



# Economics and Economic History in Science Fiction

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## 24.1 WHAT IS SCIENCE FICTION?

Science fiction—and speculative fiction more broadly—is not primarily about bug-eyed monsters or wizard fantasies or even the future. Rather, science fiction presents alternate realities, ranging from natural extensions of the present time to tales of the near future, to stories taking place in the distant future—on Earth and beyond. Counterfactual history, well established in the economic-history literature, traces its roots to the same literary genre.<sup>1</sup> Speculative fiction reflects history, sometimes with novel ways of viewing the past. Even far-future fiction can reimagine historical events and trends. Most important, science fiction branches off from history. Whether it extrapolates from the modern world or some point in the past, science fiction reflects human society and places people into new situations.

Such circumstances are worth studying, as they shed light on social sciences such as economics. This chapter reviews science-fiction literature and film that incorporate economic topics in a historical context. We reflect on the authors' and filmmakers' views as revealed in their fictional economic systems. This is not a complete study but rather a targeted

sampling of seminal works, organized, in Sects. 24.2–24.7, into Technology, Labor, Assets and Capital, Trade, Government, and Alternate History. The chapter concludes with Sect. 24.8, a plea for recognition of the importance of science fiction.<sup>2</sup>

As publishing has become more meritocratic and accessible, authors are releasing new and exciting science fiction every day. The study of the genre in this chapter hopefully justifies further such analysis of more works, especially those from emerging authors of diverse backgrounds whose perspectives were not as readily published or promoted in the past.

Because civilization typically evolves slowly, academic study often suffers from “status quo bias.” As history moves continuously, there is a tendency to restrict the scope of real-world data to established convention. In economics, even controlled experiments analyze behavior inherently skewed by the subjects’ experiences. Therefore, “thought experiments” occurring outside the present reference frame can aid understanding and play an essential role in economic research.

The catalog of science fiction provides an abundance of thought experiments far removed from the present: How would economic frameworks work in other worlds? Do any inconsistencies in the conventional practice or theory become more obvious by twisting reality? How does economic history facilitate the understanding of authors’ worldbuilding decisions?

Science fiction, then, comes down to setting. Any complete setting must have an underlying economic system, in part to justify character motivation. Such economies generally reflect those of history, with interesting divergences resulting from the tweaks to reality.

For many years, the “back page” of the *Journal of Political Economy* has presented passages from literature to illustrate economic principles, including excerpts from science fiction suggested by one of us.<sup>3</sup>

Reflecting an author’s time and society, literature often responds to social and political movements. Science fiction, in particular, gives insight into cultures hostile to open criticism. It provides data that authoritarian governments might otherwise suppress. Science fiction creates a space with less bias, where readers do not feel as personally invested in the world—because it is fictional. This space allows readers to draw conclusions or realize concerns they would not necessarily see otherwise.

While fiction cannot “prove” any theory, it can help illuminate potential flaws and shortcomings. Studying speculative fiction, then, enhances both economic theory and economic practice. There are often unintended consequences of government policy, especially in a social science tied

to human behavior. People do not always act as expected in theoretical models. We suggest that, in these times of increasing government control and intervention in financial and labor markets, policymakers would benefit from studying science fiction and thereby gaining both more imagination and more creativity!

A final introductory thought: Speculative fiction often predicts the future, pondering “what might be.” But often more useful and interesting is to consider *what might go wrong*.

## 24.2 TECHNOLOGY

Technology often plays a crucial role in science fiction. So-called “hard science fiction” tends to create futuristic settings with new science or technology that is integral to the plot. Often the inciting incident or ultimate solution to the protagonist’s problem involves the use of technology; otherwise, the story could have occurred in a non-speculative setting.

If technology is integral to a story’s plot, there should also be economic consequences, either front-and-center or implied. As technology drives economic growth—from the printing press to self-driving cars, among countless historical innovations—a fictional-world’s economy should reflect its unique set of technology.

### 24.2.1 *Space Travel*

Many of the advances postulated in fiction have already come to fruition; thus, the most incisive ones are those humanity has not yet fully realized. At the present time, space travel has already enhanced the terrestrial economy through satellites and various scientific breakthroughs. Extrapolating this progress—and even writing prior to the Space Race—many authors imagined distant futures in which humankind will colonize not only the solar system but also distant parts of the galaxy.

Isaac Asimov’s classic *Foundation* encapsulates economic principles on multiple levels. A future society such as Asimov’s vast Galactic Empire would be incomplete without a well-formulated economy. Character motivation would fall apart without economic incentive.

Asimov introduces a fictional statistical sociology called “psychohistory,” which seeks to explain and predict the behavior of the mass of humanity. This study leads its developer to predict that, as with all empires

historically, the Galactic Empire will fall apart: “Interstellar wars will be endless; interstellar trade will decay; population will decline” (Asimov 2004, p. 30). The novel and its sequels follow the people committed to protecting humanity’s knowledge and shortening the period of turmoil following the Galactic Empire’s collapse.

Society has never undergone a war across light-years of distance. The uncertainties associated with such a war, which could span centuries, would suppress innovation. The collapse of trade would impair the economy of every planet. Instead of specializing in the production of goods and services most suited to the population and available resources, the economy would instead produce other goods less efficiently than its trading partners. Even those industries in which a planet excels would become uneconomical without the support of foreign purchases: “If Korell [a trade partner] prospered with our trade, so did we. If Korellian factories fail without our trade; and if the prosperity of the outer worlds vanishes with commercial isolation; so will our factories fail and our prosperity vanish” (Asimov 2004, p. 243). A breakdown in trade can cause a deleterious chain reaction in an economy, particularly when that economy has become so specialized that it relies on imports for low-priced necessities. “Mutual gains from trade” has long been a fundamental theorem of economics, and it is pleasing that a prolific science-fiction writer sees not only that theorem but also the obverse.

Worldwide economic disruptions, such as the Great Depression of the 1930s, involve tremendous declines in international trade. Generally, the causation is two-way (“the international business cycle”).

International migration—as distinct from trade in commodities—can be countercyclical. Economic downturns in some countries historically led to increased migration to other countries. Episodic bulges in the movement of people from Latin America to the United States are examples. The ultimate causation is various: political corruption, lack of freedom (dictatorship, junta rule), domestic terrorism (drug cartels, gang warfare, breakdown of law and order), natural disasters (climate change, hurricanes). Much international movement of people occurs because of war—between India and Pakistan after the partition in 1947, from Ukraine to Poland and other neighboring countries after the Russian invasion in 2022.

Concentrated agrarian economies are especially susceptible to disruption. Because certain crops have been cultivated to a predominant species that produces the maximum yield, regions that rely on a single crop have

failed to support themselves in the event of drought or crop blight. Lack of biodiversity can be a cause of famine. In particular, the Irish Great Famine of the late 1840s resulted in part from genetically similar potatoes succumbing to mold. To escape starvation, a massive Irish migration to other countries ensued, especially to the United States.

Today's global trade has resulted in intertwined economies, even more so than when Asimov penned *Foundation*. Disputes between two countries can result in economic harm to them both. Conflict does not have to be physical; cold wars, as well as trade wars, impair both economies. Tariffs and local subsidies generally reduce competition and harm consumers.

What happens when trade breaks down? Just as it occurs in the future in Asimov's *Foundation*, it can take place in our time on Earth. Recent events have exposed multiple issues in the global supply chain. Trade disruptions can delay the production and distribution of consumer and producer goods both.

While Asimov's psychohistory focuses on averages of large groups of people over time, other works have explored the economic implications of individual decisions. In Frederik Pohl's *Gateway*, humanity has discovered long-abandoned starships from an ancient alien civilization. But navigating the galaxy with those ships involves substantial risk: "You literally had no control, once you started out in a Heechee [alien] ship. Their courses were built into their guidance system, in a way that nobody had figured out; you could pick one course, but once picked that was it—and you didn't know where it was going to take you" (Pohl 1999, p. 26). More importantly, the explorers do not know a voyage's length. Given that the ships have to be retrofitted for human life support, there is a limit to how long someone can survive.

To further complicate the risk-reward calculus, the probability of success (discovering valuable artifacts) is extremely low: "About eighty percent of flights from Gateway came up empty. About fifteen percent didn't come back at all. So one person in twenty, on the average, comes back from a prospecting trip with something that Gateway—that [humankind] in general—can make a profit on. Most of those are lucky if they collect enough to pay their costs for getting here in the first place" (Pohl 1999, p. 40). Based on those odds, explorers are more likely to die than come out ahead financially!

Every day, people assess various decisions. Rarely are the risks and rewards as clearly defined—and extreme—as in *Gateway*. Yet there are

always those desperate or ambitious enough to take the risk. People typically do not grasp (or they deem irrelevant) true probability when making decisions; if they did, many would not play the lottery! It is human nature to take chances based on the best-case scenario, rather than realistic expectation, focusing on an ultra-desirable outcome despite an extremely low probability of attainment.

Early explorers and later colonists crossed the Atlantic Ocean on sailing ships, with an uncertain future even if they survived the voyage. They took their chances, and eventually Western civilization benefited from expansion into the Americas.<sup>4</sup> Similarly, humanity in Pohl's universe benefited from the technologies discovered by those risking death for personal wealth.

As civilizations have risen and fallen over the ages, it is reasonable to expect that a civilization spanning the galaxy could fall apart. Furthermore, space travel without faster-than-light communication would lead to colonies effectively cut off from Earth save for multi-year communications delays. What happens to a colony if communication with Earth breaks down altogether? Roger Zelazny describes one such colony in *Lord of Light*. The crew takes advantage of the passengers, setting itself atop a Hindu caste system on the new planet, with only one crewmember believing they should act otherwise: "I felt that we should be doing something about the passengers, as well as the offspring of our many bodies, rather than letting them wander a vicious world, reverting to savagery. I felt that we of the crew should be assisting them, granting them the benefits of the technology we had preserved, rather than building ourselves an impregnable paradise" (Zelazny 2000, p. 63). As technology advances, it is likely that certain members of society will abuse it to maintain power over others.<sup>5</sup>

The British Parliamentary Iron Act of 1750 restricted the manufacture of iron and steel products in the American colonies, allowing colonial export only of unfinished iron—to be processed in Great Britain. By curbing the use of raw materials in the colonies, Britain would maintain economic power. However, suppressing access to technology limits productivity, and America later created opportunities for skilled immigrants to bring technologies and develop them further in the independent United States.

### 24.2.2 *Medical Advances*

Medical advances have extended lifespans and reduced illness, expanding employment. But what happens as these advances continue? Should humans be able to live a long time—if not indefinitely—in some form, consumption habits and productivity levels would inevitably change.

In Richard K. Morgan's *Altered Carbon*, human consciousness can be transferred to new bodies called "sleeves," allowing both efficient travel over large distances and prolonged human life. But the prohibitive cost of premium sleeves comparable to human bodies means most people do not benefit from the technology. Instead, more people corner fewer resources, and the economy responds in a balanced way. Circumstances can quickly change in Morgan's world: "One day you own a house, your sleeve policy's paid up, the next you're on the street looking at a single life span" (Morgan 2006, p. 123). With higher-quality goods and services, but also higher costs, both lifespan and the quality of life for the average person can drop.

As the narrator's employer says, "I wonder if you realize how much it is costing me just to keep you alive and out of storage" (Morgan 2006, p. 207). By physical existence becoming transactional, people gain direct power over others. While this is an exaggeration of current reality, it sheds some light on "medical debt" in modern society.

Since the 1960s, health-care spending in the United States has increased substantially, both absolutely and as percentage of GDP, even as the overall economy has expanded tremendously. As people live longer and more medical conditions are treatable, the increase in health-care consumption is understandable.

Because economic progress is often driven by individuals pursuing their own interests, living longer results in potential shifts in behavior: "We have a friendship that goes back centuries. Common business strategies that have sometimes taken longer than a human lifetime to bring to fruition" (Morgan 2006, p. 490). Human mortality has limited the long-term scope of any individual's horizon. Most large corporations become publicly owned across many shareholders, and even closely held private companies get split up as they are inherited.

In the film *The 6<sup>th</sup> Day*, directed by Roger Spottiswoode, humans can be physically cloned and have their memories fully restored in new bodies. Beyond the ethical and spiritual questions of nature and identity, the movie touches on economic consequences for the labor force. At the

beginning of the film, an injured athlete is worth far less to a sports franchise, the manager of which decides to replace him with a clone. People, of course, have value beyond economic production; even through the economic lens, a star athlete generates value beyond playing games and has other revenue streams. But the team may not benefit from economic activity outside the athlete's contract. Unrestricted capitalism and free markets do not always value potential fully; those directly benefiting from a worker may not have the means or even the motivation to advance the worker's potential.

Developing a worker's skills to their long-term potential has not always been the revealed practice of nations or economies. The United States has drafted millions of men over the years to fight wars. Similar to the athlete's contract in *The 6<sup>th</sup> Day*, citizens have an obligation to defend their country despite conflict with their own professional interests.

While not a medical advance per se, space travel would allow an isolationism that could reduce the spread of disease. In *The Caves of Steel*, Isaac Asimov writes that the "precision with which the Spacers had bred disease out of their societies was well known. The care with which they avoided, as far as possible, contact with disease-riddled Earthmen was even better known" (Asimov 1985, p. 6). The health of colonists in space, with limited crews and mission specialization, is essential to their survival.

As international travel has become cheaper, tourism on Earth has boomed. This interconnectedness undoubtedly accelerated the COVID-19 pandemic. The 1918 influenza pandemic was exacerbated by World War I, with troops traveling and living in close quarters. While Earth is now free of naturally occurring smallpox, its spread as the Americas were colonized devastated the indigenous populations, who lacked natural immunity.

### 24.2.3 *Robotics and Materials*

Asimov imagines that colonization beyond Earth can occur only with advances in materials sciences and robotics. Specifically, "those very robots can accompany humans, smooth the difficulties of initial adjustment to a raw world, make colonization practical" (Asimov 1985, p. 97). Increased automation lowers the risk to humans and increases the chances of success. Asimov's 1953 novel came out a few years before Sputnik 1 orbited the Earth. Since then, space programs have used unmanned vessels and machines to explore the solar system.



Beyond the practical considerations, Asimov also explores the socio-economic consequences of humanity inhabiting both the Earth and other, less-hospitable worlds: “It’s the difference between us and the Spacers. We reach high and crowd close. With them, each family has a dome for itself. One family: one house. And land between each dome” (Asimov 1985, p. 5). Those seeking to colonize other worlds would surely not want to live in a dense city. Yet, on Earth, with land limited and services concentrated in cities, urbanization will likely continue.

As with the machines in Asimov’s novels, Philip K. Dick’s robots in *Do Androids Dream of Electric Sheep?* are developed primarily for colonization. This use creates an economic relationship such that “the manufacture of androids, in fact, has become so linked to the colonization effort that if one dropped into ruin, so would the other in time” (Dick 1982, p. 40). Given the negative perception of technology leading to job displacement, it makes sense that androids would be deployed mostly off-world.

Despite best intentions, not all technology is positive for society or the economy. The satirist Kurt Vonnegut demonstrates this phenomenon throughout his work. In *Cat’s Cradle*, a scientist develops a substance called “ice-nine,” which solidifies water at higher temperatures “to get Marines out of the mud” (Vonnegut 2006, p. 44). Such an innovative technology could reduce the burden on the military, allowing economic capacity to shift into other industries and uses. Unfortunately, ice-nine does not work as intended. It turns any continuous body of water into ice: “I opened my eyes—and all the sea was ice-nine” (Vonnegut 2006, p. 261). Technology can have unintended consequences for the broader civilization, as a solution to one problem can generate its own issues.

In the film *The Matrix*, directed by Lana and Lilly Wachowski, machines have trapped humanity in a simulated reality in order to use humans as an energy source. The message—contrary to Asimov’s First Law of Robotics—is that advances in artificial intelligence could potentially backfire and harm society.

Before the dangers of smoking were well known, the cigarette industry expanded access to tobacco by making the substance cheaper and more convenient. Even government-backed research intended to help society has harmed it. For decades, the U.S. Department of Agriculture promoted a diet low in fat and high in carbohydrates. Consequently, food companies removed fat from foods and replaced it with sugar to

maintain taste. While some businesses have benefited (such as the pharmaceutical industry, thanks to an increase in diabetes), it stands to reason that workers are less productive than if they were healthier.

#### 24.2.4 *Communication*

The expansion of civilization into the stars would necessitate advances in communication to bring closer together those who are physically far apart. On Earth, too, improved communication has allowed remote work and outsourcing to maximize the use of resources across the globe. But, as with ice-nine, technologies have unintended consequences.

In the early days of personal computing, William Gibson imagined a future in which communication would *not* bring people together, depicted in *Neuromancer*: “We have sealed ourselves away behind our money, growing inward, generating a seamless universe of self” (Gibson 1984, p. 173). Before computer technology, most people needed to have human-to-human interaction to thrive, whether collaborating in person or engaging in trade with others. The digital economy, however, allows people to work remotely and avoid direct interactions.

Well before technology behemoths such as Google or Facebook existed, Gibson predicted that an information economy would result in larger, more-pervasive corporations: “Power, in Case’s world, meant corporate power. The zaibatus, the multinationals that shaped the course of human history, had transcended old barriers. Viewed as organisms, they had attained a kind of immortality. You couldn’t kill a zaibatsu by assassinating a dozen key executives; there were others waiting to step up the ladder, assume the vacated position, access the vast banks of corporate memory” (Gibson 1984, p. 203). Information technology allows scalability that manufacturing companies, for instance, can never attain. It also diffuses responsibility such that the technology grows uncontrolled. Social-media algorithms, designed to maximize engagement and advertising revenue, can be used—sometimes inadvertently, sometimes deliberately—to manipulate people and spread false information.

On the other side, improved communication has legitimately brought many people closer together. Ursula K. Le Guin imagined instantaneous communication across large distances, faster than the speed of light. When her novel *The Left Hand of Darkness* was published in 1969, the Internet was in its infancy, with the first computer network having just been built between Pentagon-funded research institutions. Yet Le Guin takes the

current events of her time and extrapolates them to a bright future: “The kind of trade I speak of can be highly profitable, but it consists of simple communication rather than transportation. My job here is, really, to find out if you’re willing to communicate with the rest of mankind” (Le Guin 2000, p. 137). Because transportation over long distances is resource-intensive, transferring information is a more economical way to provide value through trade. Indeed, the digital economy was estimated at \$11.5 trillion in 2016, far larger than the \$2.7 trillion GDP of the entire world economy in the year Le Guin’s novel was released.<sup>6</sup> Even adjusting for U.S. inflation, the digital economy has grown nearly as large as the entire economy was decades ago. Ursula K. Le Guin effectively predicted the economic benefit of the Internet before its existence!

### 24.3 LABOR

As technology changes, so does labor. The fear of job displacement due to robotics and similar technologies has pervaded popular sentiment for decades. Thus, it is no coincidence that labor plays a role in many science-fiction books and films, as writers respond to the changing economies of their own times.

Despite short-term job losses from innovation, technology has brought new industries and occupations to the global economy. The large technology companies that William Gibson predicted now employ millions of workers around the world—in jobs that would not have otherwise existed.

#### 24.3.1 *Labor Force Participation*

Le Guin not only predicted the rise of information technology, but she also foresaw the benefits of a workforce free of prejudice. *The Left Hand of Darkness* takes place on a planet populated by future humans who have evolved to have no fixed sex, occasionally becoming male or female for reproductive purposes. One of the immediate consequences of a society without distinct genders is that the workforce is not divided along those lines, which leads to increased productivity. Since 1969, the labor-force participation rate of women in the United States has increased from 43 to 56 percent.<sup>7</sup> Undoubtedly, the economy has grown faster as a result.

In *Player Piano*, Kurt Vonnegut describes a mechanized society in which a small elite group of engineers and managers runs the automated infrastructure, while most people have no means to earn a living: “Now,

you people have engineered them out of their part in the economy, in the market place [sic]" (Vonnegut 1970, p. 92). True, disruptive industries have short-term consequences for specific parts of the labor force; but history has so far shown that new opportunities arise that improve employment in the long run. While computers displaced some jobs, they also became a pervasive part of virtually every industry.

At some point, as artificial intelligence and related technologies mature, it is possible that the world could face a reckoning in which labor has been permanently displaced. At the very least, it makes sense to consider the short-term impact to jobs of new technologies in order to help facilitate training of new skills valuable to the changing economy.

Vonnegut draws an interesting comparison: "The machines are to practically everybody what the white men were to the Indians. People are finding that, because the way the machines are changing the world, more and more of their old values don't apply any more. People have no choice but to become second-rate machines themselves, or wards of the machines" (Vonnegut 1970, p. 274). Workers have had to adapt to changes in society and the economy, both of their own volition and at the will of their government.

### 24.3.2 *Population Growth*

Changes in population levels, both growth and decline, impact the labor force—as well as the population's needs, based on age distribution. If population grows faster than the economy can harness resources, quality of life declines. Movies such as *Soylent Green*, directed by Richard Fleischer, warn of overpopulation coupled with dwindling resources complicated by climate change. Food technology has not had the same level of investment as other industries, yet food is essential for life.

Phyllis D. James's novel *Children of Men* takes on the other risk: what if the population stopped growing and reproduction became extremely rare? Amidst mass infertility, "the country sunk in apathy, no one wanting to work, services almost at a stop, crime uncontrollable, all hope and ambition lost" (James 2006, p. 152). Human behavior changes based on perceptions of the future. Without the need to provide for descendants, people do not need to work as much. Thus, there is less production from those in the workforce, as well as a lack of new workers.

Populations have historically declined during periods of disease such as the Black Death and those of hunger such as Ireland's Great Famine.

A decline in population growth, or of population itself, and declines in birth rates have harmful effects on the economy—these declines a fear of policymakers in many developed countries in the present day.

Whereas Le Guin developed a world of equality, Larry Niven and Jerry Pournelle envisioned an alien species with hyperspecialized castes tied to their physical development. *The Mote in God's Eye* introduces an alien race of multiple variants that also alternates between sexes, but with the complication that every alien “has to be made pregnant after she’s been female for a while. Child, male, female, pregnancy, male, female, pregnancy, ‘round and ‘round. If she doesn’t get pregnant in time, she dies” (Niven and Pournelle 1974, p. 302). A positive feedback loop occurs, with consumption of resources leading to even more consumption. Ultimately, the aliens are “locked into a permanent state of population explosion followed by total war” (Niven and Pournelle 1974, p. 461). Resources are limited, and thus explosive population growth cannot continue unabated.

The Niven-Pournelle worldview, as well as that of Le Guin, replaces characteristics of the present-day recognition of (and discourse about) gender dysphoria with universal gender fluidity. Adapting an aspect of humanity into a speculative element is an excellent example of an important aspect of science-fiction literature: extrapolation of a current societal trend to a logical end.

Although humans have not reached global levels of overpopulation, local conflicts historically have arisen over resources. Britain conquered India in the eighteenth century to gain access to goods such as cotton, silk, tea, and spices. The Soviet Union invaded Finland in 1939, partially over nickel mines; and Russia invaded Ukraine in 2022, in part for its resource base (including agriculture and minerals such as lithium).<sup>8</sup> In 1942 Hitler determined to secure the Caucasus oil fields for the German military, thus cutting off that area from the Soviet Union. And Iraq invaded Kuwait in 1990 in an attempt to control Kuwait’s oil reserves.

### 24.3.3 *Specialization*

The aliens in *The Mote in God's Eye* evolved into multiple distinct subspecies with skills suited to their physiques. Among other castes, Engineers and Watchmakers excel at mechanical and electrical work; Doctors specialize in medicine and have steady hands for surgery; Farmers focus only on agriculture; and Masters make decisions for their communities

and the broader race. Because the skills in each caste are tied to genetics, the aliens are born into their roles with no possibility of changing caste. Interbreeding Masters and Engineers, for example, creates sterile Mediators; the castes are destined to continue so long as each subspecies survives.

Nora K. Jemisin, on the other hand, builds a future world that periodically undergoes extreme climate change, resulting in the population forming communities called “comms.” Each of these comms needs members of specific use-castes in order to survive. Similar to Doctors in *The Mote in God’s Eye*, Resistants in *The Fifth Season* are thought to be immune to disease, and thus, “comms like to have them around no matter how hard the times, in case of sickness and famine and such” (Jemisin 2015, p. 27). Strongbacks, on the other hand, are the laborer caste: “All ‘Strongback’ means is that her female ancestors were lucky enough to join a comm but too undistinguished to earn a more secure place within it. *Strongbacks get dumped same as commless when times get hard*” (Jemisin 2015, p. 27). With trade inherited from parents, these castes are ancestral but somewhat indistinguishable, with nowhere near the genetic specialization described in *The Mote in God’s Eye*. There is no social mobility, with laborers defined by their given jobs, and those jobs potentially dooming them if their comm deemed them non-essential. In this case, however, the caste system arises from culture more than from genetics.

Perception affects economic opportunity. Historically, racism and sexism limited who could more easily work in specific occupations. A similar caste system emerged in ancient India, with four main groups in a hierarchy: priests, warriors, merchants, peasants. The marginalization of certain groups continues to the present. Even without constant crisis, as in Jemisin’s world, society can perpetuate a more- or less-rigid social system.

Yet, in times of crisis, identity no longer matters. During the Great Depression, cities were hit especially hard. In the United States, several million unemployed young men left cities for Civilian Conservation Corps work, just as the Strongbacks in the novel. Eventually this work ended, and the overall economy improved.

In Jemisin’s world, however, natural disasters keep people from overthrowing the system. When the comms face disasters of their own, their options are limited: “These people face the economic destruction of their whole community. It’s not a Season, so they can move somewhere else, try to start over. Or they can dissolve, with all the comm’s families trying to find places in other communities—which should work except for those

family members who are poor, or infirm, or elderly. Or those who have uncles or siblings or parents who turned out to be orogenes; nobody will take those. Or if the community they try to join has too many members of their use-caste already” (Jemisin 2015, p. 196). Who are the essential workers? Who does society need to function? The orogenes in the novel—those with supernatural power—are akin to the casteless “untouchables” in India. But they are instead marginalized for their abilities.

Bong Joon-ho’s film *Snowpiercer* depicts a microcosm of society on a moving train, with the passengers segregated by socioeconomic classes similar to those in Western culture. With no social mobility and no way off the train, the working class revolts.

Forcing specialization by class has backfired many times throughout history. In the Russian Revolution of 1905, peasants and industrial workers revolted against the nobility. The peasants had been provided with small plots of land that could not generate enough food but were burdened with property taxes and maintenance costs.

## 24.4 ASSETS AND CAPITAL

### 24.4.1 *Consumption and Inflation*

War can unite a people due to both culture and survival, building up a nation’s production and overall capital. This concept arises in *The Left Hand of Darkness*: “He was after something surer, the sure, quick, and lasting way to make people into a nation: war” (Le Guin 2000, p. 102).

Joe Haldeman’s aptly titled *The Forever War* covers a long-term war against an alien civilization, exploring the consequences of relativistic time dilation. Because this is such a major effort, it consumes most of the economic resources back on Earth. During World War II, the United States spent over 40% of GDP on defense.<sup>9</sup> This was only temporary, but a long-term economic dependence on war could have intriguing consequences: “The main effect of the war on the home front was economic, unemotional—more taxes but more jobs as well. After twenty-two years, only twenty-seven returned veterans; not enough to make a decent parade. The most important fact about the war to most people was that if it ended suddenly, Earth’s economy would collapse” (Haldeman 2014, p. 139). Wars can lead to increased production for defense, fostering economic expansion. After World War II, the United States produced goods for other countries to consume as they rebuilt their infrastructure

after the war's destruction. Modern wars in the Middle East have benefited specific companies: those with oil interests, weapons manufacturers, and government contractors.

Contemporary soldiers, however, are not affected by relativity as those in *The Forever War*. Time dilation results in soldiers earning significant money, as time passes much faster on Earth during their deployment light-years away. Without much sales competition at their base, "Heaven's economy was governed by the continual presence of thousands of resting, recreating millionaire soldiers. A modest snack would cost a hundred bucks, a room for a night at least ten times that. Since UNEF [the armed forces] built and owned Heaven, this runaway inflation was pretty transparently a simple way of getting our accumulated pay back into the economic mainstream" (Haldeman 2014, p. 175). Inflation, in this case, results from a wealthy subsection of civilization being concentrated at an isolated base.

As in *The Forever War*, prices are not the same throughout a country. Despite being a standardized commodity, gasoline of a given grade varies in price across the United States due to local taxes and transportation costs. Also, gas stations that are more convenient and in wealthier areas can charge more than their competitors located elsewhere.

The film *In Time*, directed by Andrew Niccol, introduces a society in which the currency used is time remaining in an individual's life. Society becomes bifurcated between those who have essentially unlimited time and those who always race against the clock to make ends meet and stay alive, living literally day by day.

Seeing currency and, therefore, wealth as a direct measure of someone's life expectancy is a clear thought experiment. Much like the inflation in so many works of science fiction, prices for consumers in *In Time* rise faster than wages, keeping the working class in poverty.

Inflation comes up repeatedly in science fiction. It is no coincidence: many authors have witnessed firsthand how inflation decreases purchasing power and harms quality of life. Yet governments welcome at least some inflation, printing money to appease various constituents and special-interest groups. Inflation is effectively a hidden tax, as it reduces the relative wealth of consumers through price increases while devaluing the government's debt. It is also a regressive tax, as the wealthy invest in assets that outperform inflation while the working class spends more of its income on now higher-priced goods.<sup>10</sup>



#### 24.4.2 *Cash and Debt*

As technology has become more pervasive, more transactions have become cashless. Dan Simmons creates an interstellar civilization in *Hyperrion*, which necessitates more electronic transacting: “If our society ever opted for Orwell’s Big Brother approach, the instrument of choice for oppression would have to be the credit wake. In a totally noncash economy with only a vestigial barter black market, a person’s activities could be tracked in real time by monitoring the credit wake of his or her universal card. There were strict laws protecting card privacy but laws had a bad habit of being ignored or abrogated when societal push came to totalitarian shove” (Simmons 1991, p. 360). As Simmons warns, control over spending can lead to surveillance and invasion of privacy. While physical money carries its own risks such as theft, digital money depends on a robust, secure infrastructure.

Cryogenic freezing and near-light-speed travel both create scenarios in which people can effectively travel faster into the future without aging. Because some investments tend to generate returns that exceed inflation over time, jumping into the future could potentially allow an investor to benefit sooner in his own life from the returns. Unfortunately, unmanaged investments can go awry: “Mother sent me to this back end of the outback on a Phase Three ramship, *slower than light*, frozen with the cattle embryos and orange juice concentrate and feeder viruses, on a trip that took *one hundred and twenty-nine* shipboard years, with an objective time-debt of *one hundred and sixty-seven standard years!* Mother figured the accrued interest on the long-term accounts would be enough to pay off our family debt and perhaps allow me to survive comfortably for a while. For the first and last time in her life, Mother figured wrong” (Simmons 1991, p. 196). Consequently, the narrator arrives on a new planet completely destitute.

Governments, companies, and individuals often borrow capital to invest, hoping that the real return will exceed the interest of the loan. While this can serve an actively managed company (where the borrower controls how the capital is deployed), that is not the case for passive investments, especially when the investor is literally incapacitated. There are always risks, including “black swan” events that no model can predict.

### 24.4.3 *Value of Property*

One narrator in *Hyperion* ultimately becomes very wealthy: “My home has thirty-eight rooms on thirty-six worlds [thanks to portals between worlds]. ... the guest bathroom ... consists of toilet, bidet, sink and shower stall on an open, wall-less raft afloat on the violet seaworld of Mare Infinitus” (Simmons 1991, pp. 205–206). Why would someone want his house to span across dozens of worlds? Technology is often first sold to early adopters with high disposable income, whose motivation might be of pure vanity. But without those customers, innovation could not generate scale economies.

In Philip José Farmer’s *To Your Scattered Bodies Go*, all humans throughout history are resurrected along a river. Necessities and comforts are provided, resulting in immediate trade among people who value their provided goods differently. A reincarnated Sir Richard Burton seeks to travel up the river. Of course, he must build a boat himself: “Burton could build a craft. However, the people hereabouts were conservationists. They did not believe in despoiling the land of its trees. Oak and pine were to be left untouched, but bamboo was available. Even this material would have to be purchased with cigarettes and liquor, which would take some time to accumulate from his grail” (p. 212). Burton can choose to trade away his goods over time to acquire the bamboo, which he considers more valuable. The locals have set their own values, unwilling to accept any price for oak and pine trees.

In Roger Zelazny’s novel *This Immortal*, aliens attempt to appropriate the Earth’s wonders and turn them into tourist attractions. The protagonist develops a strategy to dissuade the aliens: “Conrad [the alien asks him], why are you tearing down the pyramid?’ ... ‘To let you know if you want this place and you do manage to take it away from us, you’ll get it in worse shape.’” (Zelazny 1966, p. 161). Conrad, then, has set up a kind of “poison pill” similar to that used to discourage corporate raiders. In the modern world, such shareholder-rights plans help protect companies from hostile takeovers. Of course, Conrad is not just devaluing shares in an asset by creating new ones at a discount; instead, he destroys that asset, in this case an ancient and irreplaceable pyramid.

In 2021, the Chinese government threatened and placed restrictions on technology companies whose publicly traded shares were listed in the United States. Consequently, the value of those companies fell. These actions harmed Chinese citizens as well as foreign investors, but they

may have the ultimate effect (intended or not) of allowing more Chinese investors to benefit from the appreciation of Chinese companies.

In Anne McCaffrey's *Dragonflight*, the protagonist intentionally sabotages her family's fortress after it is stolen in order to force the usurper to give it up. As the usurper says, "The day one of my Holds cannot support itself *or* the visit of its rightful overlord, I shall renounce it" (McCaffrey 1996, p. 37). Property is not valuable in and of itself. It often comes with maintenance costs, which can lead to the abandonment of the asset over time when it becomes uneconomical to manage.

#### 24.4.4 Resources

In the film *Interstellar*, directed by Christopher Nolan, climate change has drastically reduced the ability to grow crops, thereby risking human extinction. Humanity must find a way to travel to a wormhole that has inexplicably opened near Saturn and then travel to a distant galaxy with habitable worlds. Such a solution to a climate crisis is extremely unlikely; the movie warns viewers to protect Earth's long-term health.

It is difficult to plan for resource use in the long term. Given technology's rapid development, is it worth harming short-term economic growth to avert a potential future catastrophe that might be easier to prevent later? With multiple countries involved, a short-term sacrifice could result in a disadvantage absent international cooperation.

Human capital is also a resource, particularly when individuals have irreplaceable expertise and proficiencies; skills that require immense training make especially valuable those who have the skills. Orson Scott Card's military science-fiction novel *Ender's Game* explores this concept: "Human beings are free except when humanity needs them. Maybe humanity needs you. To do something. Maybe humanity needs me—to find out what you're good for. We might both do despicable things, Ender, but if humankind survives, then we were good tools" (Card 2002 p. 35). Ender himself is the resource, as much as the materials used in the ships and the weapons deployed in the conflict.

In the dystopian film *Mad Max: Fury Road*, directed by George Miller, warfare ensues over the limited remaining manufactured resources: gasoline and ammunition. While this scenario is extreme—with no new supply—it shows how dependent civilization can become on certain manufactured and processed goods. The conflict over gasoline mirrors the oil crises of the 1970s, in which the Organization of the Petroleum

Exporting Countries (OPEC) declared an embargo in 1973 and then the oil production of Iran and Iraq declined drastically in 1979–1980. Even more-recent shocks in energy prices have had profound effects. Although, thanks to fracking and other innovations, the United States can produce enough oil and natural gas to sustain itself, there is no instantaneous on–off switch for adjusting that production. As global prices fall, for example, it becomes uneconomical for domestic oil to compete with cheap imports. Also, government regulation—or the specter of it—can discourage production.

Modern electronic goods are dependent on semiconductor chips. The COVID-19 pandemic halted production at many factories, with widespread expectations of a decrease in demand. Instead, an economy adapting to remote work *increased* demand for various commodities, including canned goods and consumer-sized paper goods. Shortages affected a wide range of goods, including less obvious ones such as automobiles (for which electronics are a small but crucial component).

#### 24.4.5 *Productivity*

While *Mad Max* occurs in a world with more destruction than productivity, Ayn Rand’s novel *Atlas Shrugged* explores a productive society in which private enterprises suffer under increased governmental regulation.

Unlike many other authors’ works, which depict workers exploited by capitalism, Rand views capitalists as exploited by government. Rather than the government spending money, she believes those who have generated capital are best equipped to deploy it: “Let me give you a tip on a clue to men’s characters: the man who damns money has obtained it dishonorably; the man who respects it has earned it” (Rand 1957, p. 383). Moreover, she does not see capital as an end, but rather a means: “But money is only a tool. It will take you wherever you wish, but it will not replace you as the driver” (Rand 1957, p. 382). Governments often throw money at problems, as if money were the direct solution.

Rand sees productivity arising from individuals, not from central planning: “Productiveness is your acceptance of morality, your recognition of the fact that you choose to live—that productive work is the process by which man’s consciousness controls his existence, a constant process of acquiring knowledge and shaping matter to fit one’s purpose, of translating an idea into physical form, of remaking the earth in the image of

one's values—that all work is creative work if done by a thinking mind ... that your work is yours to choose, and the choice is as wide as your mind ... that your work is the process of achieving your values” (Rand 1957, p. 933). Rand focuses on the individual over the state. As both history and science fiction have demonstrated, governments do not necessarily survive forever.

While Rand's philosophy is clearly conservative, more-liberal authors such as Jemisin appear to agree that pursuing one's own passions is preferable to following societal norms.

## 24.5 TRADE

Rand's economic vision of an individual-focused economy can work because individuals find niches in society and trade with each other to provide for their needs and desires. Individuals establish value for their work through transactions, allowing them to make decisions that enhance their productivity and income. Currencies provide an intermediary store of value so that bartering does not have to be done directly between what individuals produce for society and what they consume.

### 24.5.1 *Monetary System*

Without a monetary system, in which government standardizes a currency for commerce, people must barter for goods. This old practice occurs in Brian Aldiss's novel *Starship*, where civilization on a generation ship—in which the journey will span multiple generations—has degenerated into a primitive society:

This deteriorating state of affairs Complain simply attributed to a grudge Roffery the Valuer held against the hunter clan, being unable to integrate the lower prices Roffery allowed for wild meat with the abundance of domestic fare. Consequently, he pushed through the market crowd and greeted the valuer in surly fashion.

“spanson to your ego,” he said grudgingly.

“Your expense,” the Valuer replied genially, looking up from an immense list he was painfully compiling. “Running meat's down today, hunter. It'll take a good sized carcass to earn six loaves.”

“Hem's guts! And you told me wheat was down the last time I saw you, you twisting rogue.”

“Keep a civil turn of phrase, Complain: your own carcass isn’t worth a crust to me. So I did tell you wheat was down. It is down—but running meat’s down more”. (Aldiss 1969, pp. 19–20)

Aldiss portrays a society in which there is no currency at all; thus, a “Valuer” must compile a tremendously extensive list stating, for a given commodity, how much of each other commodity it is worth. That is, every commodity has a price in terms of every other commodity—and its price is in physical units, as money does not exist.

Despite the absence of money, the characters still have a concept of price levels—a kind of “ghost money.” From a historical perspective, there was a period before money existed when market transactions still occurred. Aldiss imagines a scenario in which a future human society regresses back to these barter transactions!

Even when currency does exist, people can nevertheless barter and transact—using other intermediary goods. In the film *District 9*, directed by Neil Blomkamp, alien weapons—as well as terrestrial ones—are used as currency. Any good can act as a store of value. Guns, in fact, are more immediately practical than metals.

Historically, both gold and silver were used as stores of values prior to fiat currency, and currencies were backed by precious-metal reserves. In the film *Looper*, directed by Rian Johnson, assassins kill victims from the future sent to the past by an organized crime syndicate. They are paid with silver bars, a standardized store of value across both time and space.

What happens in a world where metals are so rare that technology is adversely affected? Robert Silverberg’s novel *Lord Valentine’s Castle* takes place on a massive planet with minimal natural metals. Consequently, the world and its economy feel mostly ancient, and there is no means of electronic payment. As the currency is explained, “These sausages cost ten weights. A hundred weights make a crown, ten crowns make a royal, and this [coin] is fifty of those” (Silverberg 1981, p. 10). The flexibility of coins of various values allows commerce to occur with a high level of trust.

Metals in *Lord Valentine’s Castle* are hoarded for pretentious purposes: “It [the performers’ stage] all floats on a pool of quicksilver ... You could buy three provinces with the value of the metal” (Silverberg 1981, p. 112). Of course, if that amount of silver entered the marketplace, it could very well collapse the price. Who would be willing to buy that

much of it in a world with no capacity to manufacture it into something useful?

Yet even today people do store some of their wealth in precious metals. Gold carries tremendous cultural value in countries such as India, and gold is a vehicle of speculation for investors worldwide.

### 24.5.2 *Commerce*

Walter M. Miller's *A Canticle for Leibowitz* follows events at a Catholic monastery protecting scientific knowledge after a devastating nuclear war. Because the monks cannot judge which documents are valuable, much of the so-called Memorabilia seems frivolous to a contemporary reader. The value of the Memorabilia changes over time. At first, it is completely useless because society lacks the capacity to utilize it. But as technology is rebirthed, some of it proves extremely valuable for a time: "Since the death of the last civilization, the Memorabilia has been our special province, Benjamin. And we've kept it. But now? I sense the predicament of the shoemaker who tries to sell shoes in a village of shoemakers.' ... 'It could be done, if he manufactures a special and superior type of shoe'" (Miller 1961, p. 143).

Rare goods command high value due to lack of supply. But as time passes and more competition occurs—in this case, from other inventors gaining the resources to rebuild—these same assets become less valuable. As certain goods become commoditized, offering a premium product becomes one way to justify a premium price.

Even a standardized commodity can become valuable given the right supply and demand circumstances. In *Dune*, Frank Herbert introduces a rare material found only on one planet, where it is guarded by giant sandworms: "By giving me Arrakis, His Majesty is forced to give us a CHOAM [company name] directorship ... [The spice] cannot be manufactured, it must be mined on Arrakis...Imagine what would happen if something should reduce spice production" (Herbert 1990, pp. 42–43). Civilization is dependent on a drug ("the spice") to enhance awareness, allowing navigators to chart safe routes through space–time and enable practical interstellar travel.

Certain goods are essential to an economy during given periods of time. Thus, monopolies of supply can lead to skyrocketing prices, as again evidenced by the 1970s oil crises with OPEC controlling supply.

Other works of science fiction paint an interstellar civilization without the ability to break the speed of light in travel or communication. Thus, governments cannot practically govern across light-years, as their agents and the general population are unlikely to act in the interests of the home world when the colony is so remote, far more distant than America from Europe during the colonial period.

As Earth's civilizations developed, maintaining sprawling empires was impossible. Many European colonies gained independence. Even Europeans inserted in colonial governance roles have acted outside the interests of their rulers. Christopher Columbus, for instance, was removed as governor of the West Indies.

Taking trade into the interstellar context addresses the costs and risks in moving goods across distances. Although transportation costs around Earth are more reasonable, there are risks to relying on international supply chains—as the United States and China have recently discovered.

In Vernor Vinge's *A Deepness in the Sky*, a group of traders called the Qeng Ho arrives at a world hoping to make a deal for ancient alien technology: “[T]here was the possibility of trade. Here, well, there was treasure but it did not belong to either side. It lay frozen, waiting to be looted or exploited or developed, depending on one’s nature” (Vinge 2000, p. 19). Trade, not government treaties, tends to unite people across distinct cultures. As Vinge notes, “No government can maintain itself across light-years. Hell, most governments don’t last a few centuries. Politics may come and go, but trade goes on forever” (Vinge 2000, p. 222). In a futuristic context, government could not practically rule across light-years of distance. Both communication and travel would take too much time. Only economic incentives could unite humanity across the galaxy.

While the original explorers of the Americas were funded by European states, they were motivated more by trade or plunder than politics or ideology. Even amidst revolutions and coups, companies have survived. Ultimately, people do not work only for government; they prioritize their own interests. A nod to Ayn Rand!

### 24.5.3 *Principal-Agent Problem*

In recent years, the sharing economy has grown, adding new value to existing capital such as homes and vehicles by increasing their use. One



complication is that lessees or renters do not fully own that capital, leading to potential damage emanating from the inherent principal-agent problem. Simple solutions like insurance and background checks are used, but they are not foolproof.

In *Mindswap*, Robert Sheckley examines the principal-agent problem of swapping bodies, a different kind of vacation rental:

“Next, you and the Martian Gentleman will both sign a Reciprocal Damage Clause. This states that any damage to your host body, whether by omission or commission, and including Acts of God, will, one, be recompensed at the rate established by interstellar convention, and, two, that such damage will be visited reciprocally upon your own body in accordance with the *lex talionis*.”

“Huh?” Marvin said.

“Eye for eye, tooth for tooth,” Mr. Blanders explained. “It’s really quite simple enough. Suppose you, in the Martian corpus, break a leg on the last day of Occupancy. You suffer the pain, to be sure, but not the subsequent inconvenience, which you avoid by returning to your own undamaged body. But this is not equitable. Why should you escape the consequences of your own accident? Why should someone else suffer those consequences for you? So, in the interests of justice, interstellar law requires that, upon reoccupying your own body, your own leg be broken in as scientific and painless a manner as possible.”

“Even if the first broken leg was an accident?”

“*Especially* if it were an accident. We have found that the Reciprocal Damage Clause has cut down the number of such accidents quite considerably”. (Sheckley 1966, p. 17)

Being accountable will change individuals’ actions. Accidents are often avoidable through additional defensive action. While lessees and renters may not have legal liability for damage caused by others, they do have some ability to deter such damage.

When it comes to governance, both political and corporate, managers’ own interests do not always align with those of their constituents, shareholders, or employees. Leaders such as Egypt’s Hosni Mubarak, Iraq’s Saddam Hussein, Libya’s Muammar Gaddafi, and Russia’s Vladimir Putin have been accused of such corruption, amassing vast personal fortunes at the expense of their constituents.

### 24.5.4 *Intellectual Property*

Intellectual property is increasingly a source of capital in the modern world. Corporate lawsuits are often about this kind of theft. Not only is intellectual property easier to steal, but also it is simpler to use than physical materials, making it extremely valuable.

Neal Stephenson forecasted the exploding value of intellectual property in the computer age in his 1992 novel *Snow Crash*: “[W]hen I have a programmer working under me who is working with that information, he is wielding enormous power. Information is going into his brain. And it’s staying there. ... he doesn’t have any right to that information. If I was running a car factory, I wouldn’t let workers drive the cars home or borrow tools. But that’s what I do at five o’clock each day, all over the world, when my hackers go home from work” (Stephenson 2003, p. 116). Companies have increasingly become valued not on current revenue but on a projection of future growth. And future growth comes in large part from intangibles such as intellectual property and customer loyalty.

For intellectual property to be recognized, especially due to its intangible nature, it must be recognized by a government through polices such as the issuance of patents. Because the government grants property rights, it is possible for the government to claim ownership of all ideas. In Ursula K. Le Guin’s *The Dispossessed*, the protagonist says, “I didn’t understand that here an idea is a property of the State” (Le Guin 2006, p. 293). The researcher ultimately refuses to share his work with the other theoreticians in that society, for he fears it would be squandered. Thus, government control can suppress innovation.

## 24.6 GOVERNMENT

### 24.6.1 *Central Planning*

While Ayn Rand viewed government as inherently burdensome, other authors have exposed flaws in specific systems of governing. In *Nineteen Eighty-Four*, George Orwell warns of “Big Brother” totalitarian governance, as well as dividing the world into a few superstates—which he feared was occurring after World War II. Indeed, the Cold War resulted from the geopolitical influence of Soviet communism and American democracy after the war. Orwell’s fictional superstates end up in a

perpetual war: “The economy of many countries was allowed to stagnate, land went out of cultivation, capital equipment was not added to, great blocks of the population were prevented from working and kept half alive by State charity. But this, too, entailed military weakness, and since the privations it inflicted were obviously unnecessary, it made opposition inevitable. The problem was how to keep the wheels of industry turning without increasing the real wealth of the world. Goods must be produced, but they must not be distributed. And in practice the only way of achieving this was by continuous warfare” (Orwell 1981, p. 155). The fictional nations use war to keep their economies in a constant state of absorbing goods before they can benefit the lower classes, while providing some basic support to them. Such a system maintains the status quo and prevents any social mobility by forcing dependence on the state.

The government effectively freezes history: “Every record has been destroyed or falsified, every book rewritten, every picture has been repainted, every statue and street building has been renamed, every date has been altered. And the process is continuing day by day and minute by minute. History has stopped. Nothing exists except an endless present in which the Party is always right” (Orwell 1981, p. 127). Put more succinctly, “‘Who controls the past,’ ran the Party slogan, ‘controls the future: who controls the present controls the past’” (Orwell 1981, p. 31). Through actions such as war and propaganda, a government can unite its citizens, even against their own interests.

In *Brave New World*, Aldous Huxley imagines a command economy focused on mass production and consumerism, where even the people are themselves manufactured. Instead of ancestral castes, citizens are engineered: “But though the Epsilon mind was mature at ten, the Epsilon body was not fit to work till eighteen. Long years of superfluous and wasted immaturity. If the physical development could be speeded up till it was as quick, say, as a cow’s, what an enormous saving to the Community!” (Huxley 1998, p. 15).

For consumption to increase, consumers cannot spend their time on pursuits that do not require the manufacture of goods: “A love of nature keeps no factories busy” (Huxley 1998, p. 23). The economy of Huxley’s world, inspired in part by Henry Ford’s assembly line, bases its strength on consumption, as “that’s the price we have to pay for stability. You’ve got to choose between happiness and what people used to call high art. We’ve sacrificed the high art” (Huxley 1998, p. 220). Society, then, abandons individual interests and pursuits. Instead, everyone’s time is spent on

production and consumption of the goods and services approved by the state. But it is not only art that suffers: “Science is dangerous; we have to keep it most carefully chained and muzzled” (Huxley 1998, p. 225). Changes in technology would inevitably disrupt the status quo.

In both dystopian works, production is organized by the state rather than by individuals. There are certain injustices and inefficiencies which private industry will not necessarily address; absent regulation, it is not in a company’s best interest to manage pollution. That is where government comes in. But as Orwell, Huxley, and especially Rand have warned: when the government overmanages, citizens lose their freedom, harming both culture and the economy.

#### 24.6.2 *Property Law*

For property rights to exist, they must be recognized by government. Without some system to verify and recognize property, anyone could claim ownership of anything, leading to endless disputes. Indeed, property owners historically *were* the government (feudalism) or directly elected the government (early America).

In *Stranger in a Strange Land*, Robert A. Heinlein depicts a human raised by Martians as he visits Earth for the first time. Heinlein imagines a drought-stricken planet in which the Martians must “share water and grow closer” (Heinlein 1987, p. 289). As a result of the planet’s environment, the “Martians seemed to have defeated death, and they seemed not to have money, property, nor government in any human sense” (Heinlein 1987, p. 142). The protagonist, then, views property far differently from Earthlings: “Nor do I regard that wealth as ‘his’; he didn’t produce it. Even if he had earned it, ‘property’ is not the natural and obvious concept that most people think it is” (Heinlein 1987, p. 185). Although Heinlein demonstrated clear conservative views in his fiction, he did value aspects of fictional societies that did not match his own politics.

As the protagonist impacts Earth, he has no intention of eliminating property rights: “No, money and property will not disappear—Michael says that both concepts are useful—but they’re going to be turned upside down and people will have to learn new rules (the hard way, just as we have) or be hopelessly outclassed. What happens to Lunar Enterprises when the common carrier between here and Luna City is teleportation?” (Heinlein 1987, p. 400). New technologies and other changes can significantly alter the value of certain property.

In *The Dispossessed*, the protagonist travels from a communist world to a capitalist society on a twin planet. There, he sees that capitalism “made the superb cars and comfortable trains. The lure and compulsion of profit was evidently a much more effective replacement of the natural initiative than he had been led to believe. ... [He] could see how efficiently a propertarian economy ran its manufacturing and power supply” (Le Guin 2006, pp. 82–83). Capitalism clearly promotes innovation and production, as it rewards individuals for their contributions, allowing the best ideas—rather than those the government or culture chooses—to succeed.

With a completely “flat” society, “[w]e have no states, no nations, no presidents, no premiers, no chiefs, no generals, no bosses, no bankers, no landlords, no wages, no charity, no police, no soldiers, no wars. Nor do we have much else. We are sharers, not owners. We are not prosperous. None of us is rich. None of us is powerful” (Le Guin 2006, p. 300).

However, promoting equity, in which outcomes are the same, often means harming those who might succeed. Progress is stifled. In *Children of Men*, James notes that “equality is a political theory not a practical policy” (James 2006, p. 7). Allowing individuals to succeed beyond their peers can lift all of society, even when it allows inequality. This is the classic trade-off between equity and efficiency.

Back on the communist world of *The Dispossessed*, “[m]ost refectories served dessert once or twice a decad [ten-day week]. Here it was served nightly. Why? Were the members of the Central Institute of the Sciences better than other people? ... He weighed the moral discomfort against the practical advantage, and found the latter heavier. ... The responsibility justified the privilege” (Le Guin 2006, pp. 111–112). Ideas of communism quickly break down as a certain privileged class justifies greater and greater rewards. Do those who work more deserve more food? This concept evolves for the protagonist, as he sees the value in an “economy based on the principle that each worker is paid as he deserves, for the value of his labor—not by capitalists whom he’s forced to serve, but by the state of which he’s a member!” (Le Guin 2006, p. 135). Here, he seems to shift to believing not that a pure free market can provide just compensation—he sees that often it does not—but that a market with some government intervention can do so.

On the capitalist world, he observes, “The rich are very rich indeed, but the poor are not so very poor. They are neither enslaved nor starving” (Le Guin 2006, p. 341). Modern China did not achieve explosive economic growth until the communist government allowed individuals

to prosper, including the development of a middle class. While capitalism has flaws, its incentives match human nature.

Capitalism allows the ambitious to prosper, but it will not provide a safety net in and of itself. The protagonist observes this dichotomy: “Because there is nothing here but States and their weapons, the rich and their lies, and the poor and their misery. There is no way to act rightly, with a clear heart, on Urras. There is nothing you can do that profit does not enter into, and fear of loss, and the wish for power. You cannot say good morning without knowing which of you is ‘superior’ to the other, or trying to prove it. You cannot act like a brother to other people, you must manipulate them, or command them, or obey them, or trick them. ... I know it’s full of evils, full of human injustice, greed, folly, waste. But it is also full of good, of beauty, vitality, achievement. It is what a world should be! It is alive, tremendously alive—alive, despite all its evils, with hope” (Le Guin 2006, pp. 345–346).

Le Guin does not take a side on the political debate. Instead, she highlights the flaws of the various systems. But she shows that deviating slightly from the rigid theories—allowing some government intervention into the otherwise free market—can work under certain circumstances.

### 24.6.3 *Capitalism, Socialism, and Communism*

Le Guin surmises that a harsh environment necessitates a communal society to survive: “This planet wasn’t meant to support civilization. If we let one another down, if we don’t give up our personal desires to the common good, nothing, nothing on this barren world can save us. Human solidarity is our only resource” (Le Guin 2006, p. 167). This conclusion is reasonable; given such a challenge, the circumstance could be overcome only by cooperation.

Robert A. Heinlein, on the other hand, takes the opposite approach. In *The Moon is a Harsh Mistress*, a more-anarchistic society emerges on a lunar penal colony. Under such harsh conditions, Heinlein supposes that only a society that rewards individual behavior could thrive. Thus, he uses this setting to promote libertarian ideals: “There is no worse tyranny than to force a man to pay for what he does not want merely because you think it would be good for him” (Heinlein 2018, p. 308). When resources are limited and survival is difficult, taxes deprive individuals from making their own decisions. Instead, the government spends in ways that might benefit some citizens over others.

Of course, what if the economy is poorly managed? “But the solution is so simple that you all know it. Here in Luna we’re rich. Three million hardworking, smart, skilled people, enough water, plenty of everything, endless power, endless cubic. But... what we don’t have is a free market. ... Authority charges too much for water, don’t buy. It pays too little for ice, don’t sell. It holds monopoly on export, don’t export. Down in [Mumbai] they want wheat. If it doesn’t arrive, the day will come when brokers come here to bid for it—at triple or more the present prices!” (Heinlein 2018, p. 22). Leadership does not always act in the best interest of its stakeholders. If leaders act for their own personal gain, they may make deals that harm those whom they represent, for example, taking kickbacks in exchange for an uneconomical deal.

Even in a democracy, certain classes form: “A managed democracy is a wonderful thing ... for the managers ... and its greatest strength is a ‘free press’ when ‘free’ is defined as ‘responsible’ and the managers define what is ‘irresponsible’” (Heinlein 2018, p. 259). The political class is perceived to be hypocritical and entitled. In our world, elected and appointed politicians often engage in business with lobbyists after stepping down from government.

Even though governments uphold laws, individuals do not always follow them: “I will accept any rules that *you* feel necessary to *your* freedom. *I* am free, no matter what rules surround me. If I find them tolerable, I tolerate them; if I find them too obnoxious, I break them. I am free because I know that I *alone* am morally responsible for everything I do” (Heinlein 2018, p. 78). Some of the modern economy occurs outside of government oversight. People transact in cash or cryptocurrency, avoiding sales and income taxes and engaging in illegal transactions.

Philip José Farmer’s novella *Riders of the Purple Wage* creates a setting closer to the modern world, in which all citizens receive a universal basic income—a traditional political goal of progressives. As technology develops the means to automate the production of necessities, a human labor force may not be needed to provide basic goods: “There is no more starvation or want anywhere, except among the self-exiles wandering in the woods. And the food and goods are shipped to the pandoras and dispensed to the receivers of the purple wage. The purple wage. A Madison-Avenue euphemism with connotations of royalty and divine right. Earned by just being born” (Farmer 1972, p. 89).

By providing these goods to consumers, the government can insert itself into the most basic transactions. Money would not be needed: “Actually, the money has no value now except as collector’s items. Shortly after the theft, the government called in all currency and then issued new bills that could not be mistaken for the old” (Farmer 1972, p. 128). By controlling currency, governments can monitor the activities of its citizens. Farmer wrote *Riders of the Purple Wage* before credit cards were commonplace (allowing easier surveillance); but, with digital currencies, electronic transfer, and other financial innovations, the possibility of physical currency becoming obsolete is real.

On regulation, Farmer describes a gray area thanks to corruption: “The [government] has no overt objection to privately owned taverns, run by citizens who have paid all license fees, passed all examinations, posted all bonds, and bribed the local politicians and police chief. Since there is no provision made for them, no large buildings available for rent, the taverns are in the homes of the owners themselves” (Farmer 1972, p. 95). People act in their own self-interest, not at the whims of government. Central planning goes against human nature. A system that embraces human nature might do better than one that tries to suppress it. Again, a nod to Ayn Rand!

By crushing innovation, the government dooms the general population to survive on welfare, while the political class can remain comfortable and in power: “The officials and workers were getting relatively high wages, but many citizens had to be contented with their guaranteed income” (Farmer 1972, p. 128). Equality (among the masses), then, is achieved not by raising people up, but by keeping them down.

In some localities (Chicago, New York, etc.), public employees earn more than the average constituent, who pays the taxes that support them. Public unions support political candidates who in turn agree to employment terms that benefit the union members. Without judging whether this is right, there is certainly the risk of a two-tiered economy in which public employees enjoy greater prosperity at the expense of working-class taxpayers.

Note that consumption-based economies are not tied to capitalism. Even a socialist welfare state like Farmer’s is based on consuming goods to appease the masses.

In an early work of science fiction from 1895, H. G. Wells warns of the dangers of *both* capitalism and communism. The Eloi society the time traveler first experiences seems like a communist utopia, but he eventually



learns the truth: “The too-perfect security of the Upper-worlders had led them to a slow movement of degeneration, to a general dwindling in size, strength, and intelligence” (Wells 1996, p. 49). The time traveler learns that the Eloi people have a symbiotic relationship with another people, the Morlocks. These workers manufacture goods for the Eloi, who are then sacrificed as food for the Morlocks. The allegory epitomizes the dangers of capitalism—a working class doomed to serve machines metaphorically and literally underground—while also showing how a communist society can stifle innovation and lead to societal regression.

Wells does not seek to convince the reader how to judge societies, or of what system works best. Instead, he highlights the dangers and pitfalls. Communist ideals often oversimplify human nature, just as *laissez-faire* capitalism leaves individuals and communities vulnerable to economic shifts and negative externalities. Fortunately, economic systems can be tweaked; fiction, in this case, provides some warnings to identify these nuances.

## 24.7 ALTERNATE HISTORY

History is not an experimental science. Historical data cannot as easily expose flaws as can fiction. That is because history is limited to what has already happened.

Science fiction often modifies one technology or event outside the world’s *current* trajectory and then extrapolates from that. Alternate history does something similar, but from the distant or not-so-distant *past* into the future.

Some alternate history might result from changes in technology, altering timelines or the people involved. Other counterfactual history can result from reasonable changes based on probability. Outcomes are not deterministic, and small random factors can impact history.

### 24.7.1 *Economic Cost (and Benefit) of War*

Outcomes of war represent major historical events; thus, swapping the winners and losers makes for interesting fiction. Technology has played a pivotal role in multiple wars, with the historical ultimate being the atomic bomb in World War II. This technology extended past the war and into the development of nuclear power.

In *The Guns of the South*, Harry Turtledove gives the South a technological advantage in the Civil War. Consequently, slavery was not abolished as early: “The Confederate constitution enshrined the right to own slaves and trade them within the nation’s borders. The Southern economy rested on the backs of its black labor force. But a lot of people who could never have stomached the butcher’s trade ate meat” (Turtledove 1993, p. 199). Historically, while slavery was prevalent in America, it also benefited European colonial powers directly. For example, Belgium exploited enslaved persons in the Congo, out of sight of its domestic citizens.

Ward Moore’s short story *Bring the Jubilee* occurs in an alternate timeline in which the South similarly won the Civil War. In Moore’s story, the North and South become two disparate nations, with the North struggling to recover: “But the Peace of Richmond had also laid the cost of the war on the beaten North ... The postwar inflation entered the galloping stage ... and precipitated the food riots of 1873 and ’74” (Moore 2001, p. 153). With the antebellum North’s economy centered on industry, while the South’s on agriculture, the North had to rely on imports for basic survival, reducing the value of its own goods and services. Once again, an author presents a cautionary tale of inflation.

Although the North specializes in manufacturing, “the great issue in [the North’s] Congress was the never-completed Pacific transcontinental line, though Canada had one and the Confederate States seven” (Moore 2001, p. 155). An economy cannot function well under uncertainty. The Civil War’s actual outcome was necessary to prevent the “pervasive fear of imminent war” (Moore 2001, p. 172) that would have stopped progress. The alternative would have been a two-state solution, with the threat of war always imminent. A unified America helped usher in prosperity.

Indeed, as the protagonist ultimately travels back in time, he observes that “[a]ny one of the inventions of my own time would make me a rich man if I could reproduce them” (Moore 2001, p. 247). A lot of value was created through continued innovation after the Civil War. Would it have still occurred as quickly if the threat of war had dragged on?

Moore also presents the oft-forgotten issue of indentured servitude: “Indenting’s pretty strictly regulated. That’s the idea, anyway. You can’t be made to work over 60 hours a week—ten hours a day. With \$1,000 or \$1,200 you could get all the education you want in your spare time and then turn your learning to account by making enough money to buy yourself free” (Moore 2001, p. 165).

Although slavery and indentured servitude might appear to provide cheap labor that would increase overall production, they force people into roles not based on their talents or motivation, which cannot help productivity.<sup>11</sup> Slavery limits collaboration and becomes little different from a centrally planned economy: the slaveowners rather than government make the decisions regarding work.

Other wars have had similarly large impacts on the United States and its economy. Philip K. Dick paints an alternate history in *The Man in the High Castle*, in which the Axis powers won World War II, dividing the United States between Japan and Germany. In this scenario, much of the United States was destroyed, as Europe had been in reality: “This is just the sticks to you, the Rockies. Nothing has happened here since before the war. Retired old people, farmers, the stupid, slow, poor ... and all the smart boys have flocked east to New York, crossed the border legally or illegally. Because, she thought, that’s where the money is, the big industrial money. The expansion. German investment has done a lot ... it didn’t take long for them to build the U.S. back up” (Dick 1988, p. 30). With America divided, and the Rockies a neutral zone, opportunity exists only on the coasts, thanks to trade and capital flows.

In reality, the continental United States was untouched in the war. The United States then benefited from rebuilding Europe, just as fictional German investment did in Dick’s work. And instead of the United States being divided, Germany was divided. Dick also references how individuals sought opportunity across borders. In the same way, many people in East Germany illegally crossed (or attempted to cross) the Berlin wall.

### 24.7.2 *Historical Impact of Government*

As governments have changed, they have often contributed to instability and unpredictability. A change in rule, as often occurred during the Middle Ages, impacted everyone from vassals to lords.

In *The Alteration*, Kingsley Amis imagines history without the Reformation. With governments continuing to answer to the Catholic Church, innovation became stifled: “[Diesel] ignition was achieved merely by compressing petroleum vapour to a certain density, without the introduction of a spark. ... electricity was appallingly dangerous, both as it existed and as it might be developed. No wonder its exploration had never received official encouragement, nor that persistent rumours told of such exploration by inventors in New England” (Amis 1976, p. 8).

When governments discourage certain technologies and enforce arbitrary laws, the economy undoubtedly suffers.

In the case of the Church, there is plenty of historical evidence to suggest Amis's fiction could have been a reality under different circumstances. Galileo Galilei spent the end of his life under house arrest after being tried by the Roman Inquisition, which also banned books by scientists such as Nicolaus Copernicus. Had the Catholic Church grown in its power, rather than losing some to Protestantism, such arrests and bans would have curbed innovation. Because technology drives economic growth, Europe would have fallen economically behind the rest of the world.

Kim Stanley Robinson's *The Years of Rice and Salt* creates an extreme alternate history, in which the Black Death wiped out nearly all of Europe's population rather than only the historical one-third, enabling other peoples of the world to spread into Europe and the Americas. Islam would have become a larger force globally, as more nations would have been majority Muslim. Of course, Islam is analogous to the broad religion of Christianity: just as Catholicism does not represent all of Christianity (unlike in *The Alteration*, of course), Islam is itself divided into factions such as Sunni and Shia. For the purposes of diplomacy, however, other nations might consider all those nations a singular bloc:

The whole of Islam was accused of breaking the commitments forced on them at the Shanghai Conference after the war, as if Islam were a monolithic block, a laughable concept even in the depths of the war itself. Sanctions and even embargoes were being called for in China and India and Yingzhou. The effect of the threat alone was felt immediately in Firanja: the price of rice shot up, then the price of potatoes and maple syrup, and coffee beans. Hoarding quickly followed, old wartime habits kicking in, and even as prices rose staples were cleared off the shelves of the groceries the moment they appeared. This affected everything else as well, both food and other matters. Hoarding was a very contagious phenomenon, a bad mentality, a loss of faith in the system's ability to keep everything running; and as the system had indeed broken down so disastrously at the end of the war, a lot of people were prone to hoard at the first hint of a scare" (Robinson 2002, p. 556).

In this case, the actions of foreign governments have immense impact on the Muslim world. Shortages do lead to further shortages due to hoarding (example: some commodities during the COVID-19

pandemic), as individuals make rational decisions based on past experience. Threats of international action, such as the proposed embargoes in Robinson's novel, are enough to move markets.

Comparable actions have affected actual history. OPEC has historically represented most international oil exports. Consequently, OPEC can control prices by adjusting output. But not all its members follow agreements to restrict production. The threat is often enough to have the desired effect on prices.

The television show *For All Mankind*, produced by Ronald D. Moore, imagines the past and future of space exploration if the Soviet Union had landed on the Moon prior to the United States. This outcome would have prolonged the space race and had a variety of social and economic consequences. In the show, these changes accelerate the civil-rights movement while advancing the technical capabilities of both the Americans and Soviets. From an economic perspective, what would have happened if the United States government had continued spending significant resources on space exploration? The benefits of such spending are difficult to predict; scientific breakthroughs can benefit the entire terrestrial economy. The Apollo missions, for instance, led to advances in computing technology used in virtually every industry today.

### 24.7.3 *Parallel Worlds*

Larry Niven's *All the Myriad Ways* imagines a multiverse in which every individual's decision creates a fork of two parallel worlds, resulting in an exponential number of universes with vastly different levels of technology: "The Crosstime Corporation already held a score of patents on the inventions imported from alternate time tracks. Already those inventions had started more than one industrial revolution" (Niven 2001, p. 101). From a broad economic perspective, the innovation borrowed from parallel worlds could be positive. What if certain technologies replaced entire industries to good effect?

But the impact on individuals was different. For a pilot who traveled across alternate realities, for example, his "own world continued to divide after his departure, in a constant stream of decisions being made both ways" (Niven 2001, p. 104). Experiencing such a phenomenon led to suicides as people realized that if "alternate universes are a reality, then cause and effect are an illusion. The law of averages is a fraud. You can do anything, and one of you will, or did" (Niven 2001, p. 106).

Such a breakdown would have consequences as people did not see risk-reward and cause-effect in the same rational light. Economic theories tend to assume people act rationally on average, but a revelation about reality—even if untrue—can cause mass changes in behavior, breaking down theoretical models.

The Sterling-Shiner story *Mozart in Mirrorshades* (a reference to Mozart adopting the fashion of the future) depicts a future civilization of people who travel to the past of an alternate timeline to acquire natural resources, artifacts, and art. A fictionalized Thomas Jefferson says to the time travelers, “You made certain promises when we joined forces. You guaranteed us liberty and equality and the freedom to pursue our own happiness. Instead we find your machinery on all sides, your cheap manufactured goods seducing the people of our great country, our minerals and works of art disappearing into your fortresses, never to reappear!” (Sterling 2001, p. 300). This accelerated transition of technology in the past shows how some of the most-valuable goods were already present in the past. A slow transition, as done with history, masks some of the negative consequences and potential externalities of economic expansion.

Trade between the past and future has always occurred, in a sense: for instance, those who own works of art sell them for currency that can be used to purchase modern goods. Similar trade between cultures has also occurred, with results such as those in the story. A conventional wisdom is that as China has flooded much of the world with cheap manufactured goods, its wealthier citizens have used the proceeds to purchase luxury real estate all over the world.

In his story *Eutopia*, Poul Anderson explores travel to parallel universes. The protagonist compares a parallel society to his own: “They kept the population within bounds in Westfall as in Eutopia. But not because they knew that men need space and clear air, Iason thought. No, they acted from greed ... A father did not wish to divide his possessions among many children” (Anderson 2001, pp. 257–258). Overpopulation is an issue explored in several aforementioned stories. In this case, Iason observes a natural correction to it, thanks to the greed (or, more generally, self-interest) innate to humans. While modern societies allow people to dictate how their assets are distributed after death, there have been nations where, for example, the law passes all possessions to the first-born son. In fictional Westfall, possessions are evenly divided among the heirs. This system of inheritance influences how individuals act.

Anderson makes an important point: “Society must have structure and meaning. But nature does not dictate what structure or what meaning” (Anderson 2001, p. 266). Many of society’s rules and norms are arbitrary, but adherence to such convention as exists is not arbitrary; for instance, while driving on the right side of the road is an arbitrary decision of government, the need to standardize a side is not.

However, sometimes choosing a particular side does make sense. If a race of people were physically asymmetrical, as are the aliens in *The Mote in God’s Eye*, one side of the road could very well be safer than the other, based on their anatomy.

Just because some custom or law has a purpose does not mean it is the ideal one. A monetary system is clearly helpful for an economy, as it allows transactions to occur more easily. But which monetary system works best? Commodity-backed currencies have given way to fiat money. Some argue “precious-metals”-backed currencies are superior because they do not allow inflation; but what happens when a gold-rich asteroid comes close enough to Earth that humans can mine it? What if a cheap technology can act as the philosopher’s stone, transforming common lead into gold? In that case, the gold-backed currency could become extremely devalued due to an oversupply of precious metals.

Studying different civilizations—foreign, historical, and yes, even fictional—is important. Certain arbitrary conventions could be impacting the economy in ways that were never apparent in the past but are transparent in science fiction.

#### 24.7.4 *History Repeated in the Future*

Because most authors write in response to the world around them, the events and societies they depict often mirror those in which they live. Thus, futuristic science fiction depicts aspects of history repeating in the future: *A Canticle for Leibowitz* was based on the bombing of a monastery during World War II; *The Forever War* inspired by the Vietnam War; *District 9* an extension of District Six during South Africa’s period of apartheid.

Other works have predicted history *before* it happened. In *The Gods Themselves*, Isaac Asimov postulates a technology that takes advantage of differences in physics between two parallel worlds, generating seemingly free energy. But when scientists learn the transfer between universes could result in a collapse of the Sun, a Senator says, “Don’t ask me to stop the

Pumping. The economy and the comfort of the entire planet depend on it. Tell me, instead, how to keep the Pumping from exploding the Sun” (Asimov 1972, p. 56).

Modern society has become dependent on burning fossil fuels for electricity, while resources are both limited and a cause of climate change. The international goal of drastically reducing carbon emissions is not realistic with current technology. Electrifying all cars—a stated goal of various countries—would require an abundance of rare-earth metals that would create their own pollution. We suggest that no single action will solve the climate crisis. The solution will result from some combination of reducing emissions, shifting energy sources, capturing carbon from the air, and other changes—including some that have not yet been imagined outside of science fiction!

Asimov could not have seen today’s climate crisis or energy squeeze: *The Gods Themselves* was published in 1972, just before the gas shortages. But Asimov did understand the concept of “no free lunch”: there are potential externalities in many transactions.

After his death, Asimov’s estate authorized other authors to publish a Second Foundation trilogy. In *Foundation’s Triumph*, David Brin presents a philosophical discussion between two of Asimov’s most-famous characters, the psychohistorian Hari Seldon and the robot R. Daneel Olivaw: “A certain faction of humans will always seek power over others. ... We inherit this trait because those creatures who succeeded often had more descendants. ... In ancient China, a powerful emperor could be relied on to check noble excesses. ... The peaks and lows of aristocratic families made gaudy headlines, diverting the galaxy’s masses, but ... practical governance was left in the hands of meritocrats and civil servants. In psychohistorical terms, this was called an attractor state. In other words, society had a natural sink into which the power-hungry were drawn, fostering their preening illusions without doing much real harm. It had worked well for a long time in the Galactic Empire, much as it did in pretechnical China” (Brin 2000, p. 88).

Too many socioeconomic systems fail because they expect humans to act against their own nature. Brin recognizes a potential evolutionary trait that might have led to survival in ancient times but could be detrimental to a modern society. A stable civilization would depend on a political system in which those seeking power do not alter the operations affecting the broader society.



The conversation continues: “The Chinese created a special class of authorities who could only be loyal to the empire, and not to their own descendants. Because they would never have children ... And an analogy in the modern Galactic Empire was obvious ... Positronic robots programmed to think only of humanity’s good” (Brin 2000, p. 90). While modern society is not about to bring back eunuchs, and robots are far from advanced enough to play any administrative role, individuals’ motivation to serve their children and descendants could be curtailed through laws and other incentives. In general, as already noted, officials’ self-centered intentions are often at odds with their fiduciary duty to their constituents.

Once again, these individual motivations are potentially evolutionary. Humans who provided for their descendants’ survival were more likely to have their genes carried forward by those descendants. Even if this logic is false, a political and economic system that rewards individuals directly for beneficial contributions is likely to thrive and serve the wider population. A system that limits the concentration of power does not utilize resources, particularly human capital, to maximum efficiency. The equity-efficiency trade-off again!

Ensuring that wealth and power do not become more concentrated in the future is a worthy goal. Most countries have laws that tax income and inheritance, while encouraging spending in positive ways through philanthropy. Of course, maintaining a balance that rewards innovation against long-term power—or, more generally, the balance between equity and efficiency—is difficult. Reality is complicated; no model can fully capture it—nor can an anecdote via a story. Yet finding that balance is essential for the viability of a society. And studying both actual and imagined reality is a useful tool to do so.

## 24.8 WHY SCIENCE FICTION MATTERS

From the innovative technologies that would allow Isaac Asimov’s *Foundation* to happen in the distant future, to the repeat of history examined in David Brin’s sequel that continued Asimov’s legacy, some component of economics plays a role in nearly every speculative story. In the end, psychohistory does not exist; there is not some statistical model that can predict any trend with near-certainty. Economics, too, does not provide some unified model that policymakers or businesses can depend on to make decisions affecting broad swaths of the population. Theories

are just that: hypotheses subject to assumptions and initial conditions. Without adjusting those assumptions or understanding initial conditions, no theory is fit to be put into practice.

Science fiction, then, provides an abundance of thought experiments that twist the assumptions inherent in economic theory and practice. Economics uses models that approximate reality; but that reality is constantly shifting, and human nature has not been fully captured by any model. With history limited to a finite set of data, fiction expands on the tools available to academics and practitioners. Science fiction deals in potentially infinite alternate realities, ranging from natural extensions of human society—counterfactual history and tales of the near future—to those in the distant future across the galaxy.

From future changes in technology to the reimagining of historical events, theoretical tweaks to society lead to economic consequences. Available data are limited, and no experimental economics can be truly independent of the status quo. With human nature not fully understood, individuals' actions can vary in unpredictable ways. Authors may not comprehend human nature better than sociologists, but they can find exceptions to average behavior (unique actions make for good storytelling). Ultimately, economies and societies are not determined by averages: they are driven at the margins.

In today's politicized environment, where ideology can override common sense, science fiction is more important than ever. Even under ideal circumstances with best intentions, policies affect behavior in ways not easily predicted by data. We suggest that policymakers study science fiction to reduce inefficiencies and minimize disruption caused by their policies.

Science fiction can make policy more realistic because it imagines what can go wrong. Assuming the best-case scenario does not lead to best-practice legislation.

Like any thought experiment, a fictional story can never prove a theory true. However, it is an extremely useful tool to assess possible futures and their implications on decisions today. By becoming more versed in potential unintended consequences, economists working on policy and business can craft decisions the better to achieve objectives. While speculative fiction may provide many incorrect predictions of the future of humanity, its study could help ensure society's future prosperity.

## NOTES

1. We are not sharply distinguishing among “alternate history,” “counterfactual history,” and “speculative history;” nor are we exploring the development and methodologies of these genres. There is a substantial literature, among which we suggest Bunzl (2004), Turtledove (2001), McCloskey (2020), and Wikipedia (2021a).
2. Related works, not with our focus, are Evans (2013), Davies (2018), and Westfahl et al. (2020).
3. Officer (2019, 2002).
4. Needless to state, we are abstracting from the costs borne by the indigenous population in the Americas and by the enslaved persons brought from Africa therein. The conventional narrative (including here) of colonization of the Americas and American “manifest destiny” does not take these costs into account, but they are opportunity costs nevertheless.
5. The analogy to the mistreatment of the indigenous and enslaved people of the Americas is obvious.
6. Wikipedia (2021b) and data.worldbank.org.
7. <https://fred.stlouisfed.org/series/LNS11300002>.
8. Wikipedia (2021c), Tabuchi (2022). In all these cases, other geopolitical factors were also involved.
9. Vandenbroucke (2020).
10. This passage is a rudimentary analysis of inflation, for lack of space and for a straightforward correspondence with the the science-fiction coverage—a comment that applies to the other economic concepts in the chapter.
11. To say nothing of the dehumanization of enslaved persons.

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