

The Matrix: The Intersection of War, Economic Theory, and the Economy

Introducing the Matrix

Whether you realize it or not, an intricate Matrix, resulting from the interactions of war, the economy, and economic thinking, creates a powerful force field that affects almost everything you do. Although the considerations of the relationship between war and the economy are common, the connection between economic thinking and war might seem less obvious. However, economics often serves as a bridge between the other two pillars of the Matrix. Almost unintentionally, in the seventeenth century, modern economics began to take shape largely in response to questions raised by the need to finance wars.

This Matrix forms the basis of an intricate neural network of variously configured and interconnected nodes, which is neither ordered nor random. It includes everything from large structures, such as states, societies, institutions, and the means of production, down to the smallest components. Modern technologies of information, communication, and transportation exponentially multiply the interconnections, increasing the complexity of this network.

The result is an intricate architecture of power -- power over other governments, over people, and even over their consciousness. However, such direct power relations are embedded within the physical laws of nature. In addition, layers of social relations consisting of the legal structure, the preexisting distribution of wealth, culture, and ignorance affect these power relations. These secondary forces confine some people to the lower reaches of the Matrix, while elevating others.

Within the Matrix, simple actions set off impulses. Some might have

trivial effects; other impulses can course through the Matrix, along the way, creating new nodes or destroying existing ones. Such impulses will also be likely to interact with a host of others coming from elsewhere in the Matrix, possibly setting off a cascade of unintended responses. Of course, more powerful people tend to set off more powerful impulses.

The Matrix singles out three man-made pillars: War, the Economy, and Economic Thinking, each of which are embedded in the natural world, upon which life depends. The Matrix explores the complex and dangerous interactions between these pillars and the natural world. Because of the complexity of the Matrix, knowledge about these pillars is limited and misinformation common. Yet, within all three pillars, people in authority tend to act with unwarranted confidence, often with calamitous results.

Democracy offers the best defense against calamity. Democracy means more than periodically voting for a lesser evil. The essential ingredients of democracy are information, trust, and a sense of community. Information requires an open government, a responsible press with a primary objective making people in authority accountable. Trust only flourishes in an environment where openness makes people in authority act in the public interest. Such an environment might help to promote a sense of community, but a broad conception of community will be important -- a community that transcends traditional geographical, social, and ethnic boundaries.

Unfortunately, capitalism as we know it, erodes democracy. People in power have their own priorities. They do everything possible to prevent even the slightest challenge to their virtually unchecked authority and privilege. Toward that end, they promote a culture of distraction, which propagates

distrust, singling out powerless groups -- unwed mothers, undocumented immigrants, Blacks, Muslims, etc., while treating anyone who dares to question them with contempt, unless they seem to gain too much influence. In that case, they might face more serious threats. Perhaps the greatest achievement in this regard was channeling the anger over the Bush administration's bailout of the banks into the energy of the Tea Party, which supports those who support the banks.

In this environment, factionalism takes precedence over community and information gives way to public relations. This strategy leaves most of the population too fearful, angry, and confused to organize together to effectively demand any real social progress. Except during those brief times when the Matrix erupts and people in power must make temporary concessions, the social structure remains unaltered and any dreams of democracy remain unfulfilled.

A Brief Look at the Human Element

In short, the Matrix evolves through the unanticipated results of countless individual actions. Of course, even if the initial command seems to be successful in achieving its purpose, it could also produce either positive or negative feedbacks -- or even contradictory feedbacks that partially cancel each other.

Edward Norton Lorenz, an American mathematician and meteorologist, who worked for the United States Army Air Corps during World War II, realized that analysis of weather conditions was impossible. Events that are too small to notice can have a significant impact. He famously proposed that a butterfly wing flapping in Brazil could conceivably set off an extreme weather event elsewhere in the world. Lorenz's work helped to create the mathematical theory

of chaos, which emphasizes the unpredictability of natural forces.

Following Lorenz, modern weather forecasters take the results of a number of different prediction models, and then make their prediction based on something like an average of the outcomes of different models.

Unlike the weather, which follows the laws of physics, the force field of the Matrix is a product of the unpredictable effects of human actions. Poorly-understood emotional responses have powerful effect on the human brain. Personal behavior exponentially amplifies the degree of unpredictability. Scientists who study the brain's neural networks are just beginning to get a handle on understanding how simple electrical impulses or chemical changes in the brain can lead to complex outcomes.

One might imagine someone telling a seemingly innocuous lie, calling for another to avoid embarrassment, finally spinning into a web of deceit that is the undoing of the liar; or how a whiny child may frustrate an-otherwise-powerful parent, who later may act impulsively on the job, setting off a series of serious unintended consequences.

In some exceptional moments, even the personal actions of the powerless can spark global change. For example, on 17 December 2010, Tarek al-Tayeb Mohamed Bouazizia, a Tunisian street vendor, was angry because of the confiscation of his goods, as well as the harassment and humiliation inflicted upon him by a municipal official and her aides. Lacking any other means to express his frustration, he set himself on fire. The resulting demonstrations and riots, including several more acts of self-immolation, amplified his initial protest, making it the catalyst for the Tunisian Revolution, which then sparked the Arab Spring.

Bouazizia's protest is doubly unusual. Not only did his individual action set off global changes, but, in this case, we can identify the particular "butterfly" responsible for the upheaval.

In describing what triggers economic crises, Karl Marx, anticipating Lorenz, suggested that some event "by acting like a feather which, when added to the weight of the scales, suffices to tip the oscillating balance definitely" (xxx Marx 1967; 3, p. 571). Marx's metaphor, like Lorenz's, was meant to imply that the identification of first causes be impossible. Even in the case of the Arab Spring, the common identification of Bouazizia might be mistaken. Perhaps, we should look to the municipal official or even a relative of hers to trace the impulse to its initial cause.

Of course, a trigger is only part of a cause. A trigger cannot fire without a loaded gun. Nor does an insignificant financial transaction cause a financial meltdown without a buildup of preconditions. In the end, the fact that one cannot identify the particular trigger or a particular financial transaction is irrelevant. Instead, one can say with relative certainty that all causes have multiple effects. In light of this warning, discussions of causality that follow will include an unstated caveat that many other factors affected the outcome.

Within the Matrix, we must understand that individual behaviors can affect numbers of people, escalating the degree of complexity. In this way, a single impulse within an individual brain conceivably could ultimately create a foreign policy crisis, significantly change the level of the Gross Domestic Product, or even ignite the Arab Spring.

Rather than looking back for first causes, what is needed is an

understanding that in a world vulnerable to myriad threats of serious destruction, resulting from military, economic, or environmental miscalculations, caution in engaging the Matrix is imperative. Several difficulties complicate that challenge. People generally overestimate their abilities. Sometimes they even engage in willful ignorance by blocking out unwelcome ideas. To make matters worse, those who sit near the core of the Matrix typically take pains to make their actions more opaque, either by withholding information or spreading disinformation so that they can operate with impunity.

Finally, disentangling the Matrix is made more difficult because impulse cascades can continue over extended periods of time. During that time, they will be interacting with other impulse cascades. Which impulse has what effect must remain a matter of speculation. For example, the consequences of wars from centuries ago may still be reverberating.

Thorstein Veblen, the American economist, coined the expression cumulative causation to address such long term effects. Knowledge of the complexity of cumulative causation might help to foster humility, which, in turn, might help to reduce the extent of reckless behavior. Three examples -- one from each pillar -- illustrate the fallibility of human behavior within the complexity of the Matrix.

Lacking a sufficient capacity for self-criticism, people, overestimating their intelligence, become susceptible to clever policies that promise quick solutions for difficult problems. The immediate relief of short-term symptoms might be a temporary source of pride, even though delaying or displacing the problem might only exacerbate the problem or create new ones. The latter case

might resemble the fate suggested by the example of the liar -- leading to a series of problems, like a game of whack-a-mole.

Economists and the Matrix

In effect, economics rules out the human element by assuming that people are virtually superhuman. Consumers make choices that maximize their welfare when they spend their money, even though they are inundated with advertisements and peer pressure, besides lacking full information about the product their purchasing. Markets are able, at least on average, to assimilate all information about the present and the future in order to allocate investments efficiently. Because of this miraculous ability to make absolutely rational decisions, market stability is ensured so long as markets are left to their own devices. Although, markets do not display this degree of stability or efficiency, economists can trace any imperfections to outside interference, such as inappropriate monetary policy, regulations and labor unions.

Despite the ideological solidarity of the majority of contemporary economists who insist that markets display such efficiency, some earlier practitioners displayed sensitivity to the complexity and unpredictability of the Matrix. Here are four of them. The first, Adam Ferguson, is commonly credited with originating the concept of unintended consequences in the following passage: "If Cromwell said, [t]hat man never mounts higher, than when he knows not whither he is going; it may with more reason affirmed of communities, that they admit of the greatest revolutions where not change is intended, and that the most refined politicians do not always know whither they are leading the state by their projects" (Ferguson 1773, p. 205). Modern readers of Ferguson generally package his idea within the narrowest ideological

framework, suggesting that governments are ineffectual in improving the economy; that everything should be left in the hands of business, which can presumably accurately foresee the future. In light of the glue factory fire, Ferguson's insight will be put to wider use.

The second, Joseph Schumpeter, is famous for having popularized the concept of creative destruction -- the idea that the most successful entrepreneurs pursuing their own interests can promote prosperity by disrupting an economy. The Matrix suggests that Schumpeter's insight should be extended to destructive creativity. Here, we will treat war as more than wholesale slaughter; that war can also have positive unintended consequences, creating another meaning for the destruction in creative destruction. The ancient Greek philosopher, Heraclitus, hinted at this double meaning, writing, "Thy name is life, thy work is death." (In Greek, both the bow, an important weapon at the time, and life were synonymously called bios.). Two millennia later, the technology for casting church bells found a new use for what had been known as the "bell-metal" in the production of cannons. The historian, John U. Nef, beautifully recaptured this new instance of Heraclitus' irony: "The early founders, whose task had been to fashion bells that tolled the message of eternal peace -- contributed unintentionally to the discovery of one of man's most terrible weapons" (Nef 1963, pp. 28). The civilian sector also can even receive some benefit from wartime mayhem when lessons from battlefield medicine get taken up in general medical practice.

Schumpeter offers another dimension for understanding the Matrix. Following Marx, Schumpeter emphasizes the disruptive nature of new technologies. For example, freight transportation by wagons gave way to

canals, when they were available. Then railroads made canals mostly obsolete. Finally, trucks took over much railroad traffic. With each disruption, new industries sprung up to support the emerging technology, while industries associated with the declining technology experienced their own decline. None of these technologies were expected, but economists downplay the unexpected.

Frank Knight offers a third insight into our exploration of the Matrix by distinguishing between what he called uncertainty and risk. The latter can be measured statistically, while the former, like the rise of the Spanish Inquisition, defies rational calculation.

Risk is operative in flipping a coin or playing a game of dice, in which (assuming that the dice are unloaded) one knows in advance the chances of a particular result. In many other aspects of life, including investments, nobody has a clue about what the outcome might be. Because the Matrix is riddled with pervasive uncertainties, Knightian modesty becomes an important virtue in approaching the Matrix; overconfidence, doctrinaire thinking, and any other traces of hubris are likely to contaminate the process.

Economists eliminate the importance of the unexpected by assuming that the world follows what statisticians call the normal distribution. Knowing this distribution, as in the case of the dice, one can quantify risk and thereby eliminate uncertainty. This idea has proven especially destructive in the world of finance.

Benoit Mandelbrot was a mathematician who pioneered in the development of chaos theory. Mandelbrot also worked in economics, where he did the world a great service by showing that uncertainty was much more prevalent than economists had imagined. The natural world does not generally behave according

to a normal distribution. Instead of the familiar bell-shaped normal distribution, natural processes tend to follow a much more complex distribution, known as the Levy distribution, in which the least likely outcomes are more frequent. Moreover, Mandelbrot showed how even very simple mathematical process can produce unpredictable outcomes, meaning that the problem of uncertainty is greater than might have otherwise been assumed.

With human intervention, this degree of uncertainty multiplies. For the most part, Mandelbrot's insight was ignored because the Levy distribution made for more difficult mathematics. Mandelbrot's work brings to mind an observation of John Stuart Mill, perhaps the most influential economist of the mid-nineteenth century: "That all swans are white, was a uniform experience down to the discovery of Australia" (Mill 1872, Book II, Chapter vii, para. 2, p. 265). Later, Karl Popper renewed interest in Mill's observation, which later became popularized in Nicholas Taleb's treatment of black swans in the world of finance (Taleb 2007).

Mandelbrot's world seems to point in the direction of Schumpeter -- a world with frequent disruptions. Economists accept that side of Schumpeter, heaping praise on heroic entrepreneurs who create unexpected innovations. At the same time, they base their theories and their policies upon a vision of an economy in which stability is its natural state.

Another less mainstream economist introduced an important insight. Karl Marx emphasized the centrality of social relations -- not just the superficial relations between those who market goods and services and their customer, which constitute virtually the whole of economists' concern, but rather the whole gamut of social relations. This perspective offers important insight into the

human relations, which constitute the most intractable dimension of the Matrix.

Much of early economist's work developed in the course of searching for answers to questions raised by war. Of course, economists were not alone in this respect. Some of the greatest minds in history have turned their attention to warfare, mining the historical record in order to discover the most effective strategies of warfare.

In many cases, economists put aside their professional hats taking active rolls on the battlefield. Many others, however, have applied their analytic skills either to improve the effectiveness of the military or assist the government in handling the fiscal and logistical complications of conducting warfare. For example, economists helped to select bombing targets. Others worked closely on scientific missions (see Leonard 1991). Wartime experience proved important for many of the most important U.S. economists of the twentieth centuries.

Economists' wartime achievements increased their prestige, giving them far more influence. For example, Paul Samuelson, the first U.S. economist to win the Nobel Prize for Economics, wrote: "I do not wish to be misunderstood. It has been said that the last war was the chemist's war and that this one is the physicist's. It might equally be said that this one is an economist's war" (Samuelson 1944, p. 103). Building on their new-found reputation as experts, economists worked in government, helping to produce profound changes in business, the economy, and politics.

At the same time, economists' academic work became increasingly abstract, leaving aside the insights of Ferguson, Knight, Schumpeter and others, creating an enormous gap between their analysis and the world that they intended to

study. Both governments and business often took their cues from that abstract analysis, frequently with very negative consequences.

The next three short sections illustrate the way each of the three pillars can erupt in unexpected ways, beginning with war.

An Accidental World War

In the spring of 1754, the Lieutenant Governor of Virginia dispatched an inexperienced, 22-year-old officer to lead a group of militiamen, together with Native American guides, charged with delivering a message, warning the French commander on the Allegheny River, near Pittsburgh, to cease constructing forts. This young man had a special interest in the activities of the French because his family was speculating on Ohio Valley land. Before the officer and his small contingent reached his destination, they came upon a group of French troops, led by another junior officer who was sent to deliver a message, warning the Americans to leave.

This tiny node surrounding what should have been a routine diplomatic exchange, intersected with two others. First, France and England had been at odds since 1066, but that long-standing conflict might not have affected the Virginians' mission since the countries were not at war at this time. However, another conflict within the Native American World was at play. Tanaghrisson, the Seneca Half King, was having political difficulties. His position was supposed to empower him to exercise authority over the Six Nations. However, the Delawares rejected his authority. To rectify that humiliation, Tanaghrisson "desperately needed an ally to support him in ejecting the French from the newly built Fort Duquesne and regaining control over the Forks of the Ohio" (Anderson and Cayton 2004, p. 126).

Toward that end, Tanaghrisson induced the young officer to attack the sleeping French detachment of mostly Canadian troops. The results were not pretty. Following the brief and confused firefight between the Virginians and the surprised Canadians on May 28, 1754, Tanaghrisson took a hatchet and smashed open the skull of the young French Ensign who had been in command of the detachment. His warriors also slaughtered a dozen wounded. Realizing that their position was indefensible against the inevitable response to the slaughter, Tanaghrisson left with his men. As Tanaghrisson expected, the next day the colonial troops were overwhelmed, leaving one third of the Virginians dead or wounded. The French commander allowed the defeated Virginian officer to leave the area, but only after signing a document of surrender. Not knowing French, the inexperienced officer had not realized that he was also confessing his guilt in murdering the young French officer (Anderson and Cayton 2004, pp. 126-27).

This violent, but seemingly minor incident, took on a momentum of its own, escalating into what Americans know as the French and Indian Wars. To the rest of the world, it became the Seven Years War. In *A History of the English Speaking Peoples*, Winston Churchill's chapter on this war was appropriately titled, "The First World War" -- appropriate because the war went beyond Britain and France, engaging all the great European powers, including Prussia, Portugal, Spain, Austria, Russia, Holland, and Sweden in a bloody entanglement. Battles spread beyond Europe and North America to Central America, the Caribbean, the West African coast, India, and the Philippines.

Britain was victorious. After the Treaty of Paris marked the end of the war, Britain had expanded its empire in Asia, Africa, and the Americas. As

Churchill recalled: "At sea and on land England was mistress of the outer world" (Churchill 1957, p. 160). More dramatically, Horace Walpole, son of the former prime minister, ironically gloated:

##I shall burn all my Greek and Latin books; they are histories of little people. The Romans never conquered the world, till they had conquered three parts of it, and were three hundred years about it; we subdued the globe in three campaigns; and a globe, let me tell you, as big again as it was in their days. [Walpole 1762, p. 22]

Walpole is also often credited with having written an apt description of the exploding Matrix, "It was the volley fired by a young Virginian in the backwoods of America set the world on fire."

By the way, the young Virginian was none other than George Washington, whose Farewell Address famously warned, "Beware of foreign entanglements." Presumably, this advice owed something to a valuable lesson he gained from his blunder during his first taste of battle. However, with his country operating more than 1,000 foreign bases today, the probability of another explosion is fairly high. With that risk in mind, better that people today understand the Matrix before experiencing its potentially terrifying consequences.

An Economic Explosion

This explosion is trivial relative to a world war, but it does serve to illustrate how seemingly insignificant events can reverberate throughout the world. On 4 July 1993, fire destroyed a glue factory in Japan. The fire might have seemed uneventful, except that it produced a special kind of epoxy resin.

The basic product for a computer chip is a silicon wafer, which is useless without the capacity to allow signals to pass to and from a circuit board. A

plastic package allows the chip to make the necessary connections with the board. The industry relied on the specialized epoxy glue in producing these packages. At the time, this single Sumitomo Corporation plant manufactured the majority of the world's supply of this epoxy resin. About 60 percent of all memory modules depended upon this product.

Normally, the expense for glue would be inconsequential, considering that factories for producing computer chips cost around \$5 billion. Even if the Sumitomo plant was more efficient than its competitors, any cost reductions from concentrating so much production in a single plant would have been virtually imperceptible.

Yet this cost savings also created a degree of probably-unrecognized vulnerability. In this respect, business takes its lead from Monty Python: "Nobody expects the Spanish Inquisition." After the fire disrupted the supply of glue, dealers saw the cost of a megabyte of memory almost triple, from \$33 to \$95. The industry feared that prices would go even higher.

So here we have what must normally be a minor cost within the complex supply chain causing a sufficient disruption to treble prices. Even though the price spike resulting from the fire lasted for only a few months, it probably created losses equivalent to many decades of cost savings in an effort to take advantage of any special efficiencies in the Sumitomo plant.

The short-lived consequences of the Sumitomo fire were relatively trivial on a world-wide scale, but the fire clearly illustrates an important point about the increasing complexity of the world economy.

More complex systems can be more resilient so long as they include sufficient redundancies. When large parts of a system, such as an economy or a

natural environment, depend on a single node, the structure becomes vulnerable to unexpected disruptions. Ominously, the Matrix is becoming increasingly vulnerable.

Economics-Induced Economic Explosions

Economists' assumption of market efficiency rules out the possibility of unforeseen disasters. The Sumitomo fire serves as a reminder that the economic equivalents of the Spanish Inquisition occur much more frequently than expected. Nowhere has this shortcoming in economics approach done more damage than in finance.

Until the 1950s, the field of finance was largely descriptive although specialization in financial economics was just beginning. During the 1960s and 1970s, it was gathering momentum as it began to apply more sophisticated mathematical theory (see MacKenzie 2006).

Lawrence Summers, a professor at Harvard University, later to become the Secretary of the Treasury in the Clinton administration, then chief economic advisor in the Obama administration, and finally president of Harvard University, raised questions about the value of financial economics at the annual meeting of the American Finance Association in 1984. He compared financial economics to what he called, "ketchup economics" (Summers 1985). Traditional economists employed in the fictional government "Department of Ketchup" analyzed all the factors affecting the ketchup market. However, a small subgroup within the department, which earned much higher salaries, ignored all the factors affecting the ketchup market, assuming them to be irrelevant because the retail price of ketchup incorporates all the necessary information. However, despite Summers' stunning critique, financial economics

continued to become increasingly influential.

Financial economists published clever mathematical proofs that purport to show why financial markets are so efficient that market forces would provide sufficient regulation to prevent financial crises; that any effort to regulate financial markets would have no effect whatsoever, except to diminish market efficiency. Financial economics also developed equations, which purported to quantify risks in financial markets. These equations gave investors excessive confidence in their ability to navigate risk.

Summers, who should have known better, later became a devotee of financial economics. Along with Alan Greenspan, and a host of highly influential financial economists, Summers used his government positions to become one of (if not the) most effective proponent for deregulation of finance. The headlong rush into financial deregulation helped to propel the world economy the current crisis, unmindful that unwarranted confidence in the efficiency of markets, along with the presumed ability to quantify risk, served to create two earlier relatively recent financial blowups, which Greenspan had to contain.

Even after economic disasters, economists assume that somehow markets will now be stable. Carmen Reinhart and Kenneth S. Rogoff (2009) published a well-received book, This Time Is Different: Eight Centuries of Financial Folly. The title is self-explanatory -- an unwillingness to understand how current economic activity is repeating past mistakes ensures that the chain of errors continues unbroken. This tendency is not limited to the economy.

The Abstraction of War

Economists were not alone in becoming more abstract. War, too, became more abstract. The earliest weapons were simple instruments used for cutting or

striking blows at close quarters. These weapons could be used in hunting for food, fending off attacks from other animals, or in fighting over hunting grounds with other hominoids. The application of these weapons requires coming within a short distance of the target. As a result, the pattern of injuries in the remains of Neanderthals displays an unusually high frequency of broken bones. Other early hominoids also never seem to have advanced beyond improving their technology for making similar weapons.

In contrast, early human beings developed a unique capacity to kill from a distance. In gaining this tactical advantage, humans could also avoid breaking their bones as frequently. Improvements in this capacity accelerated over time. A long period elapsed before humans went beyond spears to bows and arrows. Much less time elapsed before guns emerged; even less time before cannons appeared on the field of battle.

The iron cannon of Mehmet II shot huge stone balls, which destroyed the supposedly impregnable walls of Constantinople in 1453. By 1494, Charles VIII's military learned to substitute bronze for iron in its cannons. That lighter metal made the cannons more mobile. Charles was able to move 40 horse-drawn cannons for his invasion of Italy. Although Italy suffered huge losses from the invasion, Mehmet's cannon had provided an indirect gift for Italy by causing a large number of talented classical scholars to leave for the university towns of Italy (Bobbitt 2002, pp. 79-80). Heraclitus may have appreciated the irony.

Much of the public reacted with horror at the destruction that cannons made possible, especially because this weapon was not exclusively aimed at other warriors. The fortified walls, which had previously allowed civilian

populations to huddle inside crumbled under cannon fire, leaving civilians defenseless. It would have been fitting to have melted down the cannons to make church bells to honor the mounting human toll from that engine of death.

Part of the horror may have reflected the changed social relations of capital-intensive warfare. As humans developed projectiles that could fly further with more lethal force, face-to-face fighting became unusual. In the process, the personal dimension of war disappeared. Warriors lost any sense of the people whom they killed as well as the people who were out to kill them. After all, soldiers firing cannons through a town's fortification are unable to see the human toll of their actions. In contrast, Greek mythology tells of Achilles, who after killing Penthesilia, Queen of the Amazons, fell in love with her. The story presumably reflects a certain kind of respect shown to a worthy opponent in conflict.

The depersonalization of warfare reflects intentional efforts to deskill new warriors. In several of his works, Karl Marx compared the changing nature of warfare with the reduced autonomy in the workplace after the transition from the handicraft worker's shop to the modern factory. Traditionally, the handicraft workers, who depended on their skills, took pride in their craft. In the factories, they were largely reduced to acting as an appendage to machinery. Marx wrote:

##The knowledge, the judgement, and the will, which, though in ever so small a degree, are practised by the independent peasant or handicraftsman, in the same way as the savage makes the whole art of war consist in the exercise of his personal cunning these faculties are now required only for the workshop as a whole. [Marx 1867, p. 235]

In making his point, Marx credited Adam Ferguson, whose words are worth citing:

##But if many parts in the practice of every art, and in the detail of every department, require no abilities, or actually tend to contract and to limit the views of the mind, there are others which lead to general reflections, and to enlargement of thought. Even in manufacture, the genius of the master, perhaps, is cultivated, while that of the inferior workman lies waste. The statesman may have a wide comprehension of human affairs, while the tools he employs are ignorant of the systems in which they are themselves combined. The general officer may be a great proficient in the knowledge of war, while the skill of the soldier is confined to a few motions of the hand and the foot. The former may have gained, what the latter has lost; and being occupied in the conduct of disciplined armies, may practice on a larger scale all the arts of preservation, of deception, and of stratagem, which the savage exerts in leading a small party, or merely in defending himself. [Ferguson 1767, p. 183]

Ferguson, writing before his colleague, Adam Smith, suggested that the division of labor began on the battlefield rather than in Smith's pin factory. As factories developed, Marx suggests that machines went beyond replacing the workers' individual skills, making the workers function as appendages to the machines.

In the case of the military, the army became the machine to which soldiers had to adapt. With the modernization of weaponry in the seventeenth century, armies developed drills to train soldiers to make obedience reflexive. By minimizing their individuality in this way, the army as a whole was supposed to

become more powerful. Ancient Greek tradition reflects the importance of individual initiative rather than disciplined obedience. For example, Homer's Odysseus recounts how his hero repeatedly used personal cunning to overcome threats. In a battlefield with cannons, individual cunning counts for little.

Concentrating authority in a single commander, who might have the authority to mass thousands, if not hundreds of thousands of troops, presents obvious dangers. Such risks are magnified because people with that degree of power are likely to overestimate their expertise. Even worse, as Henry Adams, writing from his vantage point as a son and grandson of presidents of the United States, warned:

##The effect of power and publicity on all men is the aggravation of self, a sort of tumor that ends by killing the victim's sympathies; a diseased appetite, like a passion for drink or perverted tastes; one can scarcely use expressions too strong to describe the violence of egotism it stimulates.

[Adams 1918, p. 147]

To make matters worse, troops who are trained to give up their sense of individuality also tend to lose their sense of responsibility. Soldiers' immersion in violence frequently takes a destructive psychological toll, showing up as post traumatic stress disorder. This condition sometimes leads to violent behavior toward their family, strangers and, perhaps more frequently, themselves. Not a few behave with impunity on their missions, potentially creating risks for other soldiers or even putting the military's overall mission at risk.

Summing up, the technology and training that makes war abstract and depersonalized can result in intense personal suffering that can spread

throughout the Matrix.

Bombing as Behavior Modification

Bombing is perhaps the most important military technology of the Twentieth Century. Bombs provide a powerful offensive weapon either for killing the opposition outright, destroying the enemy's capacity to supply itself, or destroying the enemy's capacity to fight by disrupting the economy.

Ultimately, such tactics are intended to change human behavior; however, unintended consequences often intervene.

For example, intensive bombing can create an even greater determination to fight according to an important government study. After World War II, the famous economist, John Kenneth Galbraith, led a study of the effect of bombing during the war. His staff included some of the most interesting and creative economists in the world. In that respect, the study was a remarkable conjunction of war, economics and the economy, especially because economists had been recommending bombing targets by identifying the most essential industrial sites for supporting the war effort.

The assumption was that the German production was stretched to the limit, leaving the economy with numerous vulnerabilities. Toward this end, "coal, steel, ferroalloys, machine tools, transportation and all the lesser resources and fabrics of industrial life" became prime targets. By preventing the production of such material, the German military would find itself in a position similar to that of the customers of the Sumitomo glue factory after the fire (Galbraith 1981, pp. 204-05).

Although the economists may have done a good job in identifying vital targets on strictly economic grounds, they neglected the human element.

Bombing also may have made some elements of the German population more resolute in their work in military factories. Galbraith reported:

##In 1940, the first full year of war, the average monthly production of Panzer vehicles was 136; in 1941, it was 316; in 1942, 516. In 1943, after the bombing began in earnest, average monthly production was 1005, and in 1944, it was 1583. Peak monthly production was not reached until December 1944, and it was only slightly down in early 1945. For aircraft and other weaponry the figures were similar. [Galbraith 1981, p. 205]

Galbraith gave an example of how the Allies had not anticipated the effect of their bombs:

##Thus, for example, on three summer nights at the end of July and the beginning of August 1943, the RAF came in from the North Sea and destroyed the center of Hamburg and adjacent Harburg. A terrible firestorm sweeping air and people into the maelstrom caused thousands of casualties. Destroyed also were restaurants, cabarets, specialty shops, department stores, banks and other civilian enterprises. The factories and shipyards away from the center escaped. Before the holocaust these had been short of labor. Now waiters, bank clerks, shopkeepers and entertainers forcibly unemployed by the bombers flocked to the war plants to find work and also to get the ration cards that the Nazis thoughtfully distributed to workers there. The bombers had eased the labor shortage. We were beginning to see that we were encountering one of the greatest, perhaps the greatest miscalculation of the war. [Galbraith 1981, p. 205]

Galbraith summed up his team's published report on the effects of bombing Germany:

##German war production had, indeed, expanded under the bombing. The greatly heralded efforts, those on the ball-bearing and aircraft plants for example, emerged as costly failures. Other operations, those against oil and the railroads, did have military effect. But strategic bombing had not won the war. At most, it had eased somewhat the task of the ground troops who did. The aircraft, manpower and bombs used in the campaign had cost the American economy far more in output than they had cost Germany. However, our economy being much larger, we could afford it. [Galbraith 1981, p. 226]

Not surprisingly, this conclusion was controversial -- as are most conclusions regarding the Matrix.

Nonetheless, bombing remains a very attractive tool of foreign policy. Relatively few lives of the bombers are put at risk during a bombing mission. However, once the bombs are dropped, changing behavior on the ground is both difficult and expensive. For example, the highly touted U.S. plan to use bombing in Iraq was intended to create a response of Shock and Awe to discourage the enemy population from resisting, while projecting an image of overwhelming superiority for the public back home.

Whether the masterminds convinced themselves of their own propaganda or not, they insisted that because of their gratitude for deposing a dictator, the Iraqis would welcome troops from the United States. The population was expected to ignore the horrendous effect of the bombing, coming on top of a long period of sanctions, which had already crippled the Iraqi economy, including its ability to support the lives of its citizens. Not surprisingly, the United States was unable to control the outcome in Iraq. Instead, the troops encountered fierce resistance and are presently leaving the country.

Today Iraq is more closely linked with Iran than with the United States.

Bombing as Unintended Behavior Modification

The two atomic bombs dropped on Japan had an unintended (and most surprising) consequence. Gar Alperovitz makes a powerful (but obviously controversial) case that the intended target of the bombs was not Japan (Alperovitz 1965). The bombs would serve no military purpose in Japan because the United States knew that Japan was about to surrender. The report of the bombing commission confirms Alperowitz's contention:

##Based on a detailed investigation of all the facts, and supported by the testimony of the surviving Japanese leaders involved, it is the Survey's opinion that certainly prior to 31 December 1945, and in all probability prior to 1 November 1945, Japan would have surrendered even if the atomic bombs had not been dropped, even if Russia had not entered the war, and even if no invasion had been planned or contemplated. [Galbraith 1981, p. 232-23]

The bombs had another purpose. They were intended to deliver a strong message to the Soviets. The objective of changing behavior in the Soviet Union did not turn out as expected -- at least for many decades. As was the case in Germany, the bomb made the Soviets more resolute. However, to engage the United States in an arms race, the Soviets devoted much of their economy -- as much as 40 percent by some estimates. Not surprisingly, over time the defense burden took a heavy toll on the economy.

Decades later, during the Reagan administration, the United States faked missile defense tests, in which incoming missiles were designed to self-destruct. The Soviets could watch as test missiles moved toward their target. Next, defensive missiles approached the incoming missiles, which then

blew up, giving the impression that the United States had developed a technology that made the country invulnerable from missile attacks.

Nothing of the sort happened. Everything had been pre-programmed, including the self-destruction of the incoming missiles. The demonstration of the system, aptly named Star Wars after a fictional science fiction movie, achieved its intended purpose. The Soviets were led to believe that the United States had the capacity to block launch any attempted nuclear attacks. Such a technology would allow the United States, protected by the Star Wars system, to attack the Soviet Union without fear of retribution.

Of course, the United States still lacks that imagined capacity, after decades of pouring many billions of dollars in making the system work as pretended in the faked tests. Nonetheless, the bluff proved to be wildly successful. Convinced that his country's economy, already overburdened by military spending, now faced an impossible challenge, Gorbachev dismantled the Soviet Union.

In the long run, the money the Soviets threw into its advanced weapons system proved to be more threatening to the Soviets than its enemies. In effect, in the long run, the sequence of the Atomic Bombs that devastated Japan, followed by the faked Star Wars successes, seem have achieved their ultimate goal, although, in a way that was probably unimaginable to all concerned: behavior in the Soviet Union changed as desired, but only after four decades.

However, another factor was also crucial for the dissolution of the Soviet Union: United States policy in Afghanistan. In that case, the long run consequences turned out quite badly for the United States.

The Irony of Afghanistan

Afghanistan is sometimes called the graveyard of empires because great powers experienced crushing defeats there. The Mongols successful invasion of Afghanistan was the exception to the rule. Genghis Khan's troops overwhelmed the country with advanced technologies, such as a modern catapult, which could hurl heavy projectiles filled with explosives -- an early version of Shock and Awe. More important, the Mongol army managed to terrorize the population sufficiently to snuff out effective resistance.

Alexander the Great's defeat in Afghanistan was more typical. Alexander not only lost the war but his life in Afghanistan. His empire fell apart not long afterwards.

Then, in 1838, an army of 21,000 British and Indian troops set off for Afghanistan. The British were even less successful than Alexander's army. In its final retreat in 1842, its entire force (4,500 troops and 12,000 civilians) was massacred, except for nine who were taken prisoner and Dr. William Brydon, the only person who managed to cross the border to Jalalabad. Presumably, the Afghans wanted somebody to tell the British about the fate of their troops.

Sir John William Kaye, an officer in the Bengal Artillery and later John Stuart Mill's successor in the India Office, published a three volume history of the war in Afghanistan. He concluded the final volume with these words:

##Whether, as many now contend, a later and more terrible disaster owes primarily its origin to our humiliating expulsion from Afghanistan, it is not my duty to inquire. The calamity of 1842 was retribution sufficient, without any conjectural additions, to stamp in indelible characters upon the page of history, the great truth that the policy which was pursued in Afghanistan was

unjust, and that, therefore, it was signally disastrous. It was, in principle and in act, an unrighteous usurpation, and the curse of God was on it from the first. Our successes at the outset were a part of the curse. They lapped us in false security, and deluded us to our overthrow. This is the great lesson to be learnt from the contemplation of all the circumstances of the Afghan War -- "The Lord God of recompenses shall surely requite." [Kay 1878, iii, p. 102]

In the 1930s, Muslim rebels used Afghanistan as a base to fight against the Soviet Union. After World War II, the Soviet priority was to maintain stability in Central Asia. For that reason, the Soviet government pumped large amounts of aid to Afghanistan.

Beginning in the late 1960s, Afghanistan experienced a severe drought. An ineffectual government riddled with corruption was unable to do anything to alleviate the suffering. Finally, in 1973, the Daud Khan, the King's cousin and brother-in-law, took power in a coup. Food prices immediately fell, but other problems remained. Daud imprisoned or killed his enemies. On the international front, he was committed to reunification of the Pashtun people, who were divided by the British, who ceded part of Afghanistan to what became Pakistan. Pakistan, in turn, because of its hostility with India, tried to make sure that Afghanistan stayed weak so that its troops could retreat to Pakistan if necessary in the case of war with India. Pakistan's great fear was that the Pashtun's could unite and make common cause with India.

In 1978, a faction of Afghanistan's Communist Party overthrew Daud. The new government "implemented well-intentioned but poorly planned" policies, which caused turmoil (Parenti 2001, p. 104). In an effort to maintain a degree of stability, the Soviets invaded, perhaps with an invitation from the

extremist president, Amin, who was killed and then replaced by a more moderate leader.

Seeing an opportunity to take advantage of Soviet vulnerability, the United States sponsored the mujahidin, an Islamic-based resistance to the Soviets. Initially, this policy was a smashing success. The well-armed resistance imposed a heavy toll on the Soviets. For example, shoulder-fired missiles limited the effectiveness of Soviet air power. Recognizing the futility of its mission, the Soviet Union retreated. That humiliation significantly contributed to the dissolution of the Soviet Union.

Although the United States accomplished its objective, this policy set off a chain of events with unwelcome consequences. Some of the mujahidin decided to expand their operations by supporting opposition to non-Islamic governments in Kashmir and Israel. By 1988, Al Qaeda began to put that intention into practice. Within a short time, Al Qaeda also turned against the United States, culminating in the attack of 9-11.

Ironically, the United States was the first country to use aircraft for a terrorist act. Orlando Bosch and Luis Posada Carriles, both working for the Central Intelligence Agency, were involved in multiple terrorists acts, including the 1976 bombing that killed all 73 civilians, including the Cuban fencing team, aboard a flight bound for Cuba. Both Bosch and Posada were later allowed to live peacefully in the United States.

The United States was less forgiving when it became the object of airplane terrorism. In response, the United States followed in the footsteps of the Soviet Union with its own Afghan War. Rather than fearing that it might find itself in a position similar to the Soviet Union, the United States expected an

easy victory, using airpower as the dominant purveyor of violence.

Afghanistan: Corroding the United States Economy

Despite the historical record, the optimistic expectations for the United States' invasion of Afghanistan seemed to have been initially justified. After having delivered a crushing blow to the Soviet Union, the United States easily toppled the Taliban government. Within a short time, however, the invasion turned into a costly disaster. Although the United States was the world's sole superpower, it proved unable to subdue the poorly armed nation of Afghanistan. This humiliating setback was not as dramatic as the defeat of Soviet Union's invasion. Even so, the United States is paying a heavy price. Over and above its human and economic costs, the war diminished the standing of the United States in the world and created a great deal of instability throughout the region, which poses serious threats for the United States.

The policies that led to 9-11 eventually contributed to even more serious domestic consequences for the United States. The 9-11 attack allowed the government to redefine the nature of national security, increasing the power of the state relative to the rights of its citizens. At the same time, the shock of the burning World Trade Center provided the Bush-Cheney administration cover to adopt policies that would have previously been impossible. Without much resistance, the state won unprecedented powers to limit the rights of citizens. To make matters worse, the need to pay for the expansion of national security meant that resources were redirected from programs on which ordinary citizens depended.

Other policies directly threatened the basic structure of the economy. In contrast to the diminished rights of private citizens, corporate powers

expanded dramatically as the administration greatly accelerated an existing tendency to limit the government's ability to control corporate behavior.

This new configuration contributed to an already-growing inequality in the United States, which weakened the economy. The corporate sector responded by shifting its emphasis from production to finance, which took on an increasingly predatory form. Economists, who should have been alert to these dangerous trends, generally interpreted them as a sign of health.

A possibly-even-more-dangerous consequence is the distorted access to information. In the name of national security, the government claims the right to virtually every bit of personal information about private individuals, while claiming absurd levels of secrecy about its own affairs.

Given this increasing opacity of the Matrix (ignoring the governments' invasion of privacy), its three pillars -- War, the Economy, and Economic Thinking -- all came together in an environment defined by corporate power and financialization.

Economists should have been in a position to understand the looming economic dangers, but only a handful had any idea of what was happening. In contrast, an FBI analysis found that a growing tsunami of financial fraud in real estate markets was threatening the entire economy. However, the agency could not follow through with its initial findings. In the wake of 9-11, the FBI had diverted most of the personnel involved in this investigation into national security work. In 2004, the FBI did briefly warn Congress about its derailed findings, but no one in power was likely to challenge the increasingly dominant financial powers (Shukovsky 2009).

Of course, the confluence of the initial meddling in Afghanistan, 9-11,

and the financial crisis are only part of the story. The greater emphasis on national security, increasing inequality, and financialization were already well underway beforehand.

Besides, certainty in historical matters -- even recent history -- remains elusive. After all, events occurring in previous millennia still remain the subject of ongoing debates among historians.

To make matters more difficult, the human element again comes into play in looking for guidance in history. Any attempt at identifying causality comes up against the tendency to understand the sequence of events in light of pre-existing ideas or ideology.

Even so, the case of Afghanistan still illustrates how initial choices set off a chain of events that may have important consequences years or decades in the future. The effect of the initial event depends whether other linkages amplify or dampen it. Looking back to identify a single event -- or even a small set of events -- as an ultimate cause is very difficult.

Nonetheless, one must exercise extreme caution in any attempt to manipulate the Matrix, considering the potential dangers of environmental, economic, or military disasters. Without great care, even actions intended to prevent cataclysmic outcomes require great care. The recent fascination with geo-engineering -- large-scale manipulation of the planetary environment to remediate climate change -- is a case in point.

The Ease of Bombing

Countries bear relatively few direct risks from dropping a bomb on somebody else's land. A plane might cost a half-billion dollars and training for the pilot and crew a few million more. With the development of unmanned aircraft,

the costs become increasingly small, making the technology popular with the public. Such support makes the military's temptation to bomb becomes almost irresistible.

On January 29, 2012, on the CBS news program, 60 Minutes Scott Pelley asked the United States Secretary of Defense, Leon Panetta what should have been a simple question, "In how many countries are we currently engaged in a shooting war?" Panetta responded, first stumbled responding, "It's a good question." Eventually, he recovered enough to mention a few places, but never really answered the question.

http://www.cbsnews.com/8301-18560_162-57367997/the-defense-secretary-leon-panetta/ Previously, the idea of a country that could not even count its wars would be incomprehensible. In Pakistan alone, the New America Foundation estimates that drone have killed between 2004 and August 2012 (New America Foundation 2012).

For commercial reasons drone technology is spreading. Dissatisfied with its market in the United States, the drone industry is marketing their product to other countries, which are still friendly to the United States. Of course, such friendships can be short lived. A respected leader can be rebranded as a ruthless tyrant in the blink of an eye. In addition, drones are prone to malfunction. After they crash, they are likely to fall into the hands of forces that might be tempted to develop the technology for themselves or sell them to a more advanced nation intent on developing the capacity to deploy drones against the United States. Even simpler, some U.S. drone have already been hacked -- so far only to the extent that the hacker can follow the "pilot's" keystrokes, but it is only a matter of time before people will

develop technology to take control of others' drones.

An interesting cautionary message about the tendency to become seduced by the ease of deploying high-tech weapons around the world came from Ryan Crocker, the retiring ambassador to Afghanistan, who has made his career in working in hotspots, including Iraq, Lebanon at the time when the American Embassy was bombed, killing 63 people and Syria, where his wife was attacked. Crocker left Afghanistan, perhaps echoing the British experience, summed up with three lessons, which resonate with The Matrix: "Remember the law of unintended consequences. Recognize the limits of the United States' actual capabilities. Understand that getting out of a conflict once you are in can often be dangerous and as destructive for the country as the original conflict." Crocker went on, ignoring the experience of 9-11: "We're a superpower, we don't fight on our territory, but that means you are in somebody else's stadium, playing by somebody else's ground rules, and you have to understand the environment, the history, the politics of the country you wish to intervene in" (Rubin 2012). Nonetheless, a June 2012 survey by the Pew Research Center found that 62 percent of the public in the United States approve of the current policy of deploying killer drones around the world although the rest of the countries surveyed disapprove (Pew Research Center 2012).

The cases of Germany, Iraq, and Afghanistan are evidence of the limits of bombing as a military strategy. Afghanistan illustrates the complex repercussions of bombing. To exert some kind of control after dropping bombs, militaries must eventually follow up by deploying troops on the ground. Unfriendly forces, without the technical or economic wherewithal to develop

capital-intensive high-tech weapons, must rely on simple, labor intensive, ground-based bombing in the form of improvised explosive devices or suicide vests -- sometimes called the weapons of the weak. Ironically, those who deploy such weapons are often portrayed as cowards, presumably compared, for example, with heroic pilots who sit in front of a computer, which sits on a desk at a base near their homes.

Misinformation and the Pillar of War

Radar still remains the first layer of defense against attacks from the air, while its cousin sonar is a major factor in naval defenses. Fallible people have the responsibility of interpreting the world in terms of blips on the screen. The challenge of accurately processing information collected by these modern technologies complicates both conducting and avoiding war.

The complexity of early warning radar systems make mistakes more likely: "The sophistication of these systems, and their interconnection, has advanced in a manner that defies comprehension ... at the time something unusual is occurring" (Bracken 1983 pp. 48 and 52). For example, during the Suez Crisis of 1956:

##In early November at the same time as the British and French attack on the Suez, the Hungarian uprising was taking place. TASS, the Soviet press agency, was drumming up fears of worldwide nuclear war. Moscow issued a communique to London and Paris strongly hinting that rocket attacks against these cities were being considered, and, in a separate communique to Washington, Moscow suggested that joint U.S.-Soviet military action should be taken in Suez" (Finer 1964, cited in Bracken 1983, p. 65).

A serious warning came on November 5th, the evening that the White House

received its Soviet message: "The headquarters of the US military command in Europe received a flash message to an unidentified jet aircraft for flight over turkey and that the Turkish Air Force had gone on alert in response" (Bracken 1983 p. 66). That same evening three other false warnings quickly followed. In response, United States Strategic Air Command went on alert. According to President Eisenhower's chief advisor, General Andrew Goodpaster, this atmosphere had the potential to "trigger off all the NATO operations plans," which, at the time, called for all-out nuclear strikes on the Soviet Union (Bracken 1983, p. 66). As it turned out, the reported jets over Turkey were nothing more than a flock of swans (Bracken 1983, p. 66). The report failed to mention whether these swans were black or not.

The Suez example illustrates the how information can cause to act inappropriately. The bureaucratic environment also conditions the interpretation of information, which can create catastrophic risks. For example, on January 25, 1995, Soviet early-warning and defense systems registered the launch of a ballistic missile from a U.S. submarine off the coast of Norway. For the first and only time, Boris Yeltsin's "nuclear briefcase" was engaged. The world was just minutes away from a nuclear holocaust, while President Yeltsin and the Chief of General Staff Mikhail Kolesnikov followed the trajectory of the rocket until, fortunately, the path of the rocket steered clear of Soviet territory. (Cimbala 2002 pp. 201-202).

The Soviets never faced a real threat other than what might have occurred had they launched a nuclear attack. Had the bureaucracy been more efficient, they would have realized that the radar blip had no military connection at all. The Norwegians had sent advisory messages notifying the Soviets that they

intended to launch a scientific mission to study the aurora borealis. This information was lost somewhere in the Soviet foreign or defense ministry (Cimbala 2002 p. 201).

This incident illustrates the importance of interpreting information within a broader context. Some troubling suggestions are floating around about the possibility of having drones rely more on automated decision-making, making the likelihood of black swans more probable.

Information and the Pillar of War

As the capacity to project weapons further and quicker, the ability to transmit strategic information becomes vital. Over time, people have developed increasingly sophisticated techniques for sending signals over distances. Drums, waving flags (semaphore), and, of course, strong runners are early examples speeding up long-distance communication. Except for the semaphore, none of these communication systems had a military origin.

Telegraphs represented a great leap forward, allowing signals to move almost at the speed of light. Then radio signals offered the first means for the military to effectively communicate with ships at sea. People developing radio technology laid much of the technological foundation for the early computer industry. Like the early computer community, the center of the early radio industry was in what is now called Silicon Valley.

The military quickly got involved in radio. When, in its formative years, wasteful patent suits bogged down the industry, the U.S. Navy stepped in, forcing the industry leaders to combine in the monopolistic Radio Corporation of America (Perelman 2002, pp. 50-52).

The Nazi air raids on London put a premium on using technology for

collecting, in addition to transmitting, information. Scientists had been bouncing radio waves off clouds to collect information about the atmosphere. Eventually, a few people in England came up with the idea to do something similar with airplanes rather than clouds. The idea was first seen as impractical. Radio waves are too long to be able to recognize an airplane. A few stubborn scientists stuck with this idea long enough that the British government committed serious resources into developing this technology, which required discovering a means of producing microwaves. Eventually, the results of this early work were secretly delivered to the United States.

Radar, the product of this research, gave the Royal Air Force warnings about impending attacks. This information gave the Allies a decisive edge over Germany. Some would go so far as to credit radar as the decisive technology in winning the war (Phelps 2010).

The story of radar also runs through the other two pillars of the Matrix. One important node of the connection of war and economics is the Massachusetts Institute of Technology, which housed the Radiation Lab at the Massachusetts Institute of Technology, which was the hub of this research (Phelps 2010).

Just as civilian technology has advanced modern weaponry, military technology has morphed into consumer goods. Radar was no exception. For example, this wartime technology quickly spilled over into a wide range of consumer products, including microwave ovens and microwave-based cell phones. Next time you turn on your cell phone or your microwave oven, you might recall the Nazi Luftwaffe's offense against Britain.

The economics connection is equally intriguing. Two future winners of the Nobel Prize in Economics from the MIT department of economics, Paul Samuelson

and Robert Solow, did important work at the Radiation Lab. Philip Morowski has made a strong case that their wartime experience working with scientists affected their future economic thinking. They were not alone. A host of other economists had similar experiences. In many of these cases their experience had particularly perverse consequences for economic thinking (Mirowski 2001).

Blood or Ketchup?

Just as the radar operator must take account of the context in which a blip occurs, transactions -- the purchase and sale of commodities -- isolated from their context can convey misleading information. Nonetheless, economics trains economists to ignore context while concentrating on transactions.

Think back to Larry Summers' critique of the Ketchup economists who emphasized stock market prices, ignoring their context. By doing so, the Ketchup economists had no need to take account of the complex market movements, which evolve on the basis of a rich context interpreted by imperfect human brains. Instead, they would reduce the complexity of the world of finance to mathematical and statistical analysis, using techniques similar to those of scientists. However, this approach created an unwarranted confidence that allowed organizations to lose billions of dollars in risky investments based on the belief that the risk was minimal.

The next step was to hire a multitude of PhD mathematicians and physicists to develop even more sophisticated analysis, which could be reduced to algorithms to allow computers to automatically buy and sell financial instruments without any human intervention. Some of these businesses earn enormous profits although the markets in which they operated sometimes began to self-destruct, especially when the computers of the various market players

begin to amplify each other's errors. On a few occasions, computer-driven market malfunctions became so extreme that they threatened the entire financial system. The necessary outside intervention came only after enormous financial carnage.

Similar algorithms show up in a more humorous form. For example, Amazon uses algorithms to determine the most profitable price to sell their books. From time to time, the company's computer program will price a readily available book at thousands of dollars.

More serious is the possibility of modifying the algorithms developed for ketchup economics into weapons technologies, making the fake blood of old movies into real blood in catastrophes worthy of a modern science fiction film.

Making the World Safe for War

Preparation is an important element of military power. Weapons must be accumulated; soldiers trained; and the population primed to support military engagements. The first two requirements are fairly obvious. To be effective, the third involves what has become increasingly sophisticated manipulation. In earlier times, rulers relied more on pomp and ceremony to make their subjects recognize their leaders' great power. Sufficiently awed, people would be expected to avoid any signs of disloyalty, including an unwillingness to go to war.

During Woodrow Wilson's second administration, the government had an urgent need for what later became known as public relations. Wilson had based his reelection campaign in part on a promise to keep the country out of the war. In the grand tradition of American politics, Wilson quickly broke his word.

Much of the population opposed the war, especially people of German descent did not favor fighting against Germany and people of Irish descent resented the idea of fighting on England's side.

To shore up support for the war, Wilson created a Committee on Public Information, chaired by a journalist, George Creel, with Secretaries of the Navy, War, and State as ex officio members. A major player in the Committee was Edward Bernays, often described as the "father of public relations." In so far as family background was concerned, he was well placed for that purpose. His mother was the sister of Sigmund Freud and his father, the brother of Freud's wife. Wilson held him in such high regard that Wilson brought him to the Paris peace conference in 1919, with the expectation that Bernays would carry on his propaganda work in support of a completed peace treaty.

Bernays was clear about the nature of his craft. In his book, Propaganda, he explained:

##The conscious and intelligent manipulation of the organized habits and opinions of the masses is an important element in democratic society. Those who manipulate this unseen mechanism of society constitute an invisible government which is the true ruling power of our country. [Bernays 1928, p. 9]

Bernays proudly called his scientific technique of opinion-molding "the engineering of consent," which is the title of a book that he edited. Based on the lack of protest against the techniques of public relations, he concluded that "We have voluntarily agreed to let an invisible government sift the data and high-spot the outstanding issues" (Bernays 1928, p. 11).

Disciplining Children Games

The work of children is play. However, play can be serious training for the

development of skills that will be honed later in life. Children's games easily morph into adult sports, which not only develop individual's skills, but become both big businesses and important cultural influences.

Because war looms large in culture, children take naturally to war games. Because dexterity, strength, courage, and strategy are important parts of both sports and warfare, the business of sports and the creation of a warlike culture become entangled with each other.

The Olympics illustrate how sports function within the pillar of war. Rather than a celebration of play, the Olympics began as a display of skills that were crucial in battle. For example, the winner of the Decathlon, which consists of familiar parts of children's play -- running, jumping, and throwing -- takes on the image of a warrior. In the case of the javelin -- otherwise called a spear -- the connection with war is obvious.

Although the ancient Olympics were a strictly Greek affair, the modern Olympics were constituted as a contest between nations. The games become an exercise in nationalism in which powerful nations cultivate athletes to display their superiority over athletes from other countries, especially those whose foreign policy seems threatening.

American Origins of Football

Boston-style football originated in elite secondary schools in the urban Northeast, such as Boston Latin and Dixwell's. Some of these boys would matriculate to Harvard, Yale, Princeton, and Penn, bringing their game with them (Miller 2011 p. 60). The game soon took on an ideological thrust the university could provide.

Other sports played in confined spaces, such as baseball, basketball, and

football, developed as the spread of urban life in 19th century America diminished the supply of publically-available open spaces. Each of these sports developed a system of accounting in which teams or players accumulated points.

By the later part of the nineteenth century football resonated with the cultural aspirations of American universities' leaders, who accepted the ideals of Muscular Christianity as a means of developing character, "which first appeared in British private schools, that competition in games helps instill desirable traits of character and thus qualifies as a legitimate educational activity" (Mandelbaum 2004, p. 148).

While the universities were instilling the ethic of Muscular Christianity to the elite, the YMCA was intended to do the same for the working classes. A popular novel of the time, Tom Brown at Oxford, distilled the essence of the Muscular Christianity, which the book was promoting: "[It] is "a good thing to have strong and well-exercised bodies," he specified, "The least of the muscular Christians has hold of the old chivalrous and Christian belief, that a man's body is given him to be trained and brought into subjection, and then used for the protection of the weak, the advancement of all righteous causes, and the subduing of the earth which God has given to the children of men" (Hendershot 2004 p. 226).

This mind-set was almost perfectly suited to the justification of the rising American imperialism, which claimed that its mission was to civilize heathen children around the world. According to one British pundit: "If asked what our Muscular Christianity has done, we point to the British Empire" (Minchin 1901 p. 113).

In the United States, imperial ventures were still controversial. Muscular Christianity also had to push against what was denounced as Calvinist fallacy that "physical vigor and spiritual sanctity are incompatible" (Miller 2011, p. 41).

The problem with Calvinism for the imperialists was its association with another vision of world power. "The Protestant ethic obliges everyone to engage in work of importance. Work represents worthy use of time and ultimately, moral virtue (Overman 2011, p. 212). For the Calvinists, success was a matter between the individual and God. For the imperialist, success was a collective effort. The individual was to contribute to the collective effort in the great game of imperialism. Football, as a violent team sport, was a perfect school for inspiring young people with this ethic: "losers of a match are deserving of their fate, for they have failed to do what was morally necessary to achieve victory. In this sense, they have committed a sin for which their failure is proof" (Overman pp. 163-64). Those who fail to accept this challenge are treated with contempt. Thomas Wentworth Higginson, Harvard graduate and abolitionist minister, noted that Calvin "was in invalid for his whole lifetime" (cited in Miller 2011 41).

Imperialists vs. Capitalists?

Business interests and advocates of imperialism often took pains to distance themselves from each other. As symbolized in the ancient Olympics, the warrior was seen as a noble figure for whom that was idealized as virtuous in which calculations of personal gain had no place. Nonetheless, mercenaries were already an important part of warfare for the Greeks. Their employment has continued, although not without controversy. The historian, David Parrott,

explains:

##Starting with the reactions to the unconstrained looting and violence of the private mercenary companies of the fourteenth century, and enduring concern about violence outside the legitimate control of constituted authorities, she traces a developing consensus, established well before an eighteenth-century Enlightenment, that the hiring of military forces was inappropriate to a civilized society. [Parrott 2012, pp. 4-5; referring to Percy 2007]

Parrott added that reliance on mercenaries is self-defeating. People who fight merely for the money lack the loyalty necessary for a strong fighting force: "The application of military force should only be entrusted to those whose loyalty can be ensured by shared national identity and allegiance. The 'citizen army' idealized by Machiavelli (1469-June 1527) and cohorts of humanist and then nationalist thinkers is contrasted with its apparent obverse, the mercenary soldier who serves only for money." According to his world-view, virtue is an essential component of military success, but war is also a crucible for forging virtue -- a feedback system that would be familiar to many football coaches (Parrott 2012, pp. 6-7 and 28).

Machiavelli's work appeared at the end of the glorious movement of civic humanism, centered in Tuscany, during the fourteenth century, which insisted that a rich network of civic relations is essential for a good life (Bruni 2006). Within a relatively short time, the relatively democratic city states gave way to warlords intent on conquest. The ideal of rich individualism enriched by a flourishing community no longer seemed relevant during a period of absolutism. The time was ripe for Machiavelli. "... [T]he individual who rose from the ashes of Civic Humanism ... in the eyes of Machiavelli and Hobbes

(1588-1679, writing during the English civil wars) ... was ... villainous, uncivil, fearful, and cunning -- the modern adjectives for the "new" human being" (Bruni 2006, p. 28). In this new environment, virtue developed out of war rather than civic engagement.

By the mid-eighteenth century, Machiavelli's ideas became extremely relevant for the controversy about the choice between depending on a standing army or a militia. Because the government relied heavily on land taxes, the aristocracy opposed a standing army, which was both expensive in itself and convenient for the King to have at hand at times when he would be tempted to engage in an expensive ground war in Europe. The aristocrats preferred to rely on a militia, which would rely on the unpaid citizens who would be expected to contribute free time to train for the military duties. In addition, aristocrats were proud of their feudal tradition of leading troops that they raise into battle. Leading a local militia would be expected to add to their prestige. Finally, turning to Machiavelli, the aristocrats saw the militia as a training ground for virtue as well as war. In contrast, the bulk of the wealthy business class was engaged in trade or finance. Expanding Britain's reach could prove profitable, especially because the tax burden of war fell mainly on the aristocrats.

Under these circumstances, the seemingly Calvinist business-class was more favorable to war, while those who argued in terms of resurrecting Roman virtue (ideology of the later proponents of imperialism) were less militaristic.

In the late 19th century, when industry was developing the technology to effectively harness fossil fuels, economies in the developed countries develop the capacity to produce far more goods than they could sell at home. The

result was a long depression that covered much of the last quarter of 19th century. A number of observers interpreted the great scramble to accumulate colonies as a way to transcend the depression. In a tragic sense, the strategy worked. The result of the scramble was World War, which the United States engaged in as a "war to end all wars." The result was a tsunami of military spending that put many of the unemployed to work building the means to kill millions of other people.

In some respects, the battle lines regarding war in the contemporary United States invert the early 20th century enthusiasm over football as a way to toughen up the civilian population. Today, one group associated with the neoconservative movement, propose military engagements as a means to toughen the civilian population. On the other hand, those who resembled the Calvinists in the sense of preaching a traditional morality, often support war -- what they call humanitarian intervention -- as a moral duty to defend human rights. In effect, both sides have joined in the call for military intervention, while the peace movement has become largely marginalized.

Present-day wars are no longer fought for glory, but only in the name of self-defense or human rights but they show no sign of becoming less frequent.

A Glance at the Dangerous Pillar of Economics

Economic theory has two purposes. First, economics is supposed to offer an objective analysis of the way the economy actually functions. Second, economics is used as a way to recommend a preferred vision of the way the economy (or society) should be.

Following Milton Friedman, the first kind of economics is called positive economics. Supposedly, good economists do positive economics. The second kind

of economics is called normative economics (Friedman 1953). People, including economists, can indulge in normative economics, but they should make clear that such recommendations have no part in real economics.

Friedman himself was a tireless advocate of laissez-faire, but, in effect, he insisted that laissez-faire was consistent with positive economics and that anything that diverged from laissez-faire should be understood as nothing more than normative economics.

However, economists, including Friedman, immerse themselves in what he called normative economics. Economists' approach reflects changes over time in response to political, economic, and technical conditions. In fact, the kind of economics that Friedman advocated only became popular after the Paris Commune in 1881.

The Prussian army had just soundly defeated France and dismantled the French government. The working class stepped into the vacuum, organizing the Paris Commune. (The scary-sounding word, "Commune," is nothing more than the French word for city council) Even so, throughout Europe, people in power were shocked by the presumptuous behavior of the Parisians, who believed that ordinary people were properly equipped to rule. In light of the Parisians' display of revolutionary potential, the Prussians quickly responded by rearming the French army, which violently squashed the defenseless Commune, as well as a good number of innocent bystanders.

Another German influence seemed relevant at the time. Karl Marx, a heretofore-unknown German refugee in London had published his previously-largely-unnoticed Capital four years earlier. Since people in power had no idea how such an awful turn of events might have occurred, they credited

Marx as the mastermind with an exaggerated influence on the uprising (Wheen 2000, pp. 330-35). Here is the response of Adam Smith's first biographer, John Rae:

##It is a curious and not unmeaning circumstance that the country where Karl Marx is least known, is that in which he has for the last thirty years lived and worked. His word has gone into all the earth and evoked in some quarters echoes which governments will neither let live nor let die; but here, where it was pronounced, its sound has scarcely been heard. [Rae 1881, p. 585]

Economists felt the need to answer Marx's suddenly threatening work. Within a couple of years, three leading economists -- William Stanley Jevons in Britain, Leon Walras in Switzerland, and Carl Menger in Austria -- independently concocted a new kind of economics. In their theory, "the new starting point became, not the socioeconomic relations between men as producers, but the psychological relation between men and finished goods" (Meek 1972, p. 166); that is, transactions.

By adopting this approach economists could present capitalism as a harmonious system, devoid of conflict, which could exist only because of misguided or malicious behavior. Why so? In each exchange, both parties presumably improve their situation. Anyone who did not see a benefit in the exchange has the alternative to walk away. As economist, Abba Lerner, observed, "An economic transaction is a solved political problem" (Lerner 1972, p. 259). This solution depends on the elimination of any situations that could create a sense of compulsion, such as a desperate need for food or medical care. Over time, this style of economics became increasingly dominant.

For example, from the perspective of economics, the sale of tobacco is no

different than the purchase of nourishing food. However, each of these transactions takes place in a complex submatrix. Growers produce these products using inputs that other people have produced. Others process the food or tobacco and transport it, again using a complex network to supply the necessary inputs for their work. The business press describes such linkages in producing final products as a value chain.

Economics also ignores the long-term consequences of these transactions. Consumers of both products might enjoy some immediate satisfaction, but the health long-term consequences may be quite different. Moreover, little thought is given to other forms of activity. For example, a mother's nurturing of a child falls outside of the purview of most economists. This narrow focus on transactions distorts economists' perspective and limits the relevance of their work.

Given the primacy of the ideology of market efficiency, one should not be surprised that economic analysis has consistently supported dysfunctional policies.

A Dysfunctional Infusion of Military Priorities

Economists do not have a monopoly on ideology. National Security is a convenient hook on which to hang virtually any imaginable policy proposal. For example, many experts have been warning about an ongoing epidemic of obesity, which threatens to impose major health care costs on a system already experiencing skyrocketing costs. However, because the powerful tentacles of the food industry reach into every congressional district, its lobbyists have been effective in inaction.

Loretta Sanchez, the highest ranking Democratic member on the House Armed

Services, stepped into the controversy, playing the national security card, framing her argument as a matter of National Defense, writing: "If you think obesity is only a health care problem, think again." Using her position as a senior member of the House Armed Services Committee, she expressed concern that growing numbers of young Americans are "too fat to fight." As evidence, she turned to a recent study by more than 300 retired military leaders, which reported that more than 17 percent of all Americans 17-24 weigh too much to serve in uniform. Obesity is the number one medical cause for ineligibility.

Sanchez also expressed support for the health-based perspective, but again with a military twist: she pointed to the \$1.1 billion that the military already spends for obesity-related health care costs. Although Rep. Sanchez might not succeed in her appeal to national defense, there is a precedent for her strategy.

After the end of World War II, well-meaning people were supporting the school lunch program, but their efforts lacked traction. Much of the eventual congressional support resulted from the persuasive testimony of Major General Lewis Hershey, director of the Selective Service Commission. The general told congressional committees that, during World War II, poor nutrition accounted for an excessive number of rejections of young men by local draft boards (United States House of Representatives 1989, p. 53).

Obesity is not the only domestic threat to national defense. As part of a cynical effort to dismantle public education, a Council on Foreign Relations committee proposed a mix of privatized schools, an intensive reliance on commercial provisions in the remaining public schools, along with bureaucratization of the teaching profession. The two chairs were Condoleezza

Rice, former National Security Adviser and Secretary of State for George W. Bush, and Joel Klein, a former promoter of school privatization during his time as chancellor of the New York School System who then moved up to act as a close adviser to Rupert Murdoch while heading up a division of Murdoch's News Corp., which sells technology to schools.

One need not be surprised that many of the committee members were already associated in one way or another with for-profit education. However, increasing profits for providers of privatized education does not figure in the report. Instead, the report, preposterously entitled, US Education Reform and National Security, presents its proposed reforms as an essential part of a national security strategy.

According to the report's conclusion, "a rising tide of mediocrity ... threatens our very future as a nation and a people" (Council on Foreign Relations, p. 56). Despite the absence of evidence that this new kind of education is effective, the report treats its proposals as if they were based on unquestionable scientific facts. By playing the national security card, one might imagine that an unwillingness to go along with the committee might be treasonous given their warning about such a grave threat to society.

This tactic is not entirely unprecedented. The title of a 1983 Department of Education report, The Nation at Risk, also suggested national security benefits from a milder set of reforms -- at the time, the country would not have been receptive of anything as radical as the Council on Foreign Relations report. The earlier report did sound a similar alarm about national defense, warning: "We have, in effect, been committing an act of unthinking, unilateral educational disarmament" (United States House of Representatives, Committee on

Education and Labor, Subcommittee on Elementary, Secondary and Vocational Education. 1989, p. 4); however, the national security dimension in that report was more subtle, emphasizing instead, the need for the United States to compete in international markets, ideas, and standing in the world.

The earlier report was not calling for a radical restructuring of education, but only strengthening what was already there. For example, the sentence placed just before its warning about disarmament, included another warning about the failure to adequately support the previous investments that made possible educational gains in response to the shock of the Soviet success in space technology with Sputnik: "we have dismantled essential support systems which helped make those gains possible" (United States House of Representatives, Committee on Education and Labor, Subcommittee on Elementary, Secondary and Vocational Education. 1989, p. 9).

In contrast, the recent report prioritizes the need "to staff the military, intelligence agencies, and other government-run national security offices, as well as the aerospace and defense industries" (Chairs' Preface, p. xiv). The committee might take some satisfaction now that the University of North Dakota is offering a B.S. in aeronautics with a major in unmanned aircraft systems. Of course, the Cold War had already inspired a number of programs, especially in Area Studies, in which students would develop expertise in helping to carry out U.S. foreign/military policy in far off parts of the world.

Has the new report identified the ultimate purpose of education? Previously, U.S. schools generally taught students that in ancient Greece, Athens developed a rich culture, whereas Sparta's narrow culture was wholly

directed to preparing the population to fight wars. Generations of students learned to identify Sparta with the worst kind of totalitarian regimes.

Pretend that schools do have a primary responsibility to make the nation militarily strong. Would the nation really be made safer by imposing rote learning on students so that they could to fill out bubbles on multiple choice tests provided by private corporations? Will this kind of education put an end to a long string of counterproductive foreign policy adventures, including those taken under Ms. Rice's watch?

Given the importance of strong national defense, refusing to accept their unproven policies might seem to be tantamount to treason. After all, even in the words of the first report, accepting the status quo would be equivalent to "an act of unthinking, unilateral educational disarmament" (United States House of Representatives, Committee on Education and Labor, Subcommittee on Elementary, Secondary and Vocational Education. 1989, p. 9). In other words, do you want to stand with the teachers who would have us, put "The Nation at Risk?" Presumably, all good citizens will support the report's radical agenda.

Why would education and health not be important enough to be legitimate priorities in their own right without covering them in the cloak of national security? An even more troubling question remains: why should people be so susceptible to such cheap and insincere appeals that pundits and politicians can feel confident in framing their policies as a national security issue?

Small Lessons from the Military?

Although the military, like the rest of government, is highly skilled at ideological messaging, it does not let itself become a prisoner of its ideology. The reason is that the complexity of the military mission requires

it takes a broader interest in the world than do political or business interests.

Because of the complexity and importance of preparedness, the military generally takes a longer view than those who tend to look no farther than the next election or quarterly profit. The discussion of military support for the school lunch program and its concern about obesity are good examples of the military's capacity to rise above the conventional ideological climate. For instance, while business interests have managed to create significant confusion about the threat of climate change, the military takes the matter seriously, recognizing how climate instability can complicate its objectives.

The military is more reluctant about engaging in full scale invasions than civilian governments. However, governments also realize that they can achieve military goals without resorting to battle. For example, boycotts, sanctions, and other economic measures are intended to hobble other countries.

In addition, the United States has both openly and surreptitiously overthrown governments, which it regards as unfriendly. In many cases, the threats alone are sufficient to make countries compliant. A phrase used in the Latin American Drug Trade is relevant: *plata o plomo*, which translates to 'silver or lead,' meaning accept our money or face assassination.

Finally, governments can take other kinds of measures to harm other countries. In the case of Cuba, the U.S. has enlisted anti-Castro Cubans who relocated to the U.S. to carry out terrorist activities against Cuba, including the first known case of blowing up an airplane carrying civilian passengers. The United States also seems to have used biological warfare to create a swine flu epidemic in Cuba and spread a disease that harmed the tobacco crop. The

secrecy associated with such activities creates another difficulty in establishing the precise dimensions of war. For example, during the 1975 Church Committee Hearings, CIA spokesman, Nathan Gordon, refused to offer a direct response to a question of the CIA's retention of agents of biological and chemical warfare, instead insisting that, "The CIA is not a Department of Defense;" that is, the agency is not subject to any congressional oversight.

Such policies bring to mind the influential military theoretician, Carl von Clausewitz, who is often credited with the aphorism that war is a continuation of politics by other means. His actual words were less succinct, but nonetheless important (Clauswitz 1918, p. 24). In light of these surreptitious war tactics, Clauswitz might have added that, at least in the sphere of international relations, politics is a continuation of war by other means.

Like the Afghanistan case, many of these covert actions prove to be counterproductive in the long run. The United States cleverly overthrew a democratic government in Iran, which was nationalizing oil. As in Afghanistan, the United States appealed to Muslim fundamentalists. Although the coup was very successful in its objective, it eventually gave rise to a government hostile to the United States.

In all likelihood, many of the clever covert successes give rise to unwarranted self-confidence that proves counterproductive. Toward the end of his time in office, President Eisenhower expressed his disappointment his CIA director, Allen Dulles, complaining that Dulles left him with a "legacy of ashes" (Weiner 2007). Dulles' successors were no more successful, especially if we accept the idea from the Declaration of Independence about the importance

of promoting, Life, Liberty, and the Pursuit of Happiness.

Life, Liberty and the Pursuit of Happiness

The record of the U.S. economy in promoting Life, Liberty and the Pursuit of Happiness is dubious at best. Yet, each of the three components of the Matrix represents itself as a positive good. Begin with war. No country, no matter how psychopathic its rulers might be, has ever launched one without claiming a positive purpose, whether it was to promote a particular religion, to prevent harm from others, or even to preserve racial purity, even though the real objective might be something altogether different, such as plunder or conquest.

Similarly, the presumed objective of the economy is to increase the welfare of its people. Certainly, the economy of the United States, as those of other advanced nations, is large enough to provide a decent life for every citizen; nonetheless, the scourge of poverty remains. Yet public protests about inequality have been ineffective except during a few periods when strong, organized opposition had mobilized. The persistence of inequality owes much to the power of the state, at times including even the occasional use of military force to prevent the sharing of the economic bounty. Moreover, as will be discussed later, the ability of the economy to provide for its people is limited because of preventable inefficiencies, as well as the oversized demands of the military.

Economic theory, which presumably exists to guide the management of the economy in ways that can improve life, liberty, and the pursuit of happiness, serves to justify policies and institutions, which prevent that goal from taking place. In effect, the three pillars of the Matrix may be compared to an autoimmune disease, in which a body's defenses invisibly end up turning on the

body -- in this case, the body of society.

Before Life, Liberty, and the Pursuit of Happiness

The American colonists fought their war of independence with the stated intention of promoting life, liberty, and the pursuit of happiness. A less noticed statement in the Declaration of Independence suggests something altogether different. Jefferson's document criticizes King George, charging: "He has excited domestic insurrections amongst us."

What could Jefferson have meant? After all, the colonists were launching their own domestic insurrection. In 1772 in England, Lord Chief Justice Mansfield had recently decided in favor of a runaway slave, James Somerset, who was recaptured by his previous owner. After 1772, slave rebellions commenced in Surinam, St. Vincent, and Jamaica. By early 1775, Royal officials, in the colonies as well as in London, suggested that they could use the slaves as a threat against the restive colonists.

While drafting the Declaration of Independence, tensions between Britain and the colonists were becoming more heated. Jefferson, like his fellow Southerners, was angered by slaves successfully seeking refuge with the British Army. Even worse, the Southerners were horrified by the prospect of a domestic insurrection led by the emboldened slaves (Schama 2006, pp. 17 and 66-68). Jefferson's Declaration of Independence was not calling for general independence; instead, was a clarion call for the defense of slavery.

Indeed, in the wake of the first Continental Congress, independent militia companies began to form. Dunmore, the English governor of Virginia, announced that if any armed men approached the capital, he would free the slaves of the province. He distributed weapons to his household slaves and to several

Shawnee chiefs who had been staying in Williamsburg as hostages to guarantee the peace (Anderson and Cayton 2004, p. 157). In light of this tactic, the distinguished historian, Simon Schama, concluded that for the leaders of the Southern states, "Theirs was a revolution, first and foremost, mobilized to protect slavery" (Schama 2006, p. 67).

The institution of slavery lasted for almost a century after the Revolution. Even after abolition, the slaves and their descendants have still not completely shaken off the residue of servitude. The obvious contradiction between slavery and the ideal of life, liberty, and the pursuit of happiness was not lost on the English. Samuel Johnson, a famous English writer, noted shortly after the start of the Revolutionary War, "How is it," he said, "that we always hear the loudest yelps for liberty amongst the drivers of negroes'?"

Although slavery represents an extreme restriction on liberty, The Matrix will explore the continual shrinkage of liberty over time, often driven by those who yelped the loudest about the ideals of liberty.

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