The Development of a Society Can Never Be Subject to Rational Human Control

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Adonde un bien se concierta
hay un mal que lo desvia;
mas el bien viene y no acierta,
y el mal acierta y porfia.

— Diego Hurtado de Mendoza (1503-1575)[1]

The wider the scope of my reflection on the present and the past, the more am I impressed by their mockery of human plans in every transaction.

— Tacims[2]

[1] Redondilla, in Barja, p. 176. Free translation: "Where there is a plan for good, some evil derails it.The good comes but proves ineffective, while the ev^il is effective and persists."

[2] Tacitus, Book III, Chapt. 18, p. 112.

Part I

In specific contexts in which abundant empirical evidence is available, fairly reliable short-term prediction and control of a society's behavior may be possible. For example, economists can predict some of the immediate consequences for a modem industrial society of a rise or a fall in the interest rates. Hence, by raising or lowering interest rates they can manipulate such variables as the levels of inflation and of unemployment.[1] Indirect consequences are harder to predict, and prediction of the consequences of more elaborate- financial manipulations is largely guesswork. That's why the economic policies of the U.S. government are subject to so much controversy: No one knows for certain what the consequences of those policies really are.

Outside of contexts in which abundant empirical evidence is available, or when longer-term effects are at issue, successful prediction—and therefore successful management of a society's development—is far more difficult. In fact, failure is the norm.

• During the first half of the second century BC, sumptuary laws (laws intended to limit conspicuous consumption) were enacted in an effort to forestall the incipient decadence of Roman society. As is usual with sumptuary laws, these failed to have the desired effect, and the decay of Roman mores continued unchecked.[2] By the early first century BC, Rome had become politically unstable. With the help of soldiers under his command, Lucius Cornelius Sulla seized control of the city, physically exterminated the opposition, and carried out a comprehensive program of reform that was intended to restore stable government. But Sulla's intervention only made the situation worse, because he had killed off the "defenders of lawful government" and had filled the Senate with unscrupulous men "whose tradition was the opposite of that sense of mission and public service that had animated the best of the aristocracy."[3] Consequently the Roman political system continued to unravel, and by the middle of the first century BC Rome's traditional republican government was essentially defunct.

• In Italy during the 9th century AD certain kings promulgated laws intended to limit the oppression and exploitation of peasants by the aristocracy. "The laws proved futile, however, and aristocratic landowning and political dominance continued to grow."[4]

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[1] This is somewhat of an oversimplification, but its close enough to the truth for our purposes. See NEB (2003), Vol. 4, "Federal Reserve System," p. 712, and Vol. 8, "monetary policy," pp. 251-52; WOrldBook Encyclopedia, 2011, Vol. 7, "Federal Reserve System," p. 65.

[2] NEB (2003), Vol.20, "Greek and Roman Civilizations," pp. 295-96.

[3] Ibid., pp. 304-05.

[4] NEB (1997), Vol. 22, "Italy,"p. 195.

• Simon Bolivar was the principal leader of the revolutions through which Spain's American colonies achieved their independence. He had hoped and expected to establish stable and "enlightened" government throughout Spanish America, but he made so little progress toward that objective that he wrote in bitterness shortly before his death in 1830: "He who serves a revolution plows the sea." Bolivar went on to predict that Spanish America would "infallibly fall into the hands of the unrestrained multitude to pass afterward to those of. .. petty tyrants of all races and colors ... [We will be] devoured by all crimes and extinguished by ferocity [so that] the Europeans will not deign to conquer us ... ."[5] Allowing for a good deal of exaggeration attributable to the emotion under which Bolivar wrote, this prediction held (roughly) true for a century and a half after his death. But notice that Bolivar did not arrive at this prediction until too late; and that it was a very general prediction that asserted nothing specific.

• In the United States during the late 19th century there were

> worker-housing projects sponsored by a number of individual philanthropists and housing reformers. Their objective was to show that efforts to improve the living conditions of workers could be combined with ... profits of 5 percent annually...
>
> Reformers believed that the model dwellings would set a standard that other landlords would be forced to meet ... mostly because of the workings of competition. Unfortunately, this solution to the housing problem did not take hold ... the great mass of urban workers ... were crowded into ... tenements that operated solely for profit.[6]

It is not apparent that there has been any progress over the centuries in the capacity of humans to guide the development of their societies. Relatively recent (post-1950) efforts in this direction may seem superficially to be more sophisticated than those of earlier times, but they do not appear to be more successful.

• The social reform programs of the mid-1960s in the United States, spearheaded by President Lyndon Johnson, revealed that beliefs about the causes and cures of such social problems as crime, drug abuse, poverty, and slums had little validity. For example, according to one disappointed reformer:

> Once upon a time we thought that if we could only get our problem families out of those dreadful slums, then papa would stop taking dope, mama would stop chasing around, and junior would stop carrying a knife. Well, we've got them in a nice new apartment with modern kitchens and a recreation center. And they're the same bunch of bastards they always were.[7]

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[5] Simon Bolivar, Letter to Gen. Juan Jose Flores, Nov.. 9, 1830, in Soriano, p. 169.

[6] R. Heilbroner & A. Singer, p. 122.

[7] Patterson, pp.402-03.

This doesn't mean that all of the reform programs were total failures, but the general level of success was so low as to indicate that the reformers did not understand the workings of society well enough to know what should be done to solve the social problems that they addressed. Where they achieved some modest level of success they probably did so mainly through luck.[8]

• It was once believed that the "emergence of a truly interconnected world" via the Internet would be "a step toward cross-cultural cooperation and global enlightenment. As societies communicate more freely, ... empathy will be nourished, the truth will be easier to find, and many causes of conflict will wither. . ./The age of social media, in other words, should be an age of peace and understanding."[9]

The actual result has been nothing of the kind. Instead, the Internet has played a major role in the development of what many people call a "post-truth" or "post-fact" society—a society in which it becomes ever more difficult to escape systematic deception or ascertain the objective truth.[10] The Internet also serves as a deadly tool for terrorists, and as a weapon for unscrupulous national leaders who intentionally promote conflict.[11]

One could go on and on citing examples like the foregoing ones. One could also cite many examples of efforts to control the development of societies in which the immediate goals of the efforts have been achieved. But in such cases the longer-term consequences for society as a whole have not been what the reformers or revolutionaries have expected or desired.[12]

• The legislation of the Athenian statesman Solon (6th century BC) was intended to abolish hektemorage (roughly equivalent to serfdom) in Attica while allowing the aristocracy to retain most of its wealth and privilege. In this respect the legislation was successful. But it also had unexpected consequences that Solon surely would not have approved. The liberation of the "serfs" resulted in a labor shortage that led the Athenians to purchase or capture numerous slaves from outside Attica, so that Athens was transformed into a slave society. Another indirect consequence of Solon's legislation was the Peisistratid "tyranny" (populist dictatorship) that ruled Athens during a substantial part of the 6th century BC.[13]

• Otto von Bismarck, one of the most brilliant statesmen in European history, had an impressive list of successes to his credit. Among other things:

—He achieved the unification of Germany in 1867-1871.

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[8] The facts are outlined by Patterson, pp. 396-405, but the conclusions drawn from the facts are my own.

[9] E.T Brooking & P.W Singer, p. 83.

[10] Ibid, (the entire article). Manjoo (the entire book).

[11] E.T. Brooking & P.W. Singer (the entire article).

[12] There are at least three categories of exceptions to this rule, as noted in Kaczynski, Letter to David Skrbina: Oct. 12, 2004, Part III.A,but these exceptions have little relevance to the present chapter.

[13] NEB (2003), Vol. 20, "Greek and Roman Civilizations," pp. 228-29. But see Starr, pp. 314,315,317, 334^^8, 350,358.

—He engineered the Franco-Prussian war of 1870-71, but his successful efforts for peace thereafter earned him the respect of European leaders.

—He successfully promoted the industrialization of Germany.

—By such means he won for the monarchy the support of the middle class.

—Thus Bismarck achieved his most important objective: He prevented (temporarily) the democratization of Germany.

—Though Bismarck was forced to resign in 1890, the political structure he had established for Germany lasted until 1918, when it was brought down by the German defeat in World War 1.[14]

Notwithstanding his remarkable successes Bismarck felt that he had foiled, and in 1898 he died an embittered old man.[15] Clearly, Germany was not going the way he had intended. Probably it was the resumption of Germany's slow drift toward democratization that angered him most.

But his bitterness would have been deeper if he had foreseen the future. One can only speculate as to what the history of Germany might have been after 1890 if Bismarck hadn't led the country up to that date, but it is certain that he did not succeed in putting Germany on a course leading to results of which he would have approved; for Bismarck would have been horrified by the disastrous war of 1914-18, by Germany's defeat in it, and above all by the subsequent rise of Adolf Hitler.

• In the United States, reformers' zeal led to the enactment in 1919 of "Prohibition" (prohibition of the manufacture, sale, or transportation of alcoholic beverages) as a constitutional amendment. In terms of its immediate objectives Prohibition was rather successful, for it reduced per capita consumption of alcohol in the United States by some sixty or seventy percent, it diminished the incidence of alcohol-related diseases and deaths, and it "eradicated the saloon." On the other hand it provided criminal gangs with opportunities to make huge profits through the smuggling and/or the illicit manufacture of alcoholic drinks; thus Prohibition greatly promoted the growth of organized crime. In addition, it led to the corruption both of public institutions and of individual citizens. It became clear that Prohibition was a serious mistake, and it was repealed through another constitutional amendment in 1933.[16]

• The so-called "Green Revolution" of the latter part of the 20th century—the introduction of new forming technologies and of recently developed, highly productive varieties of grain—was supposed to alleviate hunger in the Third World by pro-

[14] NEB (2003), Vol. 20, "Germany," p. 114.

[15] NEB (2003), Vol. 15, "Bismarck," p. 124. For Bismarcks careergenerally, see ibid., pp. 121-24; ibid., Vol. 20, "Germany," pp. 109-114; Zimmermann, Chapts. 1&7; Dorpalen, pp. 219-220, 229-231, 255-56, 259-260^^53.

[16] Constitution of the United States, Amendments XVIII & **XXI.** Patterson, pp. 167-69. NEB (2003), Vol. 29, "United States of America," pp. 254-55. Encyclopedia ofAmerican Studies (2001),Vol.3,"Prohibition," pp. 414-17. Okrent, p.373. USA Today, .Aug.. 17, 2016, p. 8A.Vergano,p. 3A,says that according to Arthur Lurigio of Loyola University Chicago, "Prohibition... was unique in its widespread loathing by the populace and that opening is what enabled organized crime to gain its political footing in Chicago."

viding more abundant harvests. It did indeed provide more abundant harvests. But: "[A]lthough the 'Green Revolution' seems to have been a success as far as the national total cereal production figures are concerned, a look at it from the perspective of communities and individual humans indicates that the problems have for outweighed the successes ... ."[17] In some parts of the world the consequences of the Green Revolution have been nothing short of catastrophic. For example, in the Punjab (a region lying partly in India and partly in Pakistan), the Green Revolution has ruined "thousands of hectares of [formerly] productive land," and has led to severe lowering of the water table, contamination of the water with pesticides and fertilizers, numerous cases of cancer (probably due to the contaminated water), and many suicides. " 'The green revolution has brought us only downfall,' says Jarnail Singh ... . 'It ruined our soil, our environment, our water table. Used to be we had fairs in villages where people would come together and have fun. Now we gather in medical centers;.'"[18]

From other parts of the world as well come reports of negative consequences, of varying degrees of severity, that have followed the Green Revolution; These consequences include economic, behavioral, and medical effects in addition to environmental damage (e.g., desertification).[19]

• In 1953, U.S. President Eisenhower announced an "Atoms for Peace" program according to which the nations of the world were supposed to pool nuclear information and materials under the auspices of an international agency. In 1957 the International Atomic Energy Agency was established to promote the peaceful uses of atomic energy, and in 1968 the United Nations General Assembly approved a "non-proliferation" treaty under which signatories agreed not to develop nuclear weapons and in return were given nuclear technology that they were supposed to use only for peaceful purposes.[20] The people involved in this effort should have known enough history to realize that nations generally abide by treaties only as long as they coinsider it in their own (usually short-term) interest to do so, which commonly is not very long. But apparently the assumption was that the nations receiving nuclear technology would be so grateful, and so happy cooperating in its peaceful application, that they would forever put aside the aspirations for power and the bitter rivalries that throughout history had led to the development of increasingly destructive weapons.

This idea seems to have originated with scientists like Robert Oppenheimer and Niels Bohr who had helped to create the first atomic bomb.[21] That physicists would

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[17] Naruo Uehara, p. 235.

[18] Bourne, pp. 46-47.

[19] E.g.: Sohail Ejaz et al., pp. 98-102 (Pakistan, medical effects); Yukinori Okada & Susumu Wakai, pp. 236-242 (Thailand, economic and medical effects); Naruo Uehara, p. 235 (various effects, including desertification in unspecified countries); Aditya Batra (Sri Lanka, medical effects); Guillette et al., pp. 347-353 (Mexico, medical and behavioral effects); Watts (entire work) (various countries, various effects).

[20] NEB (2003), Vol. 4, "Eisenhower, Dwight D(avid)," p. 405; Vol. 18, "Energy Conversion," p. 383; Vol. 29, "United Nations," p. 144.

[21] A.K. Smith & C. Weiner, pp. 271,291,295,310,311,328.

come up with something so naive was only to be expected, since specialists in the physical sciences almost always are grossly obtuse about human affairs. It seems surprising, however, that experienced politicians would act upon such an idea. But then, politicians often do things for propaganda purposes and not because they really believe in them.

The "Atoms for Peace" idea worked fine—for a while. Some 140 nations signed the non-proliferation treaty in 1968 (others later),[22] and nuclear technology was spread around the world. Iran, in the early 1970s, was one of the countries that received nuclear technology from the U.S.[23] And the nations receiving such technology didn't try to use it to develop nuclear weapons. Not immediately, anyway Of course, we know what has happened since then. "[H]ard-nosed politicians and diplomats [e.g., Henry Kissinger] ... argue that proliferation of nuclear weapons is fast approaching a 'tipping point' beyond which it will be impossible to check their spread." These "veterans of America's cold-war security establishment with impeccable credentials as believers in nuclear deterrence" now claim that such weapons "ha[ve] become a source of intolerable risk;."[24] And there is the inconvenient fact that the problem of safe disposal of radioactive waste from the peaceful uses of nuclear energy still has not been solved.[25]

The "Atoms for Peace" fiasco suggests that humans' capacity to control the development of their societies not only has failed to progress, but has actually retrogressed. Neither Solon nor Bismarck would have supported anything as stupid as "Atoms for Peace."

[22] NEB (2003), Vol. 29, "United Nations," p. 144.

[23] F. Zakaria, p. 34.

[24] 7he Economist, June 18, 2011, "Move the base camp," pp. 18, 20, and "The growing appeal of zero," p. 69.

[25] See Kaczynski, Letter to David Skrbina: March 17, 2005, Part I.A, point 12; and either Afterthought 3 of the Feral House edition or Appendix Five of the Fitch & Madison edition. Also, "Radioactive fuel rods: The silent threat," 1he Week, April 15, 2011, p. 13.

Part II

There are good reasons why humans' capacity to control the development of their societies has failed to progress. In order to control the development of a society you would have to be able to predict how the society would react to any given action you might take, and such predictions have generally proven to be highly unreliable. Human societies are complex systems—technologically advanced societies are most decidedly complex—and prediction of the behavior of complex systems presents difficulties that are not contingent on the present state of our knowledge or our level of technological development.

> [U]nintended consequences [are] a well-known problem with the design and use of technology... .The cause of many [unintended consequences] seems clear: The systems involved are complex, involving interaction among and feedback between many parts. Any changes to such a system will cascade in ways that are difficult to predict; this is especially true when human actions are involved.[1]

Problems in economics can give us some idea of how impossibly difficult it would be to predict or control the behavior of a system as complex as a modern human society. It is convincingly argued that a modern economy can never be rationally planned to maximize efficiency, because the task of carrying out such planning would be too overwhelmingly complex.[2] Calculation of a rational system of prices for the U.S. economy alone would require manipulation of a conservatively estimated $6x10^{13}$ (sixty trillion!) simultaneous equations.[3] That takes into account only the economic factors involved in establishing prices and leaves out the innumerable psychological, sociological, political, etc., factors that continuously interact with the economy.

Even if we make the wildly improbable assumption that the behavior of our society could be predicted through the manipulation of, say, a million trillion simultaneous equations and that sufficient computing power to conduct such manipulation were available, collection of the data necessary for insertion of the appropriate numbers into the equations would be impracticable,[4] especially since the data would have to

[1] Joy, p. 239.

[2] Steele, pp. 5-21. It is also claimed that a free market provides a mechanism that "automatically" maximizes the efficiency of an economy. This last contention is unproven and probably far from accurate, but the argument that excessive complexity makes rationally planned economies impossible is very strong.

[3] Ibid., p. 83. Stigler, p. 113.

[4] "It is 'absurd' to suppose that the information could be collected... ." Steele, p. 83.

meet impossibly high standards of precision if the predictions were expected to remain valid over any considerable interval of time. Edward Lorenz, a meteorologist, was the first to call widespread attention to the fact that even the most minute inaccuracy in the data provided can totally invalidate a prediction about the behavior of a complex system. This fact came to be called the "butterfly effect" because in 1972, at a meeting of the American Association for the Advancement of Science, Lorenz gave a talk that he titled "Predictability: Does the Flap of a Butterfly's Wings in Brazil Set Off a Tornado in Texas?"[5] Lorenz's work is said to have been the inspiration for the development of what is called "chaos theory"[6]—the butterfly effect being an example of "chaotic" behavior.

Chaotic behavior is not limited to complex systems; in fact, some surprisingly simple systems can behave chaotically.[7] The Encyclopaedia Britannica illustrates this with a purely mathematical example. Let A and x_0 be any two given numbers with $0<A<4$ and $0<x_0<1$, and let a sequence of numbers be generated according to the formula x_{n+i}=Axn (1 - x_n). For certain values of A, e.g., A=3.7, the sequence behaves chaotically: In order to bring about a linear increase in the number of terms of the sequence that one can predict to a reasonable approximation, one needs to achieve an exponential improvement in the accuracy of one's estimate of x_0. In other words, in order to predict the nth term of the sequence, one needs to know the value ofx0 with an error not exceeding 10'1', k a constant.[8] This is characteristic of chaotic systems generally: Any small extension of the range of prediction requires an exponential improvement in the accuracy of the data.

> [A]ll chaotic systems share the property that every extra place of decimals in one's knowledge of the starting point only pushes the horizon [of predictability] a small distance away. In practical terms, the horizon of predictability is an impassable barrier. ... [O]nce it becomes clear how many systems are sufficiently nonlinear to be considered for chaos, it has to be recognized that prediction may be limited to short stretches set by the horizon of predictability. Full comprehension... must frequently remain a tentative process ... with frequent recourse to observation and experiment in the event that prediction and reality have diverged too far.[9]

It should be noted that the Heisenberg Uncertainty Principle sets an absolute limit to the precision of data used for the prediction of physical phenomena. This principle, which implies that certain events involving subatomic particles are unpredictable, is inferred mathematically from other known laws of physics; hence, successful prediction

[5] The text of the talk can be found in Lorenz, pp. 181-84.
[6] Time, May 5, 2008, p. 18. 7he Week, May 2,2008, p. 35.
[7] NEB (2003), Vol. 3, "chaos," p. 92.
[8] Ibid., Vol. 25, "Physical Sciences, Principles of," p. 826.
[9] Ibid., pp. 826-27.

at the subatomic level would entail violations of the laws of physics. If a prediction about the behavior of a macroscopic system requires data so precise that their accuracy can be disturbed by events at the subatomic level, then no reliable prediction is possible. Hence, for a chaotic physical system, there is a point beyond which the horizon of predictability can never be extended.

Of course, the behavior of a human society is not in every respect chaotic; there are empirically observable historical trends that can last for centuries or millennia. But it is wildly improbable that a modern technological society could be free of all chaotic subsystems whose behavior is capable of affecting the society as a whole, so it is safe to assume that the development of a modern society is necessarily chaotic in at least some respects and therefore unpredictable.

This doesn't mean that no predictions at all are possible. In reference to weather forecasting the Britannica writes:

> It is highly probable that atmospheric movements... are in a state of chaos. If so, there can be little hope of extending indefinitely the range of weather forecasting except in the most general terms. There are clearly certain features of climate, such as annual cycles of temperature and rainfall, which are exempt from the ravages of chaos. Other large-scale processes may still allow long-range prediction, but the more detail one asks for in a forecast, the sooner it will lose its validity.[10]

Much the same can be said of the behavior of human society (though human society is far more complex even than the weather). In some contexts, reasonably reliable and specific short-term predictions can be made, as we noted above in reference to the relationship between interest rates, infation, and unemployment. Long-term predictions of an imprecise and nonspecific character are often possible; we've already mentioned Bolivar's correct prediction of the failure of stable and "enlightened" government in Spanish America. (Here it is well to note that predictions that something will not work can generally be made with greater confidence than predictions that something will work.[11]) But reliable long-term predictions that are at all specific can seldom be made.

There are exceptions. Moore's Law makes a specific prediction about the rate of growth of computing power, and as of2012 the law has held true for some fifty years.[12] But Moore's Law is not an inference derived from an understanding of society, it is simply a description of an empirically observed trend, and no one knows how long the trend will continue. The law may have predictable consequences for many areas of

[10] Ibid., p. 826.

[11] See Kaczynski, Letters to a German, paragraph that begins, "Among the few reliable predictions..."

[12] See Kelly, pp. 159ff. But Moore himself thinks the law is a "self-fulfilling prophecy," i.e., it continues to hold true only because people believe in it. Ibid., p. 162.

technology, but no one knows in any specific way how all this technology will interact with society as a whole. Though Moore's Law and other empirically observed trends may play a useful role in attempts to foresee the future, it remains true that any effort to understand the development of our society must (to borrow the Britannica's phrases) "remain a tentative process... with frequent recourse to observation and experiment... ."

But just in case someone declines to assume that our society includes any important chaotic components, let's suppose for the sake of argument that the development of society could in principle be predicted through the solution of some stupendous system of simultaneous equations and that the necessary numerical data at the required level of precision could actually be collected. No one will claim that the computing power required to solve such a system of equations is currently available. But let's assume that the unimaginably vast computing power predicted by Ray Kurzweil[13] will become a reality for some future society, and let's suppose that such a quantity of computing power would be capable of handling the enormous complexity of the present society and predicting its development over some substantial interval of time. It does not follow that a future society of that kind would have sufficient computing power to predict its own development, for such a society necessarily would be incomparably more complex than the present one: The complexity of a society will grow right along with its computing power, because the society's computational devices are part of the society.

There are in fact certain paradoxes involved in the notion of a system that predicts its own behavior. These are reminiscent of Russell's Paradox in set theory[14] and of the paradoxes that arise when one allows a statement to talk about itself (e.g., consider the statement, "This statement is false").

When a system makes a prediction about its own behavior, that prediction may itself change the behavior of the system, and the change in the behavior of the system may invalidate the prediction. Of course, not every statement that talks about itself is paradoxical. For example, the statement, "This statement is in the English language" makes perfectly good sense. Similarly, many predictions that a system may make about itself will not be self-invalidating; they may even cause the system to behave in such a way as to fulfill the prediction.[15] But it is too much to hope for that a society's predictions about itself will **never** be (unexpectedly) self-invalidating.

A society's ability to predict its own behavior moreover would seem to require something like complete self-knowledge, and here too one runs into paradoxes. We need not discuss these here; some thought should suffice to convince the reader that any attempt to envision a system having complete self-knowledge will encounter difficulties.

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[13] Kurzweil, e.g., pp. 351-368.

[14] Russell's Paradox: Let a set be called "ordinary" if, and only if, it is not a member of itself, and let S be the set of all ordinary sets. Is S ordinary, or not?

[15] See note 39.

Thus, from several points of view—past and present experience, complexity, chaos theory, and logical difficulties (paradoxes)—it is clear that no society can accurately predict its own behavior over any considerable span of time. Consequently, no society can be consistently successful in planning its own future in the long term.

This conclusion is in no way unusual, surprising, or original. Astute observer's of history have known for a long time that a society can't plan its own future. Thus Thurston writes: "[N]o government has ever been able physically to manage the total existence of a country, ... or to foresee all the complications that would ensue from a decision made at the center."[16]

According to Henry Kissinger: "History is a tale of efforts that failed, of aspirations that weren't realized, of wishes that were fulfilled and then turned out to be different from what one expected."[17]

Norbert Elias wrote: "[T]he actual course of... historical change as a whole is intended and planned by no-one."[18] And: "Civilization ...is set in motion blindly, and kept in motion by the autonomous dynamics of a web of relationships..."[19]

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[16] Thurston, p. xviii. See also Buechler, p. 27 ("social action always produces unintended and unanticipated consequences").

[17] Isaacson, p. 697.

[18] Elias, p. 543nl. See also R. Heilbroner &A. Singer, p. 112 (much of economic history "follow[s] from the blind workings of the market mechanism").

[19] Elias, p. 367. However, Elias continues: "But it is by no means impossible that we can make of it something more 'reasonable,' something that functions better in terms of our needs and purposes. For it is precisely in conjunction with the civilizing process that the blind dynamics of people intertwining in their deeds and aims gradually leads toward greater scope for planned intervention into both the social and individual structures—intervention based on a growing knowledge of the unplanned dynamics of these structures." But Elias does not even pretend to offer any evidence to support this statement, which is mere speculation—in contrast to his statements about the unplanned and unintended character of all earlier historical change, which are abundantly supported by his empirical studies of the ways in which European society changed in the past. What Elias suggests here looks very much like the proposal set forth at the beginning of Part III of the present chapter, and that proposal is disposed of in Part III.

When Elias claims that "we can make of [society] ... something that functions better in terms of our needs and purposes," he fails to explain who this "we" is. Obviously, "we" don't all have the same purposes, and the effort to fulfill some of "our" needs (e.g., status, power) inevitably brings us into conflict with others among the "we." See Parts III and IV of this chapter.

Though the edition of Elias's book cited here is dated 2000, the content was written several decades earlier. Since that time there has been no discernible improvement in humans' capacity for "planned intervention" in the development of their societies. If anything, our statesmen seem even less in control of events than they were in the past. Elias's formative years were in the frst half of the 20th century, when a belief in "progress" was still widely current. Elias seems to have been reluctant—not for rational reasons—to relinquish that belief. His remarks on that subject, ibid., pp. 462-63, are ill-advised.

Part III

The expected answer to the foregoing will be: Even granting that the behavior of a society is unpredictable in the long term, if may nevertheless be possible to steer a society rationally by means of continual short-term interventions. To take an analogy, if we let a car without a driver roll down a rugged, irregular hillside, the only prediction we can make is that the car will not follow any predetermined course but will bounce around erratically. However, if the car has a driver, he may be able to steer it so as to avoid the worst bumps and make it roll instead through relatively smooth places. With a good deal of luck he may even be able to make the car arrive approximately at a preselected point at the foot of the hill. For these purposes the driver only needs to be able to predict very roughly how far the car will veer to the right or to the left when he turns the steering wheel. If the car veers too far or not far enough, he can correct with another turn of the wheel.

Perhaps something similar could be done with an entire society. It is conceivable that a combination of empirical studies with increasingly sophisticated theory may eventually make possible fairly reliable shortterm predictions of the way a society will react to any given change—just as fairly reliable short-term weather forecasting has become possible. Perhaps, then, a society might be successfully steered by means of frequent, intelligent interventions in such a way that undesirable outcomes could usually be avoided and some desirable outcomes achieved. The steering process would not have to be infallible; errors could be corrected through further interventions. Just possibly, one might even hope to succeed in steering a society so that it would arrive in the long run at something approximating one's conception of a good society.

But this proposal too runs into difficulties of a fundamental kind. The first problem is: Who decides what outcomes are desirable or undesirable, or what kind of "good" society should be our long-term goal? There is never anything resembling general agreement on the answers to such questions. Friedrich Engels wrote in 1890:

> History is made in such a way that the final result always arises from the conflicts among many individual wills, each of which is made into what it is by a multitude of special conditions of life; thus there are innumerable intersecting forces, an infinite collection of parallelograms of forces, and from them emerges a resultant—the historical event—which from another point of view can be regarded as the product of one power that, as a whole, operates unconsciously and without volition. For what each individual wants

> runs up against the opposition of every other, and what comes out of it all is something that no one wanted.[1]
>
> Norbert Elias, who was not a Marxist, made a very similar remark:
>
> [F]rom the interweaving of countless individual interests and intentions—whether tending in the same direction or in divergent and hostile directions—something comes into being that was planned and intended by none of these individuals, yet has emerged nevertheless from their intentions and actions.[2]

Even in those rare cases in which almost everyone agrees on a policy, effective implementation of the policy may be prevented by what is called the "problem of the commons." The problem of the commons consists in the fact that it may be to everyone's advantage that everyone should act in a certain way, yet it may be to the advantage of each individual to act in a contrary way.[3] For example, in modern society it is to everyone's advantage that everyone should pay a portion of his income to support the functions of government. Yet it is to the advantage of each individual to keep all his income for himself, and that's why hardly anyone pays taxes voluntarily, or pays more than he has to.

The answer to the foregoing arguments will be that political institutions exist precisely in order to resolve such problems: The concrete decisions made in the process of governing a society are not the resultant of conflicts among the innumerable individual wills of the population at large; instead, a small number of political leaders are formally empowered (through elections or otherwise) to make necessary decisions for everyone, and to enact laws that compensate for the problem of the commons by compelling individuals to do what is required for the common welfare (for example, laws that compel payment of taxes). Since the top political leaders are relatively few in number, it is not unreasonable to hope that they can resolve their differences well enough to steer the development of a society rationally.

Actually, experience shows that when the top political leaders number more than, say, half a dozen or so, it must seriously be doubted whether they can ever resolve

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[1] Engels, Letter to Joseph Bloch, as referenced in our List of Works Cited. Engels of course wrote in German. The translation given here is influenced both by the English translation in Historical Materialism (see the List of Works Cited), pp. 294-96, and by the Spanish translation provided by Carrillo, pp. 111-12. Since Carrillo was Secretary General of the Communist Party of Spain, he presumably was learned in Engels's ideas.

[2] Elias, p. 311. But see note 46, above.

[3] See Kaczynski, Letter to David Skrbina: March 17, 2005, Part I.A, point 11. The problem of the commons is also called the "tragedy of the commons," and the term is often used in a narrower sense than that in which I use it here. See, e.g., Diamond, pp. 428-430. But the term is also used in the broader sense in which I apply it. E.g., The Economist, April 2, 2011, p. 75. Without using the term 'problem" or "tragedy of the commons," Surowiecki, p. 25, has illustrated the concept by giving several excellent examplies of way's in which "individually rational decisions [can] add[ ] up to a collectively irrational result:."

their differences well enough to be able to govern in a consistently rational way. But even where no conflicts exist among the top leaders, the real power of such leaders is very much less than the power that is formafly assigned to them. Consequently, their ability to steer the development of their society rationally is extremely limited at best.

When this writer was in the Sacramento County Main Jail in 199698, he had some interesting conversations with the jail administrator, Lieutenant Dan Lewis. In the course of one such conversation, on December 31, 1996, Lewis complained that it was not easy to get some of his officers to follow his orders, and he described the problems that a person in a position of formal power faces when he tries to exert that power to make his organization do what he wants it to do. If the leader takes measures that are resented by too many of the people under his command, he will meet with so much resistance that his organization will be paralyzed.[4]

It's not only jail administrators whose power is far more limited than it appears to an outsider. Julius Caesar reportedly said, "The higher our station, the less is our freedom of action."[5] According to an English author of the 17th century: "Men in great place (saith one) are thrice servants; servants of the sovereign, or state; servants of fame; and servants of business. So as they have no freedom, neither in their persons, nor in their actions, nor in their times."[6] U.S. President Abraham Lincoln wrote: "I claim not to have controlled events, but confess plainly that events have controlled me."[7]

While F.W. de Klerk was President of South Africa, Nelson Mandela asked him why he did not prevent acts of violence that in some cases were being carried out with the collusion of the police. De Merk replied, "Mr. Mandela, when you join me [as a member of the government] you will realise I do not have the power which you think I have."[8] It's possible that de Merk was pleading powerlessness as an excuse for tolerating violence that in reality he might have been able to prevent. Nevertheless, when Mandela himself became President, he "quickly realized, as de Klerk had warned him, that a President had less power than he appeared to. He could rule effectively

[4] The second sentence of this paragraph is based on my notes of a conversation with Lt. Lewis, written within a couple of hours after the end of that conversation.The relevant pages are No. 04-1013 and No. 04-1016 of my Bates- numbered notes to my attorneys, which should now be in the Labadie Collection at the University of Michigan's Special Collections Library. The last sentence of the paragraph is based on my recollection (2012) of the same conversation.

[5] From a speech attributed to Caesar by Sallust, Conspiracy of Catiline, section 51, p. 217. Roman historians commonly invented the speeches that they attributed to famous people, but the quoted statement is worth noting whether it represented Caesars opinion or Sallust's.

[6] Brathwait, quoted by Boorstin, pp. 99-100. I've taken the liberty of modernizing spelling and capitalization.

[7] NEB (2003),Vol.23, "Lincoln,"p.36.

[8] Sampson, pp. 454-55.See also p. 436 (Mandela" 'was still operating under the illusion, cherished by so many revolutionaries,' complained de Klerk... , 'that possession of the levers of government enabled those in power to achieve whatever goals they wanted.'").

only through his colleagues and civil servants, who had to be patiently persuaded ... "[9]

In line with this, a thorough student of the American presidency, Clinton Rossiter, has explained how severely the power of the President of the United States is limited, not only by public opinion and by the power of Congress, but also by conflicts with members of his own administration who, in theory, are totally under his command.[10] Rossiter refers to "the trials undergone by [Presidents] Truman and Eisenhower in persuading certain chiefs of staff', whose official lives depend entirely on the President's pleasure, to shape their acts and speeches to the policies of the administration."[11] One of our most powerful presidents, Franklin D. Roosevelt, complained:

> The Treasury is so large and far-flung and ingrained in its practices that I find it is almost impossible to get the actions and results I want... . But the Treasury is not to be compared with the State Department:. You should go through the experience of trying to get any changes in the thinking, policy and action of the career diplomats and then you'd know what a real problem was. But the Treasury and the State Department put together are nothing compared with the Na-a-vy. The admirals are really something to cope with—and I should know. To change anything in the Na-a-vy is like punching a feather bed. You punch it with your right and you punch it with your left until you are finally exhausted, and then you find the damn bed just as it was before you started punching.[12]
>
> Roosevelt's capable successor in the presidency, Harry S. Truman, said:
>
> [P]eople talk about the powers of a President, all the powers that a Chief Executive has, and what he can do. Let me tell you something—from experience!
>
> The President may have a great many powers given to him by the Constitution and may have certain powers under certain laws which are given to him by the Congress of the United States; but the principal power that the President has is to bring people in and try to persuade them to do what they ought to do without persuasion. That's what I spend most of my time doing. That's what the powers of the President amount to.[13]

Thus, concentration of formal power in the hands of a few top leaders by no means liberates decision-making from Engels's "conflicts among many individual wills." Some people may be surprised to learn that this is true even in a society governed by a single, theoretically absolute ruler.

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[9] Ibid., p.498.
[10] Rossiter, pp. 52-64.
[11] Ibid., p.54.
[12] Ibid.
[13] Ibid.,pp.167-68.

• From 200 BC to 1911 AD, all Chinese dynasties were headed by an emperor who "was the state's sole legislator, ultimate executive authority, and highest judge. His pronouncements were, quite literally, the law, and he alone was not bound by his own laws."[14] The emperor was supposed to be restrained by "Confucian norms and the values perpetuated by the scholar-official elite,"[15] but in the absence of an explicit codification or any mechanism for enforcement, these restraints were effective against the emperor only to the extent that some of his subjects were brave enough to challenge him on their own initiative, though the emperor, "if he insisted, would prevail."[16]

More important, therefore, were the practical limitations to which the emperor was subject. 'As the head of a vast governmental apparatus... he was... forced to delegate his powers to others who conducted the routine operations of government... Institutions inherited from previous dynasties were the main vehicles through which he delegated political responsibilities," for "in seeking alternatives to that immediate past, one had no models outside of China to draw upon."[17] Needless to say, the actual power wielded by an emperor depended on the energy and ability of the individual who occupied the office at any given time,[18] but it seems clear that that power was in every case far less than what might naively be inferred from the fact that the emperor's word was law.

To illustrate the practical limitations on the emperor's power with a concrete example,in 1069 AD the emperor Shenzong (Shen-tsung), having recognized the brilliance of the political thinker Wang Anshi (An-shih), appointed him Vice Chief Councillor in charge of administration and gave him fall power to implement his ideas in the emperor's name.[19] Wang based his reforms on thorough study, but both he and the emperor failed to take account of the bitter opposition that the new policies would arouse among those whose private interests were threatened by them.[20] "Even in the short run, the cost of the divisive factionalism that the reforms generated had disastrous effects."[21] Opposition to Wang was so intense that he resigned permanently in 1076, and during the eight years following Shenzong's death in 1085 most of the reforms were rescinded or drastically revised.[22] Under two subsequent emperors, Zhezong (Che-tsung; reigned in effect, circa 1093-1100) and Huizong (Hui-tsung; reigned 1100-1126), some of the reforms were restored, but "Wang's own former associates were gone, and his policies became nothing more than an instrument in bitter political warfare."[23] "[A]lthough Emperor Huizong's reign saw some of the reform measures reinstated, the

[14] Mote, p. 98.
[15] Ibid., p. 99.
[16] Ibid.
[17] Ibid.
[18] See ibid., pp. 99-100.
[19] Ibid.,p.139.
[20] NEB (2003),Vol. 16, "China,"p. 100. Mote, pp. 139-142.
[21] NEB (2003),loc.cit.
[22] Mote, p. 142. NEB (2003), loc. cit.
[23] Mote, p. 142. For emperors' dates see ibid., p. 105, Chart 2. Zhezong technically became emperor in 1085, but the country was governed by a regent until approximately 1093.

atmosphere at his court was not one of high-minded commitment,"[24] but was characterized by "debased political behavior."[25] "Leading officials engaged in corrupt practices," and the rapacity of the emperor's agents "aroused serious revolts of people who in desperation took up arms against them."[26] The fall of the Northern Song (Sung) Dynasty in 1126-27 marked the final demise of whatever was left of Wang's reforms.[27]

• Norbert Elias makes clear that the "absolute" monarchs of the "Age of Absolutism" in Europe were not so absolute as they seemed.[28] For example, Louis XIV of France is generally seen as the archetype of the "absolute" monarch; he could probably have had any individual's head chopped off at will. But by no means could he use his power freely:

> The vast human network that Louis XIV ruled ha[d] its own momentum and its own centre of gravity which he had to respect. It cost immense effort and self-control to preserve the balance of people and groups and, by playing on the tensions, to steer the whole.[29]

Elias might have added that Louis XIV could "steer" his realm only within certain narrow limits. Elias himself refers elsewhere to "the realization that even the most absolute government is helpless in the face of the dynamisms of social development. ... "[30]

• The theoretically absolute emperor Joseph II ruled Austria from 1780 to 1790 and instituted major reforms of a "progressive" (i.e., modernizing) character. But:

"By 1787 resistance to Joseph and his government was intensifying . . . . Resistance simmered in the Austrian Netherlands...

"[By 1789) ... The war [against the Turks] caused an outpouring of popular agitation against his foreign policy, the people of the Austrian Netherlands rose in outright revolution, and reports of trouble in Galicia increased . ...

"Faced with these difficulties, Joseph revoked many of the reforms that he had enacted earlier. ...

• ... [Joseph II] tried to do too much too quickly and so died a deeply disappointed man."[31]

Especially to be noted is the fact that Joseph II failed even though most of his reforms were modernizing ones; that is, they merely attempted to accelerate Austria's movement in obedience to a powerful pre-existing trend in European history.

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[24] Ibid., p. 207.
[25] Ibid.,p. 143.
[26] Ibid., p.207.
[27] Ibid., p. 143.
[28] Elias, pp. 312-344.
[29] Ibid., pp. 343-44.
[30] Ibid., p. 38. For an inkling of the limitations on what one very nearly absolute monarch can do today, see Goldberg, pp. 44-55 (about King Abdullah II ofJordan).
[31] NEB (2003), Vol. 14,"Austria," pp. 518-520.

Revolutionary dictators of the 20th century, such as Hitler and Stalin, were probably more powerful than traditional "absolute" monarchs, because the revolutionary character of their regimes had done away with many of the traditional, formal or informal social structures and customary restraints that had curbed the "legitimate" monarchs' exercise of their power.[32] But even the revolutionary dictators' power was in practice far less than absolute.

• In the Soviet Union between 1934 and 1941, the Stalin regime was unable to regulate its own labor force, for the "demand for labor created a situation that overrode ... the efforts of the regime to control labor through legislation."[33] The government naturally wanted a stable work-force consisting of workers who would remain at their jobs as long as they were needed, but in practice workers "continued to change jobs at a high rate."[34] Laws were evaded or simply ignored, and "hardly slowed down the movement of workers."[35]

More significantly, the Terror of the middle to late 1930s was not a calculated and effective measure undertaken by Stalin to crush resistance to his rule. Instead, a frightened dictator initiated a process that rapidly spiraled out of his control. "Stalin was a man initiating and reacting to developments, not the cold mastermind of a plot to subdue the party and the nation." "It now appears that Stalin and his close associates, having helped create a tense and ugly atmosphere, nonetheless repeatedly reacted [during the Terror] to events they had not planned or foreseen." "An atmosphere of panic had set in reminiscent of the European witch-hunts ... . " "Stalin seems to have become steadily more worried as the purges uncovered alleged spies and Trotstyites. Finally he struck at them, almost incoherently.[¶] During 1937 and 1938 events spun out of... control." "[T]he police fabricated cases, tortured people not targeted in Stalin's directives, and became a power unto themselves." "Terror was producing avoidance of responsibility, which was dysfonctional. Whatever the goal at the top, events were again out of control." "[Stalin] reacted, and over-reacted, to events. ... He was sitting

[32] It could be argued that dissolution of the "traditional... social structures and customary restraints" was a precondition for the dictators' rise to power. See Selznick, p. 281n5.

[33] Thurston, p. 169. For other information on the regime's inability to control its labor force, see ibid., pp. 167-172, 176, 184.

[34] Ibid., p. 172. Ulam, p. 342.

[35] Thurston, p. 171. There were of course other ways in which Stalin's intentions were thwarted by some combination of economic realities and ordinary people's refusal to cooperate. E.g., Stalin's program of forced collectivization wrecked Soviet agriculture, which never fully recovered. Ulam, pp. 330-37, 355-56. It might be claimed that, despite his inability to control his work-force, Stalin did exercise control to the extent that he achieved the industrialization of the Soviet Union. But industrialization had already begun under the tsars, and, given Russia's proximity to the industrialized West, its continuing industrialization was only to be expected. Thus, in industrializing Russia, Stalin merely pushed the country along its predetermined course of development; and under a capitalist regime it's likely that industrialization would have proceeded more rapidly and more efficiently.

at the peak of a pyramid of lies and incomplete information ... ." "The evidence is now strong that [Stalin] did not plan the Terror."[36]

One of the consequences of the Terror was the elimination of almost all of the trained and experienced officers from the higher ranks of the Soviet army and navy, with the result that Stalin's military machine was crippled.[37] This was at least part of the reason for the Soviet collapse before the German onslaught in 1941.

• During the 1930s, when the Hitler regime was rearming Germany in preparation for anticipated warfare, resistance by the working class "kept the government from curtailing the production of consumers' goods, although civilian output interfered seriously with arms production."[38] In 1936, "a kind of popular uprising in Munsterland" forced the Nazis to replace the crucifixes that they had removed from school buildings, and there were other instances in which fear of resistance from the churches led the regime to moderate its policies.[39] It can hardly be open to doubt that study of the inner workings of the Third Reich would reveal many additional ways in which the Nazis' policies were limited by the anticipated public reaction to them.

Ulam notes that Hitler's original choice for commander-in-chief of the German army was vetoed by his officers "on the grounds that the man was too much of a Nazi," and he implies that Hitler had far less control over the German military establishment than Stalin had over the Soviet one.[40] But Hitler surely would have been able to eliminate all resistance from his officer corps by conducting a thorough purge like that carried out by Stalin. Actually, Hitler was well aware that there was serious disaffection among his generals,[41] yet, until the assassination attempt of July 20, 1944, he never undertook a major purge of the German military.[42] Why didn't he?

The answer to that question helps to show how limited are the options available even to an "absolute" ruler. A dictator in the position of a Hitler or a Stalin has essentially only two choices: He can carry out a thorough purge of his officer corps, as Stalin did, in which case he cripples his military machine by eliminating most of its trained and experienced leaders; or he can leave his officer corps largely intact, as Hitler did, in which case he risks being overthrown by his own generals. Hitler was bent on military

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[36] Thurston, pp. 17, 57, 90, 106, 112, 147, 227-28, 233. Stalin did not plan the Terror as it actually developed, but Thurston's argument is insufficient to prove that Stalin did not plan to initiate a terror campaign of some sort, though the terror campaign that he did initiate proved uncontrollable. In other respects, and as far as concretefacts (as opposed to rhetoric) are concerned,Thurston's view is mostly consistent with the more traditional view of Stalin as the "mastermind of a plot to subdue the party and the nation." For all this, and for some remarks on state terrorism in general, see Appendix Five.

[37] Thurston, p. 200. Ulam, pp. 445-48, 489,521, 523.

[38] Dorpalen, p. 418.

[39] Rothfels, pp. 58-59.

[40] Ulam, p. 447.

[41] Kosthorst, pp. 108-110. Rothfels, pp. 97,104, 227n88.

[42] Hitler did purge his army to a limited extent. Thurston, p. 200. Rothfels, p. 88. But this was not comparable to the kind of thorough purge that Stalin carried out. Apparently the officers purged by Hitler were merely dismissed from the service, not executed or imprisoned.

conquest, for which he needed an efficient army, so he gambled on retaining his trained and experienced officers even though he knew that many of them were opposed to his policies and some even aspired to remove him from power. Hitler won his gamble in the sense that he remained in power until defeated militarily by the Allies, but he did so only through an astonishing series of lucky breaks. Rothfels[43] marvels at Hitler's incredible luck: Again and again, from 1938 up to July 20, 1944, the Fuhrer's own officers tried to assassinate him or carry out a coup against him, but he was always saved at the last moment by some chance circumstance.[44]

It's worth noting that, in Ulam's opinion, Stalin too needed "fantastic luck" in order to gain power and retain it as long as he did.[45]

Quite apart from any resistance by subordinates or other "conflicts among individual wills" within a system, purely technical factors narrowly limit the options open even to a leader whose power over his system is theoretically absolute.

• In Frank Norris's immortal novel, The Octopus—about wheat farmers whose livelihood is destroyed by railroad rate increases—the protagonist, Presley, confronts the apparently ruthless businessman

Shelgrim, President of the railroad. But Shelgrim tells him:

"'You are dealing with forces, young man, when you speak of wheat and the railroads, not with men . ... Men have only little to do with the whole business . ... Blame conditions, not men.'

"'But—but', faltered Presley, 'You are the head, you control the road.'

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[43] Rothfels, p. 100.

[44] To mention only the three most striking examples:

(i) In 1938 some of Hitler's generals planned a coup d'etat, which was to take place on the morning of September 29. 'The order to proceed with the coup had already been given when the announcement on September 28 of Neville Chamberlain's fight to Munich, where he was to negotiate the famous agreement, seemed to remove the rationale for the coup. Rothfels, pp. 78-79. Kosthorst, p. 10, provides the information that the order to proceed with the coup had already been given.

(ii) On March 13, 1943, Lieutenant Fabian von Schlabrendorff succeeded in planting a bomb on Hitler's plane. Rothfels, p. 99. But "the detonator cap... failed to fre. The explanation was probably that the cabin temperature in the aircraft had been sub-zero, due to a fault in the heating system, and this had affected the detonator." A. Read & D. Fisher, p. 118.

(iii) In the well-known assassination attempt ofJuly 20, 1944, the bomb did explode but failed to disable Hitler. Often cited as the chance circumstances that saved the Fuhrer are the fact that he happened to be leaning over a heavy oaken table at the moment when the bomb went off under the table, and the fact that someone had pushed the briefcase containing the bomb behind one of the thick wooden supports that held up the table. Far more important, however, was an error that on the part of German military officers—renowned for their technical efficiency—seems incredible: The would-be assassins neglected to provide their bomb with shrapnel. Had ample shrapnel been provided, Hitler's legs likely would have been mangled; he would have been unconscious on an operating table and unable to conduct the telephone conversation with Major Remer that quashed the coup attempt. See Gilbert, Second World War, pp. 557-59, and the diagram on p. 1059 of Cebrian et al.

[45] Ulam, p. 474.

"'...Control the road! ... I can go into bankruptcy if you like. But otherwise, if I run my road as a business proposition, I can do nothing. I can not control it."'[46]

The Octopus is a work of fiction, but it does truthfully represent, in dramatized form, the economic realities of the era in which Norris wrote (about the end of the 19th and the beginning of the 20th century). At that time, "railway labor and material costs" had increased, and "many American railroads, already struggling to stay alive economically, could not afford rate reductions." State railroad commissions "seeking ... ways of establishing fair, 'scientific' rates" found that "there was no such thing as 'scientifc' rate making. They discovered that it was extraordinarily difficult to define the 'public interest' or to take the rate question 'out of politics.' Setting rates meant assigning economic priorities, and someone—shipper, carrier, consumer—inevitably got hurt."[47] So it's likely that a railroad like Shelgrim's would indeed have gone bankrupt if it had tried to set rates in such a way as to treat everyone "fairly" and humanely.

It is probably true in general that the ruthless behavior of business enterprises is more often compelled by economic realities than voluntarily chosen by a rapacious management.

• In the 1830s, at an early stage of the U.S. industrial revolution, the textile manufacturers of Massachusetts treated their employees benevolently. Nowadays their system would no doubt be decried as "paternalistic," but in material terms the workers could consider themselves fortunate, for working conditions and housing were very good by the standards of the time. But during the 1840s the situation of the workers began to deteriorate. Wages were reduced, hours of work increased, and greater effort was demanded of the workers; and this was the result not of employers' greed but of market conditions that grew out of economic competition.[48] "As business became nationwide ... the competition of different manufacturing areas meant that prices and wages were no longer determined by local conditions. They fluctuated as a consequence of economic changes wholly beyond the control of the employers or workers immediately concerned."[49]

• A recent (2012) article by Adam Davidson discusses some of the reasons behind the problem of unemployment in the U.S. Taking as an example a company that he has personally investigated, Davidson writes: "It's tempting to look to the owners of Standard Motor Products and ask them to help [unskilled workers]: to cut costs a little less relentlessly, take slightly lower profits, and maybe even help solve America's jobs crisis in some small way." Davidson then goes on to explain why a company like Standard Motor Products would be unable to survive in the face of competition if it did not cut costs relentlessly and, therefore, replace human workers with machines

[46] Norris, Book II, Chapter VIII, pp. 285-86. I've taken the liberty of improving the capitalization and punctuation.

[47] Patterson, p. 65.

[48] Dulles, pp. 73-75.

[49] Ibid., p. 99.

whenever it was profitable to do so.[50] Here again we see that "[t]he businessman ... [is] only the agent of economic forces and developments beyond his control."[51]

In the last two examples the options open to leaders of organizations were limited not by technical factors alone, but by these in conjunction with competition from outside the organization. But even independently of external competition and of any "conflict of wills" within a system, technical factors by themselves severely limit the choices available to the system's leaders. Not even dictators can escape these limitations.

• In the Encyclopaedia Britannica article on Spain we find: "For almost 20 years after the [Spanish Civil War], the [Franco regime] followed a policy of. .. national economic self-sufficiency... . Spain's policies of economic self-sufficiency were a failure, and by the late 1950s the country was on the verge of economic collapse."[52]

Unwilling to rely solely on the foregoing brief passage for twenty years of Spanish economic history, this writer consulted a Spanish correspondent, who sent him copies of pages from relevant historical works.[53] It turned out that the Britannica's account—perhaps unavoidably in view of its brevity—was oversimplified to the point of being seriously misleading. Among other things, it isn't clear to what extent Spain's policy of self-sufficiency was voluntarily chosen and to what extent it was forced on the country, first by the conditions prevailing during World War II and later by the Western democracies' hostility to the authoritarian regime of Franco. Much of this history is beyond the understanding of those of us who have no specialized knowledge of economics, but one thing does emerge clearly: Oliite apart from any external competition or internal conflict, economic reality imposes narrow limits on what even an authoritarian regime can do with a nation's economy. A dictator cannot run an economy the way a general runs an army—by giving orders from above—because the economy won't follow orders.[54] In other words, not even a powerful dictator like Francisco Franco can overrule the laws of economics.

Nor can idealistic zeal overcome those laws.

• In the years following the Cuban Revolution of 1956-59, U.S. media propaganda portrayed Fidel Castro as motivated by a lust for power, but actually Castro started out with generalized humanitarian and democratic goals.[55] Once he had overthrown the Batista government, he found that, despite the immense power conferred on him by his personal charisma,[56] the options open to him were extremely limited. Circumstances forced him to choose between democracy and the deep social reforms that he envisioned;

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[50] Davidson, pp. 66ff.

[51] R. Heilbroner &A. Singer, p. 84.

[52] NEB (2003), Vol. 28,"Spain,"p. 10.

[53] Sueiro &Diaz Nosty, pp. 309-317. Suarez, pp. 231-33, 418, 471-72, 483-88. Payne, pp. 16-23.

[54] See Payne, p. 17 ("[Franco era] un ignorante del funcionamiento de la economia—como casi todos los dictadores—y creia que se podia lidiar con ella como lo hacia un general con su ejercito: dando 6rdenes y directrices desde arriba sobre c6mo debia comportarse.").

[55] Matthews, pp. 79, 108. Horowitz, pp. 64, 127-28.

[56] Matthews, pp. 76, 96-97, 337. Horowitz, pp. 46, 146-47.

he couldn't have both. Since his basic goals were his social ones he had to abandon democracy, become a dictator, and Stalinize and militarize Cuban society.[57]

There can be no doubt about the idealistic zeal of the Cuban revolutionaries,[58] and Castro was as powerful as any charismatic dictator could ever be.[59] Even so, the revolutionary regime was unable to control the development of Cuban society: Castro admitted that he had failed to curb the bureaucratic tendencies of Cuba's administrative apparatus.[60] Notwithstanding the regime's strong ideological opposition to racism, "the drive to promote ... blacks and mixed race Cubans to leadership positions within the government and Party" was only partly successful, as Castro himself acknowledged.[61] In fact, Cuban efforts to combat racism do not seem to have been any more successful than those of the United States.[62] The Castro regime achieved no more than minimal success in its attempt to free the Cuban economy from its almost total dependence on sugar and to industrialize the country.[63] To survive at all economically, the regime was forced to abandon its attempt to build "socialism" (as conceived by Cuba's idealistic leaders) within a short period. It was found necessary instead to make ideologically painful compromises with economic reality,[64] and even with these compromises the Cuban economy has remained no more than barely viable.[65]

A contributing factor in Cuba's economic failure was the embargo imposed by the United States: U.S. firms were forbidden to trade with Cuba. But this factor was not decisive, and not as important as admirers of the Castro regime liked to think. Cuba could trade with most of the economically important countries of the world other than the U.S., and was even able to trade indirectly with major U.S. corporations by dealing with their subsidiaries in other countries.[66] The embargo was far less important than Cuba's inability to free itself from its excessive dependence on sugar or even to run its sugar industry efficiently.[67] Another factor in Cubas economic failure was a lack of cooperation within Cuban society—Engels's "conflicts among many individual wills." There were absenteeism, passive resistance to production quotas, and "stolid peasant resistance."[68] "Individualistic" tendencies led to pilfering, waste, and even to

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[57] Matthews,pp. 108,201. Horowitz,pp.41-84, 128, 130-32, 145,157.

[58] Matthews,pp. 83, 337-38. Horowitz,pp. 129-130, 133. Saney, pp. 19, 40nl.

[59] E.g., Matthews,pp. 76,254,337; Horowitz,pp.41, 46, 47, 56.

[60] Horowitz, p. 120. Cf Saney, pp. 20-21.

[61] Saney,pp.112-13.

[62] This is the impression one gets from Saney,pp. 100-121. Cf. Horowitz, p.117.

[63] Saney,pp. 19-21.Horowitz,pp. 46, 48, 60, 77, 175. Steele, p. 405nl 7. NEB (2003), Vol. 3, "Cuba," p. 773; Vol. 29, "West Indies,"pp. 735, 739.

[64] Saney, pp. 19-20. Horowitz, pp. 129-134. Matthews, p 201 ("... in so many... ways, [Castro] found that his 'utopian' ideas did not satisfy his real needs").

[65] See USA Today, Sept. 9, 2010, p. 4A, May 10, 2011, p. 6A, and June 8-10, 2012, p. 9A; Time, Sept. 27, 2010, p. 11; The Week,, April 29, 2011, p. 8; Horowitz,p. 175.

[66] Horowitz, pp. 111-12, 129,158, 161-63, 174-75.

[67] See ibid., pp.175-76.

[68] Ibid., pp.43, 77, 123.

major criminal activity.[69] In addition, there were conflicts within the Cuban power-structure.[70] Almost certainly, however, the decisive factor in Cubas failure has been the Castro regimes refusal to comply with the technical requirements for economic success: The regime compromised its ideology only as far as was necessary for bare survival, and declined to accept those elements of the free market and of capitalism that might have made vigorous development possible. That this factor was decisive is shown by the fact that purely socialist economies have failed all over the world."[71]

[69] Saney, p.21.

[70] Horowitz, e.g., pp. 30, 75-77, 120.

[71] Other factors contributing to Cuba's economic failure were: (i) The limited natural and human resources of the island. Saney, pp. 15, 19. Horowitz, p. 145. But Singapore had negligible natural resources, yet built an impressively powerful economy. Human resources (trained technical personnel, etc.) can be created in a relatively short time, as in Japan following the Meiji Restoration. The Cubans would not have had to be as industrious or as skillful as the Singaporeans or the Japanese in order to build merely an adequate economy, (ii) Cuba's economic dependence on the Soviet Union. Saney,p. 21. Horowitz, pp. 77, 99,111,120,128, 147. But Cuba's dependence was only a result of its failure from other causes. An economically sound nation would have been able to avoid total dependence on a single foreign power.

Part IV

There is yet another—and critically important—reason why a society cannot "steer" itself in the manner suggested at the beginning of Part III of this chapter: Every complex, large-scale society is subject to internal developments generated by "natural selection" operating on systems that exist within the society. This factor is discussed at length in Chapter Two; here we will only sketch the argument in the briefest possible terms.

Through a process analogous to biological evolution there arise, within any complex, large-scale society, self-preserving or self-reproducing systems large and small (including, for example, business enterprises, political parties or movements, open or covert social networks such as networks of corrupt officials) that struggle to survive and propagate themselves. Because power is a cardinal tool for survival, these systems compete for power.

Biological organisms, evolving through natural selection, eventually invade every niche in which biological survival is possible at all, and, whatever measures may be taken to suppress them, some organisms will find ways of surviving nonetheless. Within any complex, large-scale society, a similar process will produce self-propagating systems that will invade every corner and circumvent all attempts to suppress them. These systems will compete for power without regard to the objectives of any government (or other entity) that may try to steer the society. Our argument:—admittedly impossible at present to prove conclusively—is that these self-propagating systems will constitute uncontrollable forces that will render futile in the long run all efforts to steer the society rationally. For details, see Chapter Two.

Part V

Notwithstanding all the arguments we've reviewed in the present chapter up to this point, let's make the unrealistic assumption that techniques for manipulating the internal dynamics of a society will some day be developed to such a degree that a single, all-powerful leader (we'll be charitable and call him a philosopher-king[1] rather than a dictator)—or a group of leaders small enough (< 6?) to be free of "conflicts among individual wills" within the group—will be able to steer a society as suggested at the beginning of Part III, above.

The notion of authoritarian rule by a single leader or a small group of leaders is not as far-fetched as it may appear to the citizens of modern liberal democracies. Many people in the world already live under the authority of one man or a few, and when the technological society gets itself into sufficiently serious trouble, as it is likely to do in the coming decades, even the citizens of liberal democracies will begin looking for solutions that today seem out of the question. During the Great Depression of the 1930s, many Americans—mainstream people, not kooks out on the fringes—felt disillusioned with democracy[2] and advocated rule by a dictator or an oligarchy (a "supercouncil" or a "directorate").[3] Many admired Mussolini.[4] During the same period, many Britons admired Hitler's Germany. "Lloyd George's reaction to Hitler was typical: 'If only we had a man of his supreme quality in England today,' he said."[5]

Returning, then, to our hypothetical dictator, or philosopher-king as we've decided to call him, we'll assume, however implausibly, that he will somehow be able to overcome the problems of complexity, of the conflicts of many individual wills, of resistance by subordinates, and of the competitive, power-seeking groups or systems that will evolve within any complex, large-scale society. Even under this unreal assumption we will still run into fundamental difficulties.

The first problem is: Who is going to choose the philosopher-king and how will they put him into power? Given the vast disparities of goals and values ("conflicts

[1] The idea of a "philosopher-king" originated with Plato (see in Buchanan: "The Republic," Book V, p. 492; Book VI), who seems to have entertained not only the notion of a single philosopher-king (ibid., Book VI, pp. 530-31), but also that of a philosopher-oligarchy (ibid., Book VII, p. 584: "... when the true philosopher kings are born in a State, one or more of them...").

From respect for the female sex, let's note that the hypothetical philosopher "king" considered in Part V of this chapter could just as well be a philosopher-queen.

[2] Leuchtenburg, pp. 26, 27.

[3] Ibid., p. 30.

[4] Ibid., pp. 30n43, 221-22.

[5] Gilbert, European Powers, pp. 191-92.

among individual wills") in any large-scale society, it is hardly likely that the rule of any one philosopher-king could be consistent with the goals and values of a majority of the population, or even with the goals and values of a majority of any elite stratum (the intellectuals, say, or scientists, or rich people)—except to the extent that the philosopher-king, once in power, might use propaganda or other techniques of human engineering to bring the values of the majority into line with his own. If the realities of practical politics are taken into account, it seems that anyone who might actually become a philosopher-king either would have to be a compromise candidate, a bland fellow whose chief concern would be to avoid offending anyone, or else would have to be the ruthless leader of an aggressive faction that drives its way to power. In the latter case he might be an unscrupulous person intent only on attaining power for himself (a Hitler), or he might be a sincere fanatic convinced of the righteousness of his cause (a Lenin), but either way he would stop at nothing to achieve his goals.

Thus, the citizen who might find the idea of a philosopher-king attractive should bear in mind that he himself would not select the philosopher-king, and that any philosopher-king who might come into power would probably not be the kind that he imagines or hopes for.

A farther problem is that of selecting a successor when the philosopher-king dies. Each philosopher-king will have to be able to pre-select reliably a successor whose goals and values are virtually identical to his own; for, otherwise, the first philosopher-king will steer the society in one direction, the second philosopher-king will steer the society in a somewhat different direction, the third philosopher-king will steer it in yet another direction, and so forth. The result will be that the development of the society in the long term will wander at random, rather than being steered in any consistent direction or in accord with any consistent policy as to what constitute desirable or undesirable outcomes.

Historically, in absolute monarchies of any kind—the Roman Empire makes a convenient example—it has proven impossible even to ensure the succession of rulers who are reasonably competent and conscientious. Capable, conscientious rulers have alternated with those who have been irresponsible, corrupt, vicious, or incompetent. As for a long, unbroken succession of rulers, each of whom not only is competent and conscientious but also has goals and values closely approximating those of his predecessor—you can forget it. All of these arguments, by the way, apply not only to philosopher-kings but also to philosopher-oligarchs— ruling groups small enough so that Engels's "conflicts among many individual wills" do not come into play.

All the same, let's assume that it would somehow be possible to ensure the succession of a long line of philosopher-kings all of whom would govern in accord with a single, permanently stable system of values. In that event ... but hold on ... let's pause and take stock of the assumptions we've been making. We're assuming, among other things, that the problems of complexity, chaos, and the resistance of subordinates, also the purely technical factors that limit the options open to leaders, as well as the competitive, power-seeking groups that evolve within a society under the influence of

natural selection, can all be overcome to such an extent that an all-powerful leader will be able to govern the society rationally; we're assuming that the "conflicts among many individual wills" within the society can be resolved well enough so that it will be possible to make a rational choice of leader; we're assuming that means will be found to put the chosen leader into a position of absolute power and to guarantee forever the succession of competent and conscientious leaders who will govern in accord with some stable and permanent system of values. And if the hypothetical possibility of steering a society rationally is to afford any comfort to the reader, he will have to assume that the system of values according to which the society is steered will be one that is at least marginally acceptable to himself—which is a sufficiently daring assumption.

It's now clear that we have wandered into the realm of fantasy. It is impossible to prove with mathematical certainty that the development of a society can never be guided rationally over any significant interval of time, but the series of assumptions that we've had to make in order to entertain the possibility of rational guidance is so wildly improbable that for practical purposes we can safely assume that the development of societies will forever remain beyond rational human control.[6]

[6] True believers in technology like Ray Kurzweil and Kevin Kelly will no doubt propose futuristic, hypertechnological solutions to the problem of rational guidance of a society. For our answer, see Appendix One.

Part VI

It's likely that the chief criticism to be leveled at this chapter will be that the writer has expended a great deal of ink and paper to prove what "everyone" already knows. Unfortunately, however, not everyone does know that the development of societies can never be subject to rational human control; and even many who would agree with that proposition as an abstract principle fail to apply the principle in concrete cases. Again and again we find seemingly intelligent people proposing elaborate schemes for solving society's problems, completely oblivious to the fact that such schemes never, never, never are carried out successfully. In a particularly fuddled excursion into fantasy written several decades ago, the noted technology critic Ivan Illich asserted that "society must be reconstructed to enlarge the contribution of autonomous individuals and primary groups to the total effectiveness of a new system of production designed to satisfy the human needs which it also determines," and that a "convivial society should be designed to allow all its members the most autonomous action by means of tools least controlled by others"[1]—as if a society could be consciously and rationally "reconstructed" or "designed." Other egregious examples of this sort of fully were provided by Arne Naess[2] and Chellis Glendinning[3] in 1989 and 1990, respectively; these are discussed in Part IV of Chapter Three of this book.

Right down to the present (2013), people who should know better have continued to ignore the fact that the development of societies can never be rationally controlled. Thus, we often find technophiles making such absurd statements as: "humanity is in charge of its own fate"; "[we will] take charge of our own evolution"; or, "people [will] seize control of the evolutionary process."[4] The technophiles want to "guide research so that technology improve[s] society"; they have created a "Singularity University" and a "Singularity Institute" that are supposed to "shape the advances and help society cope with the ramifications" of technological progress, and "make sure ... that artificial intelligence... is friendly" to humans.[5]

Of course, the technophiles won't be able to "shape the advances" of technology or make sure that they "improve society" and are friendly to humans: Technological advances will be "shaped" in the long run by unpredictable and uncontrollable

[1] Illich, pp. 10, 20.

[2] Naess, pp. 92-103.

[3] Glendinning, as referenced in our List of Works Cited.

[4] Grossman, p. 49, col. 1, col. 3. Vance, p. l.

[5] Grossman, p. 48, col. 3. Markoff, "Ay Robot!," p. 4, col. 2, col. 3 (columns occupied entirely by advertisements are not counted).

power-struggles among rival groups that will develop and apply technology for the sole purpose of gaining advantages over their competitors. See Chapter Two.

It's not likely that the majority of technophiles fully believe in this drivel about "shaping the advances" of technology to "improve society." In practice, Singularity University serves mainly to promote the interests of technology-oriented businessmen,[6] while the fantasies about "improving society" function as propaganda that helps to forestall public resistance to radical technological innovation. But such propaganda is effective only because many laymen are naive enough to take the fantasies seriously.

Whatever may be the motives behind the technophiles' schemes for "improving society," other such schemes unquestionably are sincere. For recent examples, see the books by Jeremy Rifkin (2011)[7] and Bill Ivey (2012).[8] There are other examples that superficially look more sophisticated than the proposals of Rifkin and Ivey but are equally impossible to carry out in practice. In a book published in 2011, Nicholas Ashford and Ralph P. Hall[9] **"**offer a unified, transdisciplinary approach for achieving sustainable development in industrialized nations ... .The authors argue for the design of multipurpose solutions to the sustainability challenge that integrate economics, employment, technology, environment, industrial development, national and international law, trade, finance, and public and worker health and safety."[10] Ashford and Hall do not intend their book to be merely an abstract speculation like Plato's Republic[11] or Thomas More's Utopia-, they imagine themselves to be offering a practical program.[12]

In another example (2011), Naomi Klein proposes massive, elaborate, worldwide "planning"[13] that is supposed to bring global warming under control,[14] help with many of our other environmental problems,[15] and at the same time bring us "real democracy,"[16] "rein in"[17] the corporations, alleviate unemployment,[18] reduce wasteful con-

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[6] See, e.g., Vance, p. 1 (Singularity University "focuses on introducing entrepreneurs to promising technologies ...," etc.).

[7] Rifkin, as referenced in our List of Works Cited.

[8] Ivey, as referenced in our List of Works Cited.

[9] Ashford & Hall, as referenced in our List of Works Cited.

[10] Publisher's description located online as of March 28, 2016 at: http:// yalebooks.com/book/ 9780300169720/technology-globalization-and-sustain- able-development. The bit quoted here does truthfully describe the content of the book.

[11] Plato did not regard his "Republic" as mere abstract speculation; he thought he was describing, at least to a rough approximation, a practical possibility. See in Buchanan: "The Republic," Book V, pp. 491-92; Book VI, pp. 530-31; Book VII, p. 584. But in modern times—as far as I know—Plato's "Republic" has always been treated as theoretical speculation, not as a description of a practical possibility.

[12] Ashford & Hall, p. 1 ("We hope that the prescriptions discussed in this work will not be regarded as utopian.").

[13] Klein, pp. 14-15.

[14] Ibid., pp. 14-17.

[15] Ibid., p. 15.

[16] Ibid., p. 15, col. l.

[17] Ibid.; see also p. 18, col. 1 ("reining in of the market forces").

[18] Ibid., pp. 15, col. 1, col. 2; 16; 21, col. 2.

sumption in rich countries[19] while allowing poor countries to continue their economic growth,[20] foster "interdependence rather than hyper-individualism, reciprocity rather than dominance and cooperation rather than hierarchy,"[21] "elegantly weavfel all these struggles into a coherent narrative about how to protect life on earth,"[22] and overall promote a "progressive" agenda[23] so as to create a "healthy, just world."[24]

One is tempted to ask whether the schemes concocted by people like Ashford, Hall, and Klein[25] are meant as an elaborate joke of some sort; but no, the intentions of these authors are quite serious. How can they possibly believe that schemes like theirs will ever be carried out in the real world? Are they totally devoid of any practical sense about human affairs? Maybe. But Naomi Klein herself unwittingly offers a more likely explanation: "[I]t is always easier to deny reality than to watch your worldview get shattered ... '[26] The worldview of most members of the upper middle class, including most intellectuals, is deeply dependent on the existence of a thoroughly organized, culturally "advanced," large-scale society characterized by a high level of social order. It would be extremely difficult psychologically for such people to recognize that the only way to get off the road to disaster that we are now on would be through a total collapse of organized society and therefore a descent into chaos. So they cling to any scheme, however unrealistic, that promises to preserve the society on which their lives and their worldview are dependent; and one suspects that the threat to their worldview is more important to them than the threat to their lives.

[19] Ibid.,pp. 16; 17, col. 2.
[20] Ibid., p. 16.
[21] Ibid., p. 19, col. 2.
[22] Ibid., p. 20, col. 1.
[23] Ibid.
[24] Ibid., p. 20, col. 2.
[25] For a more recent (2015) example of such delusions, see Gardner, Prugh & Renner, p. 17 ("The world now needs to adopt solutions that change the entire system of production and consumption in a fundamental manner. ... This... requires large-scale social, economic, and political engineering...").
[26] Klein, p. 18, col. 1.

Appendix

Part A

In answer to the arguments of Chapter One, true-believing technophiles like Ray Kurzweil and Kevin Kelly are likely to answer: "Technology will solve all those problems! Human beings will be transformed step by step into man-machine hybrids (cyborgs), or even into pure machines, that will be incomparably more intelligent than their human ancestors.[1] With their superior intelligence, these beings willbe able to use the technological miracles of the future to guide the development of their society rationally." However, none of the arguments of Chapter One (with one exception, noted below) depend on the limitations of human intelligence or on any weaknesses peculiar to human beings, so there is every reason to think that the arguments will remain valid for a society derived from the present one through the piecemeal replacement of humans by machines in the manner envisioned by Kurzweil.

Part B

The technophiles wont be rash enough to claim that any future technological miracle will make it possible for a society to predict its own development over any substantial interval of time. But some, perhaps, will point to the fact that the modern mathematical theory of control now makes it possible—in some cases—to design mechanisms that will keep a complex system on a fixed course even if only the short-term "effect of any potential control action applied to the system"‘ can be predicted (though the effect must be predictable "precisely... under all possible environmental circumstances").[2] But in the context of control theory a system is called "complex" if "the efforts of many persons and the use of special technical equipment (computers) are required to draw the whole picture,"[3] and examples of "complex" systems are "[t]he launch of a spaceship, the 24-hour operation of a power plant, oil refinery, or chemical factory, the control of air traffic near a large airport."[4] In the present discussion we are dealing with an entirely different level of complexity. Any one power plant, oil refinery, or chemical factory is extremely simple in comparison with an entire modern society.

[1] Kurzweil, e.g., pp. 194-203,307-311,324-26,374-77,472.
[2] NEB (2003),Vol. 25, "Optimization, Mathematical Theory of," p.224.
[3] Ibid., p. 223.
[4] Ibid., p. 224.

Actually, a careful reading of what the Britannica says about control theory[5] will give scant encouragement to anyone who might liketo believe that the theory would make possible the rational control of the development of an entire society. Among other reasons, control theory generally "is applicable to any concrete situation ... [only when] that situation can be described, with high precision, by a [mathematical] model," and the applicability of the theory is limited by "the agreement between available models and the actual behavior of the system to be controlled."[6] For control of an entire society one would need a precise mathematical model of, among other things, human behavior (or of the behavior of cyborgs or of machines descended from humans, which in Kurzweil's vision would be far more complex even than human beings themselves). In special contexts, as when one needs only statistical information about human behavior, adequate models may be possible. E.g., in a marketing study one may be unconcerned with the actions of individuals; one may need only such information as the percentage of consumers who will buy a given product in specified circumstances. But for control of an entire society one would need a precise mathematical model of the behavior of each single one of numerous persons (whether human persons or machine-persons) including, at the least, all those who occupy positions of specrial importance (political leaders, top-level government officials, military officers, corporation executives, etc.) and whose individual behavior interacts continuously with the society as a whole and has a significant effect on it.

All the same, lets make the extremely daring assumption that a precise mathematical model of our entire society could actually be constructed. Even so, it is wildly improbable that sufficient computing power could ever be available to handle the trillions upon trillions upon trillions of simultaneous equations that would be involved. Remember what we pointed out in Part II of Chapter One: that sixty trillion equations would be required just for prices in the U.S. economy alone, leaving out of account all other factors in U.S. and world society; and that even if some future society had enough computing power for control of the present society, it wouldn't have enough to control its own development, because the complexity of a society grows right along with its computing power. Finally, even if enough computing power were available, it would be impracticable to collect the stupendous amount of minutely detailed, highly precise information that would be required for insertion of the appropriate numbers into the equations.

Thus, it is safe to conclude that no society will ever be able to set up a mathematically designed control system that will keep the society forever on a fixed course of development. Let us nevertheless carry to the utmost extreme our generosity toward the true-believing technophiles: Let's grant them the impossible and assume that such a control system could successfully be designed. Even under this assumption we still run up against fundamental difficulties: Who is going to decide what objectives are to

[5] Ibid., pp.223-26.

[6] Ibid.,p. 224.

guide the design of the control system that is to keep the society on a fixed course of development, and what fixed course of development should be chosen for the society? And how will the society be induced to accept the control system and the chosen course of development? If the control system is to be approved by the public at large it will have to be a compromise solution that in trying to satisfy everyone will satisfy no one. In practice, it is unlikely that such a compromise could ever win general acceptance, so any control system would have to be forcibly imposed by an authoritarian faction that had acquired dictatorial power. In that case— let the citizen beware! Furthermore, if any faction ever became powerful enough to impose its own solution on society, it would probably be riven thereafter by internal power-struggles. (Recall the remark of Benjamin Franklin quoted in Part II of Chapter Two, and see Part C of Appendix Two, below.)

The notion of a future society governed in accord with a mathematical control system, rationally chosen and designed, can be dismissed as science fiction.

Part C

Let's take another look at the idea that we considered and disposed of in Part V of Chapter One: that of an all-powerful philosopher-king. In order even to entertain the notion that such a philosopher-king could rationally steer the development of a society, we already had to make assumptions that were wildly improbable. We then noted that, even granting those assumptions, we still ran into fundamental difficulties: that of selecting a satisfactory philosopher-king and putting him into a position of absolute power; and that of ensuring the succession, after the death of the original philosopher-king, of a long line of competent and conscientious philosopher-kings who would all govern in accord with some stable and permanent system of values.

The technophiles will have a ready answer to the second difficulty: They will argue that biotechnology will make it possible in the future to hold back the aging process indefinitely;[7] hence, our philosopher-king will be immortal and- the question of choosing a successor will never arise. But this still doesn't solve the problem of rational guidance of a society's development, for people change over time, and our philosopher-king will change too. His decisions will affect the society in which he lives in ways that will not be fully predictable, and the changes in society will in turn affect the philosopher-king's goals and values in ways that cannot be foreseen. Consequently, the society's development over the long term will not be steered in accord with any stable system of values but will drift unpredictably.

At this point in our discussion—and only at this point—the distinction between human beings and intelligent machines becomes relevant: In place of a human philosopher-king, technophiles may propose rule by a super-computer hardwired to adhere forever

[7] E.g., "Mr. Immortality," The Week, Nov. 16,2007, pp. 52-53; Grossman, pp. 46-47; Kurzweil, pp. 9,212-15,371.

to a fixed system of values. Even if we assume that such a computer could be created and that it would remain internally stable, we still face fundamental difficulties: Who is going to decide what values are to be hardwired into the electronic philosopher-king, and how will they put their electronic philosopher-king into a position of absolute power? This is no more easy to answer than the question discussed in Part V of Chapter One of how to choose a human philosopher-king and put him into a position of absolute power, or the question discussed in Part B of this appendix of how to choose a mathematical control system and secure the submission of society to its rule.

It would in any event be impossible to formulate a satisfactory system of values. Any values would be sure to give unsatisfactory results if they were sufficiently precise and rigid to determine the electronic philosopher-king's decisions in all cases without leaving the machine any substantial discretion to make its own value-judgments. This will be clear to anyone who has ever done much research in American constitutional law. The rules of decision laid down by the courts are full of vague "balancing tests" and indefinite "factors" on which judges are supposed to rely in deciding cases. Two judges applying the same "balancing test" or "factors" in the same case will often come to radically different conclusions; hence the numerous dissenting opinions that one finds in the published decisions of the U.S. Circuit Courts and the Supreme Court. The reason why the rules of decision are so vague and fexible is that it is impossible to formulate precise, rigid principles that will determine the outcome of all cases in even a remotely satisfactory way. If the courts were held strictly to any such set of rigid principles, they would be forced to make many decisions that practically everyone would regard as unreasonable.

On the other hand, if the system of values hardwired into the electronic philosopher-king were sufficiently vague or fexible to allow the machine any significant leeway to make its own value-judgments, gone would be the stability of values that the hardwiring was supposed to ensure. Where principles are in any substantial degree vague or flexible, one can usually find a way to justify almost anything in terms of them. Hence, two decisions that are both arguably in harmony with the same set of principles can have radically different practical consequences; this again is seen in the dissenting as against the majority opinions of the U.S. federal courts.

Thus, even apart from all other difficulties, the impossibility of formulating a satisfactory system of values is by itself sufficient to justify us in dismissing as science fiction the notion of a future society ruled by a supercomputer hardwired to govern according to a stable and permanent system of values, if the system of values is expected to give results that we would regard as even marginally acceptable.

Part D

The reader may wonder why we have even bothered with this excursion into science fiction. But for the problems facing our society today it is likely that technophiles

will envision future solutions that to most people will look like science fiction. Ray Kurzweil's book, for example, is full of that type of material, and much of it is indeed science fiction. Nonetheless, it is always risky to dismiss ideas about future technological developments as science fiction solely because they seem implausible on vague intuitive grounds. Things that seemed implausible at the outset of the Industrial Revolution, or even just a few decades ago, are not the least bit implausible today. To mention only one example, back in the 1950s, when Moores Law had never been heard of, most people, probably including most computer scientists, would have dismissed as implausible the suggestion that fifty years later every Tom, Dick, and Harry would hold comfortably in his lap more computing power than that of a whole roomful of 1950s computing machinery costing millions of dollars. Futuristic proposals need to be examined critically and dismissed as science fiction only when good reasons for the dismissal have been found.

But whatever technological miracles the future may have in store, we think there are excellent reasons for dismissing as science fiction the notion that the development of a society will ever be subject to rational guidance.

Ted Kaczynski
The Development of a Society Can Never Be Subject to Rational Human Control
2020

<archive.org/details/eb.-published-political-books-by-ted-kaczynski/...Edition>