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Ecological-Evolutionary Theory and Societal Transformation in Post-Communist Europe

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Abstract: Ecological-evolutionary theory offers a unique and distinctive perspective on societal change.In particular, it draws attention to the enormous and revolutionary power of technological innovations as a source of change. Some of the implications of this for the post-Communist societies of middle and eastern Europe are then considered. Ecological-evolutionary theory also offers a unique and distinctive perspective on human nature, and the implications of this are also discussed.
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Introduction

At the end of the nineteenth century and in the early years of the twentieth, the social sciences gradually abandoned the evolutionary perspective that had been dominant up to that point. They did so for a number of reasons, a few of which still seem justified although most now appear dubious.

Then, surprisingly, after decades of rejection, attitudes began to shift in the 1960s. Some came to recognize that evolutionary theories have one invaluable feature that other theories lack: they compel us to take account in our thinking of the total range of human experience – not simply that little segment with which we are familiar in our own lives and immediate experience. For this reason, they provide a far more solid foundation on which to build a science of human societies and, thus, also, a unique and valuable tool for understanding social change, especially the more fundamental and far-reaching transformations of societies.

In this paper, I provide a brief introduction to one version of the new evolutionism and then explore some of its implications for societal development and change in the Czech Republic and the other societies of middle and eastern Europe which, until recently, were governed by Communist regimes.

Basic Features of Ecological-Evolutionary Theory

Currently, there are several versions of the new evolutionism in western social science. The one on which I focus in this paper is known as ecological-evolutionary theory and builds on foundations laid by the Scottish social philosophers of the eighteenth century, especially Millar and Ferguson. Their work was developed and extended in important ways later in the nineteenth and early twentieth centuries by various archaeologists, especially Thomsen and Childe.

Ecological-evolutionary theory can be described as a qualified materialist theory, since it views three sets of material factors as the primary forces shaping the life of human societies, but not as the only ones. The first of these is our species' genetic heritage

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which is shared by the members of every society and is responsible for all or most of the characteristics that are common to all societies (e.g., the use of language, moral codes, the division of labor along age and sex lines). Second, there are the biophysical environments to which societies must adapt, which have been responsible for many of the differences among societies in the past and still contribute to differences today (e.g., differences in levels of development between societies in the tropics and those in temperate regions, or the differences between societies in oil-rich areas and those in resource-poor regions). Finally, there are the technologies that societies possess that enable them to satisfy their members' varied needs and desires. These have been the basic engine of change over the course of human history and they have become the most important determinant of societal differences.

While acknowledging that other variables, such as ideologies and social structures, have, and have had, considerable influence on societies, especially in the shorter run, when the experience of human societies is viewed in its entirety (i.e., from prehistoric times to the present, and for humankind as a whole), it is hard to avoid the conclusion that the primary determinants of the most basic characteristics of human societies have been the three sets of factors that ecological-evolutionary theory emphasizes and that other factors are best understood as intervening or dependent variables [Heise et al. 1976; Nolan and Lenski 1995].

To appreciate the enormous importance of technology, for example, one need only compare Stone Age societies of the past with modern industrial societies: the differences between them in size, wealth, productivity, nature and extent of the division of labor, rates of invention and discovery, degree of social inequality, and human health and longevity, to name but a few, have all been enormous [Lenski et al. 1995]. The power of technology is evident not merely in comparisons of Stone Age societies with modern industrial societies, it is equally evident in advanced societies of the modern era. For example, as Table 1 indicates, advances in agricultural technology in the United States in the last two centuries have dramatically increased agricultural productivity, and this, in turn, has led to a radical transformation of the American labor force and caused the rapid growth of urbanization. It has also contributed enormously to improvements in health and longevity and in the standard of living.

Table 1. Productivity of American agriculture, 1800-1990

	Number of worker-hours required:			Percentage
Production of:	1800	1910-1917	1990	reduction
100 bushels of wheat	373	106	6	98.2
100 bushels of corn	344	135	3	99.0
1 bale of cotton	601	276	4	99.4
1,000 pounds of milk	n/a*	38	2	95.1
1,000 pounds of beef	n/a*	46	9	81.1
1,000 pounds of chicken	n/a*	95	1	99.2

*) Not ascertained.

Sources: U.S. Dept. of Commerce, *Historical Statistics of the United States, Colonial Times to 1970*, Series K 445-485; U.S. Dept. of Commerce, *Statistical Abstract of the United States, 1989*, table 1110; and U.S. Dept. of Agriculture, *Agricultural Statistics 1992*, table 550.

If ecological-evolutionary theory is correct, it was no mere coincidence that as the demands of Marxist ideology came increasingly into conflict with the potentialities of modern technology that the latter prevailed. Not only have the innovations introduced by Lenin and his successors proven less durable, they never were as profound.[1] Still today, however, many sociologists cling to an exaggerated view of the transforming power of ideologies, partly because of their own strong personal commitments to various ideologies, and partly also because of their lack of familiarity with preindustrial societies.

From the standpoint of an understanding of the process of social change in the modern world, it is important to recognize the degree to which ideologies reflect the influence of ecological-evolutionary theory's three basic factors. Marxist ideology, for example, obviously reflects the influence of the new technologies that were transforming western European societies in the nineteenth century. One simply cannot imagine Marxist ideology emerging in medieval Europe or ancient Greece, nor, alternatively, Thomistic theology emerging among the societies of pre-Columbian America. This is why ecological-evolutionary theory views ideologies as intervening variables in the larger process of social change.

To understand why technology has been such a powerful force in human life, we need to understand that technological advances are, in essence, improvements on the basic "tools" with which we are endowed by our genetic heritage – that is, our arms, our legs, our eyes, our ears, our brain, etc. Thus, the invention of the microscope and telescope were functionally the equivalent of radical evolutionary (i.e., biological) improvements in our species' genetic heritage, as were the invention of the steam engine, the computer, and every other technological advance. If it is all but impossible to exaggerate the importance of the biological "tools" with which nature has endowed us, it is surely difficult to exaggerate the importance of the varied technologies that humans have created to extend and enhance the powers of our bodies. Simply put, technologies are the means by which humans satisfy all of their many material needs and desires and many of the nonmaterial ones as well.[2]

Marxism and Ecological-Evolutionary Theory Compared

Marxian theory, in some respects, is similar to ecological-evolutionary theory. It, too, recognizes the enormous transforming power of technological innovation. But Marxism and ecological-evolutionary theory differ in two important respects. First, they differ profoundly in their assumptions concerning human nature, a difference that has far-reaching implications. Second, they also differ in their view of the relative strength and importance of technology and ideology in the modern era and this, too, is a difference that makes a critical difference.

When viewed from an historical perspective, it is clear that Marx's view of human nature was essentially a secularized variant of classical Christian doctrine. With classical Christian thinkers, Marx imagined that in the beginning there was an idyllic era in which human life was good and that people lived together in harmony with nature and with one another (i.e., in the Garden of Eden/in the era of primitive communism). During this pe-

[1]) In fact, in many respects (e.g., in the concentration of power and privilege in the hands of a small, self-perpetuating elite) they were actually regressive.

[2]) Status striving, for example, is often satisfied by the acquisition of material goods, as Veblen made clear in his discussion of conspicuous consumption.

riod, selfishness, greed, exploitation, and oppression were absent. With the emergence of private property or, for Christians, with the Adam's sin and the Fall, a long era began in which the darker side of human nature prevailed. But, once again, paralleling Christian doctrine, Marx predicted that this era would shortly end and a happier time was imminent (i.e., the Second Coming of Christ/the era of socialism and later communism). Finally, where Christians, such as St. Paul, believed that faith in Christ would give rise to the new man in Christ, a paragon of Christian moral values, Marx predicted that the creation of a new social order would give rise to the new socialist man, a paragon of socialist values.

Today, we know that Marx, like St. Paul, was much too sanguine in his expectations concerning human nature. The experience of a score or more of socialist societies has sadly demonstrated that the new socialist man has been even rarer than the new man in Christ. Furthermore, thanks to advances in the biological sciences, we now begin to understand why this is so. People do not enter this world like blank tablets, as John Locke (and Marx) supposed, waiting for environmental forces to shape our character. Rather, as Kenneth Boulding once wrote, "Straight from the womb we like milk, we dislike loud noises, and we dislike falling" [Boulding 1970: 31].

Because human nature is a product of the interaction of environmental influences with our species' genetic heritage and, not simply a product of environmental influences, it is not nearly as malleable as we might wish [Lenski et al. 1995: 13-15, 26-30]. Like other primates (and unlike the social insects), humans are genetically programmed to have a strong sense of self and of self-interest. While this is often channeled into socially useful activities, the sense of self and self-interest is rarely, if ever, totally suppressed. Elman Service, the anthropologist, summed up matters best when he wrote that the task confronting societies is one of redirecting human selfishness rather than overcoming or eliminating it.

Ecological-evolutionary theory also differs from Marxian theory in its view of the relative importance of technology and ideology in shaping societies in the modern era. Where Marx expected ideology to become the dominant revolutionary force in advanced industrial societies, ecological-evolutionary theory predicts that technology and, more specifically, technological innovation will remain dominant in social change and transformation.

This is not to suggest that ideologies are unimportant in the process of social change. On the contrary, ecological-evolutionary theory assumes that as technology advances, societal wealth increases, and that this provides societies with a wider range of options than previously, thereby increasing the potential for ideologically motivated change. Nevertheless, the range of options within which ideologies and their advocates are able to choose continues to be limited by the technologies available at the time. Furthermore, technological innovation does not merely increase the range of options available, it also alters the structure of rewards and costs of all the options and thus alters the preferences and choices made by individuals and groups. For these reasons, then, ecological-evolutionary theory regards technology as still the dominant force in social change--even in technologically advanced societies.

Societal Transformation in Post-Communist Europe

Benjamin Franklin once said that two things are certain in this world, death and taxes. Had he been more perceptive, he would have added a third, technological innovation. We

can, of course, forgive him, since in his day the rate of technological innovation was far less than it is today; for another of the constants throughout human history has been the exponential growth in the rate of technological innovation *at the global level*[3] [Lenski et al. 1995: table 5.1].

The italicized qualification in the previous sentence is especially relevant for the post-Communist societies of middle and eastern Europe. By all accounts, the leadership of these societies during the Communist era failed to appreciate the enormous importance of technological innovation and change[4] and created a social system that caused their societies to lose ground relative to the non-Communist societies of western Europe, America, and the Far East. According to one observer, the Czech Republic was only a few years behind western Europe technologically when the Communists seized power in the late 1940s, but had fallen forty years behind by the time the Communists were ousted.

In an era when rapid advances in the technologies of transportation and communication are creating enormous pressures toward European economic union – even a global economy – the post-Communist societies of middle and eastern Europe have little choice but to try to catch up with their competitors.

But catching up is only part of the task that lies ahead. As noted above, the rate of technological change is steadily accelerating. Thus, even when the process of catch-up is completed (if, indeed, it ever is), the Czech Republic and other post-Communist societies will almost certainly be subject to continuing technological innovation and change.

Because post-Communist societies are compelled to play catch-up, it is not difficult to anticipate many of the changes that lie ahead for them. In other words, many of the changes that occur in middle and eastern Europe will be of the kind that western European societies have already undergone or are currently undergoing – changes of the kind that are often described as the emergence of "post-industrial" society.

Like many popular concepts, the idea of "post-industrial" society can be useful, but it can also be misleading. Where it is most useful is in drawing attention to the many social changes that technological advances have caused; where it is misleading is in its suggestion that western societies have somehow freed themselves from, and moved beyond, their long-standing dependence on industrial technology. For, when industrial technology is properly understood as technology that utilizes inanimate sources of energy (coal, oil, natural gas, nuclear power) to power machines that produce the material necessities of human life, it is clear that western societies today are no less dependent on this kind of technology than western societies of the last two hundred years. If anything, they are even more dependent!

The revolutionary change that has given rise to the widespread use of the term, "post-industrial", has been the transformation of the labor force of western societies. New

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[3]) In other words, while exponential growth has continued over the long run at the global level, this has not always been true of each and every society. On the contrary, for various reasons the rate of technological change and innovation has remained stable or even declined in many individual societies [Lenski et al. 1995: 53-55].

[4]) This may have occurred because Marxist ideology led them to overestimate the importance of the structural and ideological changes they made in the societies they controlled. In other words, they appear to have overestimated the transforming power of structural and ideological innovation and underestimated the power of technological.

technologies have drastically reduced the need for human labor in the productive process. Vast armies of industrial workers (Marx's proletariat) are no longer required; fewer and fewer workers are able to produce more and more and usually better and better products. Just as newer agricultural technologies drastically lowered the demand for agricultural workers in the not far distant past, now newer industrial technologies are reducing the demand for industrial workers, and the end result is just as revolutionary. According to one recent forecast, opportunities for employment in semi-skilled and unskilled jobs in the Czech Republic will be reduced by one-quarter in just the twelve-year span from 1993-2005 [Tuček 1993: 26-28], and the trend is not likely to end then.

The larger social consequences of these technologically induced changes in the labor force are likely to be every bit as great as those that occurred earlier in response to advances in agricultural technology. Large numbers of middle-aged and older workers will find their occupational skills rendered obsolete. How society will deal with this problem remains to be seen.

In the United States, one of the more immediate consequences of the growing oversupply of less skilled workers has been the failure of real wages (i.e., wages after correction for inflation) to keep pace with increases in productivity. In fact, at a time when productivity is increasing fairly rapidly, wages for the average worker have stagnated or even declined [Head 1996].

This problem is further aggravated by advances in the technologies of transportation, which have led to the emergence and increasingly rapid growth of the global economy. As new technologies have greatly reduced the cost of transporting goods, it has become increasingly profitable for employers to turn to the so-called emerging nations of Asia, Africa, and Latin America for semi-skilled and unskilled labor. Labor costs in these nations are only a fraction of the costs in advanced industrial societies.

To make matters worse, many less skilled white collar jobs are also being rendered obsolete by new technologies. Networks of computers are dramatically reducing the need for armies of clerical workers to keep and maintain organizational files and records and have even begun to reduce the need for middle level managers and professional staff.

How societies will adapt to these changes remains to be seen. One possibility is to reduce the length of the work week and work year, spreading opportunities for employment more widely and increasing opportunities for leisure. This approach, however, raises the unit costs of production and in an increasingly global market economy threatens the economic security of societies that follow this path.

An alternative response, but one that most industrial societies have been slow to adopt, is the establishment of a rigorous national population policy, one that not merely limits the natural increase of population through an excess of births over deaths but also limits severely or even forbids immigration from other nations. With the notable exception of Japan, elites in most industrial societies have been unwilling to adopt such policies since they (i.e., the elites) usually benefit from the trends that threaten or harm so many of their compatriots. Moreover, various currently popular ideologies confuse the issue in the minds of many since efforts to restrict immigration are commonly attacked as "racist" by opponents.

A growing body of evidence suggests, however, that this argument is beginning to lose its appeal. Recent surveys have shown, for example, that a substantial majority of

Americans (including even members of recent immigrant groups) now favor raising barriers to immigration [Federation for American Immigration Reform 1996].

If the various trends cited above continue, the probability of greater tensions and conflicts within societies is likely, especially if the more powerful members of society continue to benefit economically from the trends, while millions of their fellow members suffer. Already, a growing number of politicians in western Europe and the United States have begun to direct attention to the problem, but it is unclear if any have found a satisfactory solution.[5]

New technologies promise to give rise to other often unrecognized kinds of change. In countless subtle ways, for example, they have weakened the traditional family system. Children have become increasingly expensive and also increasingly free of parental control; opportunities for profitable employment for women have risen sharply, thus weakening the economic bond between men and women. In addition, new technologies of many kinds (e.g., frozen meals, microwave ovens, dishwashing machines) make life outside of marriage increasingly easy for both sexes. Finally, other new technologies (e.g., television, the internet) provide dramatic new opportunities for those who reject traditional family values to promote their views.

One could easily extend the list of changes that are likely in post-Communist societies. Since space does not allow that, I will merely restate the basic underlying thesis, namely, that the most revolutionary force at work in the world at large today is technological innovation. And, I would add, the prospects for slowing this force in the near-term future seem negligible, if only because technological innovation increases the ability of the more powerful members of societies to satisfy their many and varied needs and desires. Halting a force such as this, will prove an extraordinarily daunting task.

Societal Continuity in Post-Communist Europe

If ecological-evolutionary theory is correct, there is at least one change that the peoples of the post-Communist societies of middle and eastern Europe should not expect: that is, a major change in human nature. Changes have occurred and will surely continue in what people say and do; but changes in their basic underlying motives and goals are unlikely. In short, continuity is more likely than change in this aspect of life.

If most politicians and others were devious and self-serving in the bad old days under Communist Party rule, one should not be surprised to find these patterns persisting. The shift from a totalitarian system to a democratic one is not likely to change basic human nature and it would be a serious mistake to expect it.

This is not to say, however, that conditions will remain as bad as they were: the demise of totalitarianism and the breakup of monopoly power in the realm of politics is an enormously important change and should never be underestimated. But it appears too much to expect that the ending of Party control will bring about a radical transformation in basic human motivation. As General Secretary Krushchev once said, this is as likely as

[5]) The problem for which no one seems to have a solution is the competitive nature of the emerging global economy. Everyone wants the benefits of this kind of economy in the form of lower prices for goods and services, but no one in advanced industrial societies with their high standards of living wants to pay the price in terms of businesses bankrupted by their inability to compete in world markets and lowered standards of living for the population at large.

shrimps learning to whistle. Or, alternatively, as he might have said, it is about as likely as the emergence of the new socialist man.

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