by any one entity. The only unified body that governs Facebook is its respective markets. Privacy issues and the possibility of identity theft is an obvious turn off to consumers and leads to a downturn in market value and shares. Figure 8 shows one example of stock

drops after a privacy leak. In response to the scandal, Facebook's stock fell over twenty three percent in trading. This created \$120 billion worth of damage to the market value in just under two hours.²⁰

Obviously, the free market can be punishing enough to business without legal action. However, the cost of such market freedom is the ruin of individuals that are hurt in the crossfire. Certain individuals who were hurt as a result of Facebook's past privacy policies and safeguards, or lack thereof, cannot undo the harm from the actions taken afterward. This can be seen throughout Facebook's stock value timeline in the wake of one of Facebook's privacy issues scandals (Figure 8). The only predictable thing about the private market is that companies are human and will make mistakes. The question is: how do we prevent mistakes in a way that does not hurt private business? Where is the balance between keeping the business environment safe and fair proactively, and ruining the processes of the free market? How do we prevent the status quo of reactive policy's inability to protect people first without harming businesses with over regulation? The answer is smaller changes in legislature versus larger bills that can be sunk with add-ons and varied purposes.

Facebook is also an example of the regulatory powers of the market. As one can see in figure 8, Facebook's stock after a data breach scandal in 2018 dropped significantly, losing over a hundred billion dollars over the course of the next few months²¹. The

²⁰ Frenkel, Sheera. "Facebook Starts Paying a Price for Scandals." *The New York Times*, The New York Times, 25 July 2018, www.nytimes.com/2018/07/25/technology/facebook-revenue-scandals.html.

²¹ Cherney, Max A. "Facebook Stock Drops Roughly 20%, Loses \$120 Billion in Value after Warning That Revenue Growth Will Take a Hit." *MarketWatch*, MarketWatch, 26 July 2018, www.marketwatch.com/story/facebook-stock-crushed-after-revenue-user-growth-miss-2018-07-25.

market obviously has some self-regulating tendencies which shouldn't be ignored when considering the degree of governmental structure overhaul needed.

III. GOVERNMENTAL RESPONSE

A. COMMITTEE OVERSIGHT OUTLINES AND ANALYSIS

The Senate Committee on Commerce, Science and Transportation is laid out to address issues that follow under the following categories as defined in the Rules of the Senate:

“...Committee on Commerce, Science, and Transportation, to which committee shall be referred all proposed legislation, messages, petitions, memorials, and other matters relating to the following subjects:

Coast Guard.

1. Coastal zone management.
2. Communications.
3. Highway safety.
4. Inland waterways, except construction.
5. Interstate commerce.
6. Marine and ocean navigation, safety, and transportation, including navigational aspects of deep water ports.
7. Marine fisheries.
8. Merchant marine and navigation.
9. Nonmilitary aeronautical and space sciences.
10. Oceans, weather, and atmospheric activities.
11. Panama Canal and interoceanic canals generally, except as provided in subparagraph (c).
12. Regulation of consumer products and services, including testing related to toxic substances, other than pesticides, and except for credit, financial services, and housing.
13. Regulation of interstate common carriers, including railroads, buses, trucks, vessels, pipelines, and civil aviation.
14. Science, engineering, and technology research and development and policy.
15. Sports.
16. Standards and measurement.
17. Transportation.
18. Transportation and commerce aspects of Outer Continental Shelf lands.

...Such committee shall also study and review, on a comprehensive basis, all matters relating to science and technology, oceans policy, transportation, communications, and consumer affairs, and report thereon from time to time.”²²

²²“Rules Of The Senate: U.S. Senate Committee on Rules & Administration.” *Rules of the Senate / U.S. Senate Committee on Rules & Administration*, www.rules.senate.gov/rules-of-the-senate.

The Senate Subcommittee on communications, technology, innovation and the internet covers issues that fall under the dictation as outlined in the Rules of the Senate:

“The Subcommittee on Communications, Technology, Innovation, and the Internet has jurisdiction over legislation, congressional action, and other matters relating to communications. For these purposes, “communications” includes telephones, cell phones, the Internet, commercial and noncommercial television, cable, satellite broadcast, satellite communications, wireline and wireless broadband, radio, consumer electronic equipment associated with such services, and public safety communications. The subcommittee also is responsible for oversight of the Federal Communications Commission (FCC), the Corporation for Public Broadcasting (CPB), and the National Telecommunications and Information Administration (NTIA) at the Department of Commerce, which is the federal agency primarily responsible for the management of government spectrum and advising the President on telecommunications policy.”²³

The Senate Subcommittee on Science, oceans. Fisheries and weather covers issues that fall under the dictation as outlined in the Rules of the Senate:

“The Subcommittee on Science, Oceans, Fisheries, and Weather is responsible for legislation and oversight of science, technology, engineering, and math research, development, and policy; standards and measurement, and matters that impact our oceans, coasts and inland waterways including: coastal zone management; marine fisheries and marine mammals; oceans, weather, and atmospheric activities. The subcommittee is responsible for overseeing the National Science Foundation, National Institute of Standards and Technology, the White House Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration.”²⁴

The Senate Subcommittee on Transportation and Safety covers issues that fall under the dictation as outlined in the Rules of the Senate:

“The Subcommittee on Transportation and Safety has jurisdiction over interstate transportation policy issues. In addition to the committee's broad oversight of the Department of Transportation, the subcommittee has oversight over the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, the Pipelines and Hazardous Materials Safety Administration, National Transportation Safety Board, National Highway Traffic Safety Administration, and the Surface Transportation Board. The subcommittee focuses on safety and infrastructure development related to both freight and passenger rail, including Amtrak.”²⁵

²³ <https://www.commerce.senate.gov/public/index.cfm/communicationstechnologyandtheinternet>

²⁴ <https://www.commerce.senate.gov/public/index.cfm/science-oceans-fisheries-weather>

²⁵ <https://www.commerce.senate.gov/public/index.cfm/surfacetransportationandmerchantmarineinfrastructureandsafetyandsecurity>

The House Subcommittee on Research and Technology Outlines their duties and issues

oversighted by the committee are outlined by the committee’s mission statement:

“The Subcommittee on Research and Technology has jurisdiction over the following subject matters: all matters relating to science policy and science education; the Office of Science and Technology Policy; all scientific research, and scientific and engineering resources (including human resources); all matters relating to science, technology, engineering and mathematics education; intergovernmental mechanisms for research, development, and demonstration and cross-cutting programs; international scientific cooperation; National Science Foundation; university research policy, including infrastructure and overhead; university research partnerships, including those with industry; science scholarships; computing, communications, networking, and information technology; research and development relating to health, biomedical, and nutritional programs; research, development, and demonstration relating to nanoscience, Nano engineering, and nanotechnology; agricultural, geological, biological and life sciences research; materials research, development, demonstration, and policy; all matters relating to competitiveness, technology, standards, and innovation; standardization of weights and measures, including technical standards, standardization, and conformity assessment; measurement, including the metric system of measurement; the Technology Administration of the Department of Commerce; the National Institute of Standards and Technology; the National Technical Information Service; competitiveness, including small business competitiveness; tax, antitrust, regulatory and other legal and governmental policies related to technological development and commercialization; technology transfer, including civilian use of defense technologies; patent and intellectual property policy; international technology trade; research, development, and demonstration activities of the Department of Transportation; surface and water transportation research, development, and demonstration programs; earthquake programs and fire research programs, including those related to wildfire proliferation research and prevention; biotechnology policy; research, development, demonstration, and standards-related activities of the Department of Homeland Security; Small Business Innovation Research and Technology Transfer; voting technologies and standards; other appropriate matters as referred by the Chair; and relevant oversight.”²⁶

The above excerpts from the rules of the Senate and House outline the depth of issues that each committee addresses. Each committee and subcommittee addresses issues that vary in scope dramatically. This makes it difficult to specialize and be well informed, as there are many aspects the committee must manage. While legal aids and each legislator’s staff can ease the burden, it is still a daunting task and can be cut down to be more manageable.

²⁶ “Research and Technology (116th Congress): House Committee on Science, Space and Technology.” *The Committee On Science Space and Technology*, science.house.gov/subcommittees/research-and-technology-116th-congress.

Additionally, because of varying interpretation of rules and proceedings, committees can govern issues that common sense would say do not fall under their jurisdiction. For example, those fluent in committee jurisdiction law have argued in the past that immigration issues fall under the commerce committee's jurisdiction as it largely impacts the fiscal issues of American trade and commerce.²⁷ Hypothetically, with this legal logic, the commerce committee could take over any other committees' jurisdiction with the argument that any economic impact consideration involved in said legislation makes it a commerce issue. Therefore, the aforementioned committees' power can extend even beyond the respective outlines above. This status quo of using loose jurisdictional boundaries only adds to the problem of team sizes and efficiency.

This is a large issue, as the broad scope of policies that these committees must deal with leads to inefficiency. From a business standpoint, most experts believe that an efficient team has about 5 members, or at most, follows the "two pizza rule".²⁸ That is, a team that cannot be fed by two pizzas is too big to run efficiently or effectively. Of course, each legislator has a significant number of legislative staff running in the background, but for these purposes, counting legislative heads is prudent. Each legislator relies on his/her staff prepare him/her to make an educated vote, but as the sovereign of their office and representatives, each office may be addressed as one person, as officially, they are the only legitimate voting power within the office. The average science/technology related committee or subcommittee has 15 legislators, too big to be

²⁷ "H.R.4701 - HEAL for Immigrant Women and Families Act of 2019." *Congress.gov*, Library of Congress, 2019, www.congress.gov/bill/116th-congress/house-bill/4701?q=%7B%22search%22%3A%5B%22immigration%22%2C%22immigration%22%5D%7D&s=1&r=3.

²⁸ Frost, Aja. "Jeff Bezos' Two Pizza Rule." *The Muse*, The Muse, 19 June 2020, www.themuse.com/advice/the-other-reason-pizza-will-make-your-meetings-better.

effective and manage all the issues that fall under their respective governance. Given the magnitude of issues that fall under science and technology, how can this be reduced to a fragment of a committee's attentions and still be handled effectively? One can see that there are enough issues within this small scope – vaping and e-cig technology, cryptocurrencies, gene therapy advancements 3D printing, etcetera. as mentioned before are only a small portion of issues in the tech field facing legislators today. In the future, as technology and science develop exponentially, this scope will only put more pressure on already overburdened legislators.

B. SUCCESS OF THE AMERICAN CONSTITUTION

The American constitution has had success in the past because of its vague, versatile, and universal language. It is a unified, basic, codified form of ethics; that is, it centers around individual liberties and protection of the American people as opposed to nitpicking each and every hypothetical “what-if” scenario. The judicial branch enforces the constitution and interprets new legal situations against the set boundaries of the constitution.

The age-old question: How do you protect individuals and keep everything fair while protecting the free market? The answer is relatively simple, stick with what works; the American constitution has stood the test of time because it's vague and universal, yet clearly sets the moral standard of the country and sets a precedent of how the country should be run. It could be argued that the constitution and the bill of rights are enough to set the standard for future innovation in terms of individual rights and protecting the American people, however, this does not completely eliminate the need for more specified laws and no one can accurately predict what legislative action we will need in

the future. Many attempts to proactively legislate do more harm than good. “These are likely to be out-of-date or redundant by the time they are implemented.”²⁹

C. HINDRANCE OF BINARIES

Binaries make political processes difficult and impede legislators’ ability to effectively pass new legislation. “Reaching out across the aisle” is becoming increasingly uncommon, and the inability to come to agreement makes the entire political process slower. Figure 3 shows the evolution of the senate’s voting tendencies.³⁰ They are increasingly separated and uncooperative.

In an effort to gauge current attitudes towards the current political environment, I conducted a quick informal poll of high school students and asked them the following questions:

1. Do you feel “reaching across the aisle” is currently plausible?
2. Do you think that this will change soon?

According to the poll data, 75.9% of students felt that reaching across the aisle is not plausible; perhaps more alarming, 82.8% of students felt that this status quo will not change anytime soon. The general attitude and outlook about America’s political binaries is dismal. One of our youngest generations, that is still capable of complex political comprehension, does not believe that the political system they are inheriting is capable of cohesion.

²⁹Malan, Daniel, and University of Stellenbosch Business School. “Technology Is Changing Faster than Regulators Can Keep up - Here's How to Close the Gap.” World Economic Forum, 21 June 2018, www.weforum.org/agenda/2018/06/law-too-slow-for-new-tech-how-keep-up/.

³⁰ “Political Polarization: United States of Amoeba.” *The Economist*, The Economist Newspaper, 7 Dec. 2013, www.economist.com/united-states/2013/12/05/united-states-of-amoeba.

D. GOVERNMENT VERSUS BUSINESS CHARACTERISTICS

There exists a very common argument that the federal government should not operate as a business, for reasons such as: the public does not function like shareholders or customers, its purpose is not to create a profit, or the government does not have the luxury of simply cutting any service that is not profitable like a private company does. While the government cannot perfectly align with private business functions, there are still commonalities.

The United States Government shares many of the same characteristics of a not-for-profit business. Common sense says that an effective business should regularly reassess external threats or problems in the future of its industry; the United States Government, though not technically a business, has many similar functions and could benefit from management consulting. For example, common place for the federal government is for an external event to prompt a reaction rather than preventative maintenance beforehand. While each approach has its advantages and disadvantages, no one can make proactive approaches that perfectly predict the future. The critical time for reactive approaches needs to be much quicker than it currently is, especially for the federal government, as it is the overseeing body of the entire country.

IV. THE PROPOSED SOLUTION

A. NEW RULES VS. RESTRUCTURING

To protect private innovation and facilitate the creation of new technologies that can dramatically benefit mankind, proactive legislative approaches should be avoided. Placing rules on a technology that does not yet exist is key to the Collingridge Dilemma's key problem. The assumption that we must make policies to govern something that is nonexistent is the equivalent of chasing ghosts. We must minimize the potential damage that the reactionary status quo could cause in the future by facilitating more expedient legislative processes. This will be done through single purpose bills, more defined committee purposes, and smaller team sizes.

B. SUBCOMMITTEE PLAN

a. JURISDICTIONAL/POINT OF ORDER

The first step in my proposed solution is to better define committee purposes and enforce specific subject jurisdiction. There are two major reasons for this: to better allocate resources and find the best team size and structure for each committee, and to promote specialization and expertise in each committee topic. It is simply unrealistic to expect legislators to be perfect experts in every political topic. This is especially so with the growing technological world. Subcommittees that have more specified tasks will be more productive in terms of determining where to allocate resources. If there is not as much overlap in subject matter, then assessing the production and needs of each subcommittee and general committee is easier.

b. COMMITTEE/SUBCOMMITTEE SIZE

The Ringelmann Effect is one of the earliest studies in team size; substantiated with at least 80 other separate social loafing studies since, the phenomenon that smaller teams are more productive has been thoroughly exacerbated and the verdict is in: Optimizing team size can substantially increase productivity. Most studies find that team sizes of four to five are the most useful.³¹ While most human resource management experts will agree that the optimal team member number is in the range of 4-9 participants, it can also be argued that it depends on the task.³² As was stated in the previous passage, defining jurisdictional lines can help determine which legislative areas are in need of more attention. Restructuring this with a number of legislators on the lower end would speed up the process, although the number of legislative aids needed to complete the work would undoubtedly go up.

I would also propose that the heads of subcommittees make up the general committees. This way there is a natural workflow and flow of information from subcommittees to general committees and finally the house and senate. While it could be argued that this creates an extra level of bureaucracy, I believe that an extra filter between a small team and the final voting governing body will refine new drafts and incorporate external knowledge from related subcommittees into the final work.

³¹ de Rond, Mark. "Why Less Is More in Teams." *Harvard Business Review*, 6 Aug. 2012, hbr.org/2012/08/why-less-is-more-in-teams.

³²Podcasts Global Focus. "Is Your Team Too Big? Too Small? What's the Right Number?" *Knowledge@Wharton*, 14 June 2006, knowledge.wharton.upenn.edu/article/is-your-team-too-big-too-small-whats-the-right-number-2/.

C. SINGLE PURPOSE BILLS

Congress has passed fewer and fewer new legislation over time.³³ I believe that this is, in part, because of the growing bill size. As we see in figure 2, when bills grow in length, there are fewer and fewer new laws enacted. I do not believe that a simple enactment of “single purpose bills” would be enough to address the rampant bill size problem in the United States Federal Government. The bill itself to enact such a rule for the house or senate would ironically need to spell out every legal loop hole in an endless sea of legalese. A legislator could hypothetically argue that a bill about health care should include more FDA regulation, as they are related to the same purpose. This could go on and on until the legal loopholes of the “single purpose bill act” have provided a way to simply maintain the status quo of passing overly large bills that address a multitude of legislation. Rather, plain and simple, I think that a page limit should be enacted on congressional bills. A strict limit of 7 pages would make it very difficult to put more than one purpose into a bill and would safeguard against legal loopholes.

D. COST ANALYSIS

One issue facing the plan to shrink committee size is the probable necessity for more staff to attend more committee meetings and help legislators attend to all their oversights. Figure 1 shows the decline of legislative staff in Washington D.C. This trend would not be conducive for my proposed plan. The average Legislative assistant salary as of April 2021 is \$66,932 in the Washington D.C. area.³⁴ Hiring a few extra Legislative

³³ “Making the 'Do-Nothing Congress' Look Great by Comparison.” *MSNBC*, NBCUniversal News Group, 24 Sept. 2020, www.msnbc.com/rachel-maddow-show/making-the-do-nothing-congress-look-gr-msna29474.

³⁴ “Legislative Assistant Annual Salary (\$66,932 Avg: Apr 2021).” *ZipRecruiter*, 2021, www.ziprecruiter.com/Salaries/Legislative-Assistant-Salary.

Aids to help in a new office, like the committee for scientific and technological development, would be feasible in terms of cost. Even short term commitments would be possible; often, in the event of hesitant legislators, small commitments can be conceded more easily to take a step in the right direction.

V. CONCLUSION

The solution to the issues arising from the Collingridge Dilemma and the Pacing Problem are not glaringly obvious yet; however, as the exponential growth of scientific and technological advances progresses, the flaws of the current United States Federal Government's norms will be increasingly prevalent. When the government can no longer maintain their mission, outlined in the preamble, as it applies to modern innovations, exploitation of new technology, or a lack of transparency in these complex issues will only make legislator's duties increasingly difficult. In order to maximize federal government efficiency, human resources concepts, like optimizing team size should be applied to government processes, the rules of jurisdiction should be clearer and more heartily enforced, and finally, new legislation should be concise and limited to single purposes to expediate reactionary law-making process.

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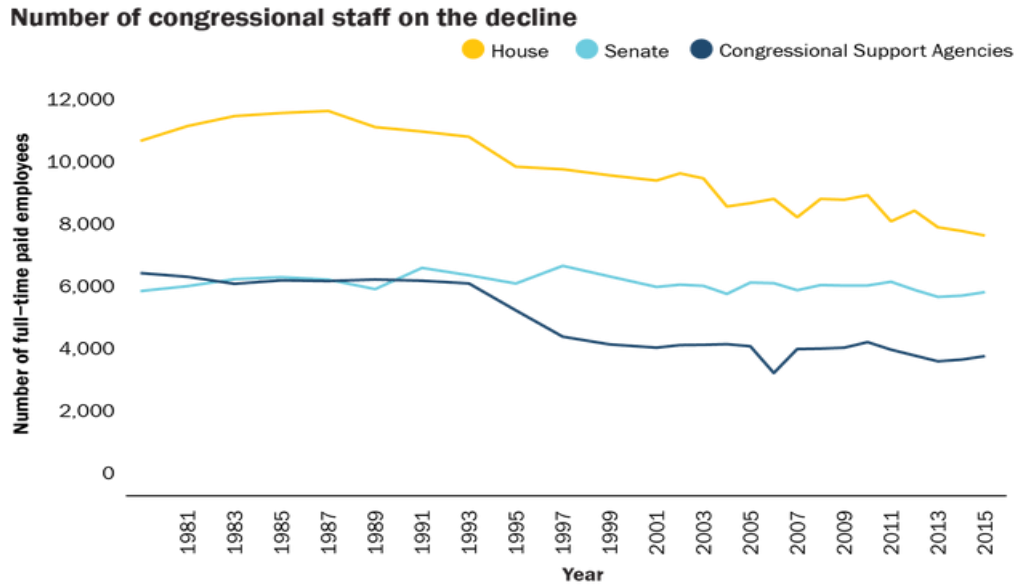
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VII. APPENDIX

A. FIGURES

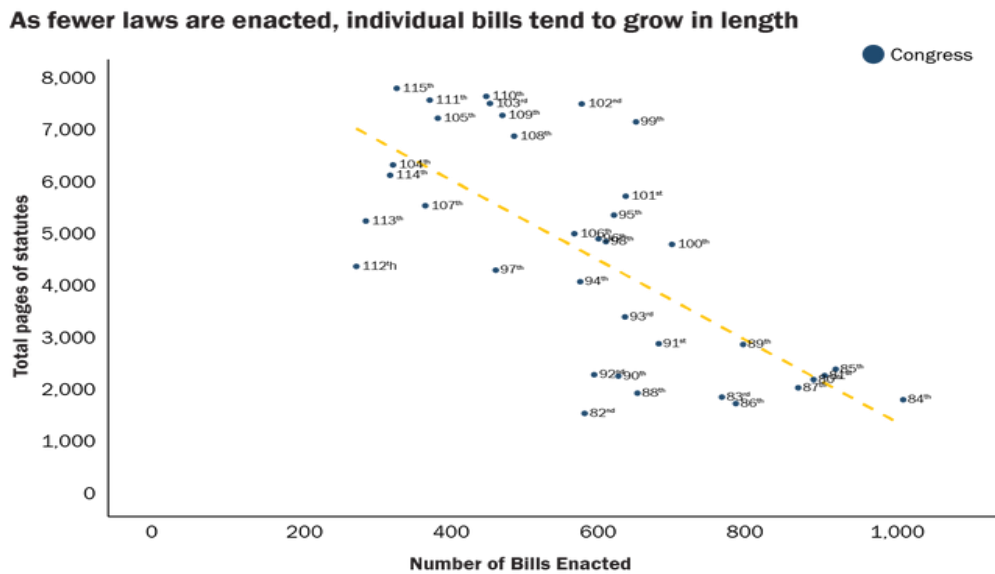
Figure 1



Source: The Brookings Institution. 2019. Vital Statistics on Congress [Table 5-1].

BROOKINGS

Figure 2



Source: The Brookings Institution. 2019. Vital Statistics on Congress [Table 6-4].

BROOKINGS

Figure 3

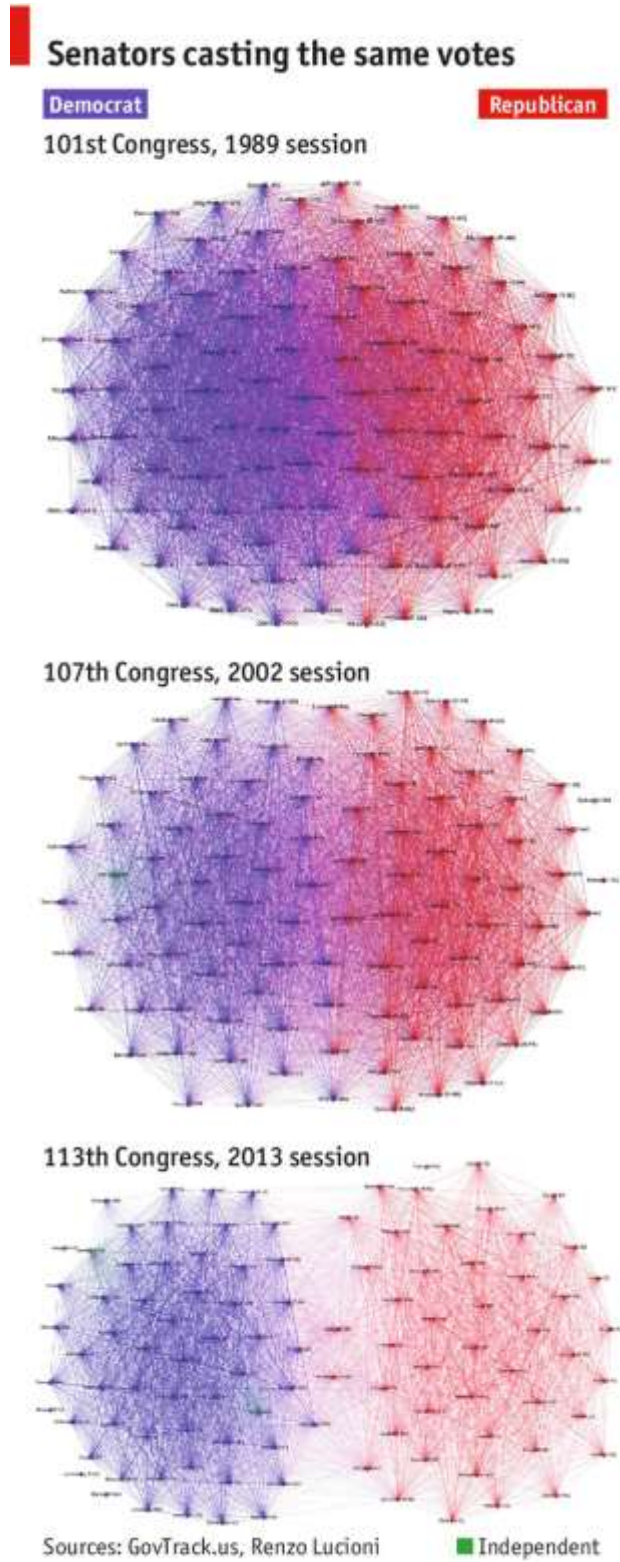


Figure 5

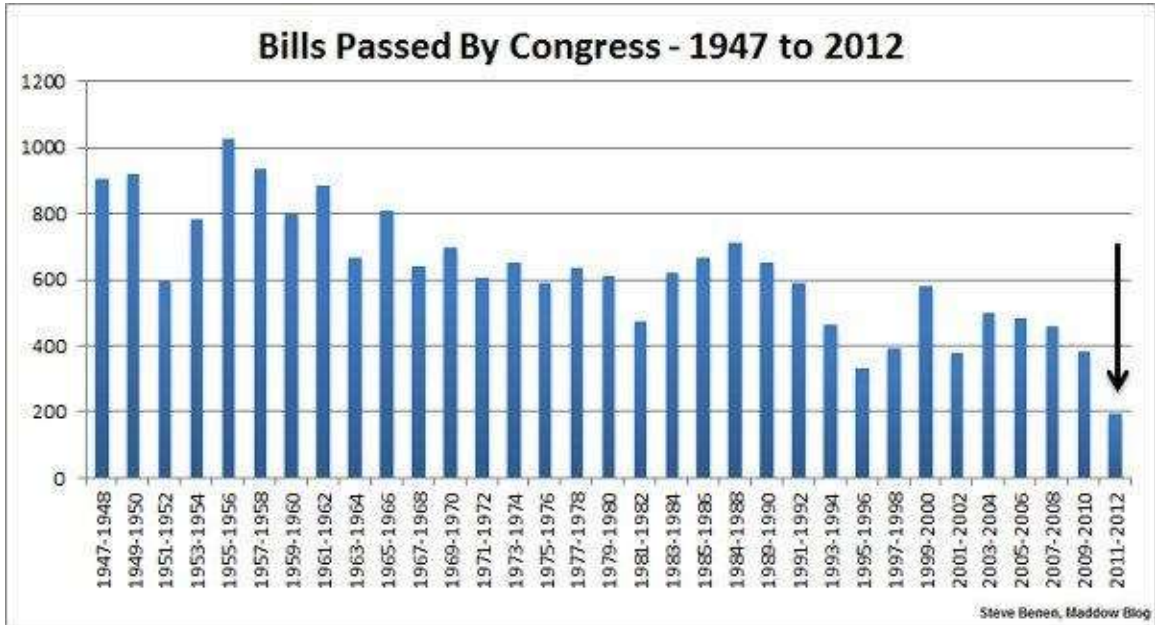


Figure 6

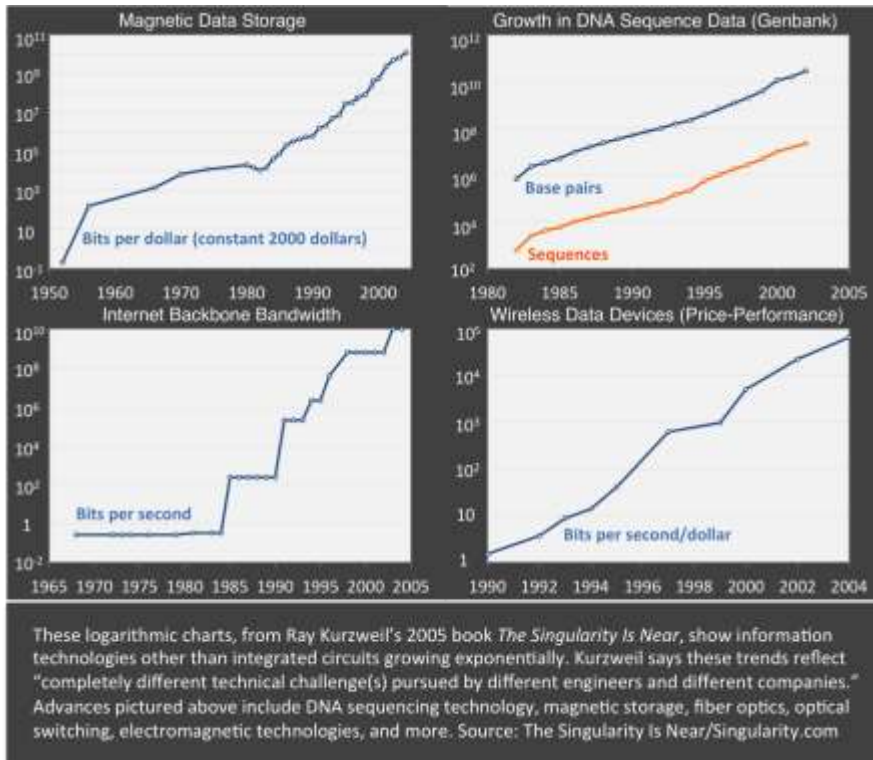


Figure 7

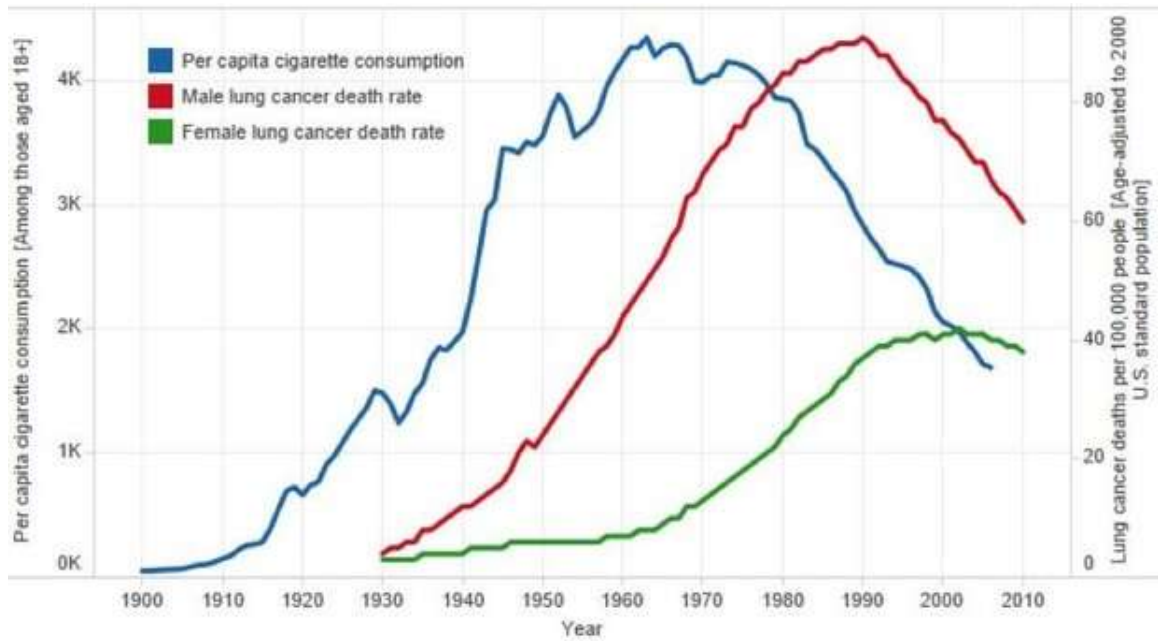


Figure 8

