
Adapting Human Lifestyles for the 21st Century

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A number of ecological problems (e.g., global warming, ozone depletion, deforestation, acid rain) have been identified, which threaten to reduce the quality of human life in the 21st century. These problems are human produced, resulting primarily from overpopulation and overconsumption. Alterations in people's awareness, attitudes, beliefs, and behaviors may stimulate changes in their political and economic systems, which in turn might foster the kind of lifestyle changes that could mitigate these ecological problems. Psychologists can play a role in helping individuals and systems advance toward the goal of becoming a sustainable society: one that satisfies its current needs without jeopardizing the prospects of future generations.

Several human-produced ecological crises may threaten all people in the not-too-distant future. Among these threats are global warming, ozone depletion, deforestation, soil poisoning and salination, desertification, acid rain, loss of biodiversity, and so forth (cf. Oskamp, 2000, this issue). It is the domain of physicists, chemists, meteorologists, biologists, agronomists, ecologists, and others to analyze these serious problems. However, all of the looming ecological problems share a common element: They are the result of people appropriating ever greater portions of Earth for human use and then generating geometrically increasing amounts of waste that stress the planet's ecosystems. Psychologists can play a role in reducing these ecological threats that Earth now faces by identifying effective strategies to persuade people to reduce their birth rates and to adopt more ecologically appropriate lifestyles. Changing the wasteful political, economic, and business systems that currently mold people's behavior could lead to lifestyles that support global sustainability.

Because of humans' central role in causing the coming ecological problems, many authors have called into question the attitudes and lifestyles that have developed during the 19th and 20th centuries. Humans might change their current wasteful, consumption-oriented lifestyles and embark on courses of cultural evolutionary change (Ornstein & Ehrlich, 1989) in their ways of thinking, valuing, and living. Of course, as volitional beings, humans are free to ignore the warning signs of stressed ecosystems and to choose to do nothing. However, denying that there is a problem will not reduce or eliminate the disturbing ecological realities. Psychologists can be instrumental in grappling with the initial hurdle of humans' impulses toward escape from (and denial of) impending threats.

Changing Human Lifestyles

History demonstrates that human attitudes, behaviors, and lifestyles have changed dramatically over time. Human beings now tend to average 3.6 offspring per woman. That was not always the case. For example, the birth rate in the United States was cut almost in half between 1910 (30.1 births per 1,000 people per year) and 1994 (15.3 births per 1,000 people per year; *Almanac*, 1996). Furthermore, current birth rates are vastly different in different locations, ranging from 11 births per 1,000 people per year in Italy to 45 births per 1,000 people per year in Tanzania (Reddy, 1994). Extreme social and cultural circumstances highlight the variability in behavior of which humans are capable. Humans may strive to change their thoughts, actions, lifestyles, and ambitions toward the goal of becoming a sustainable society—that is, one that satisfies its current needs without jeopardizing the prospects of future generations.

Ecological problems of the 21st century might be tractable to both effective human engineering and technological breakthroughs. Recent declines in worldwide corn reserves to a 60-year low ("Record-High Corn Prices," 1996) offer a good example. Although agricultural breakthroughs will always offer some help for changing the worldwide food situation, none appear to be in the offing to alleviate the shortage of corn and other grains. However, two areas of human engineering could help mitigate this food problem.

The first concerns current eating habits. Approximately 10 calories of vegetation are required to produce 1 calorie of meat (Ehrlich & Ehrlich, 1990; Hardin, 1993). Thus, if people were to eat less meat, there would be a 10-fold (in theory—6- to 7-fold in actuality) increase in the number of vegetable calories available for consumption for each of the meat calories a person forgoes. This is especially true for corn shortages, because far more corn is consumed by livestock than by humans. Some health ex-

Editor's note. Stuart Oskamp developed this Psychology in the Public Forum section.

Author's note. This article is based on the presidential address to Division 24, Theoretical and Philosophical Psychology, at the 104th Annual Convention of the American Psychological Association in Toronto, Ontario, Canada, in August 1996.

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perts claim that a diet consisting of less meat and more grains would, in fact, be healthier for Americans.

Second, if humans reduced their fertility rate from 3.6 children per woman to 2.1 children per woman, the worldwide food situation would improve dramatically (Ehrlich & Ehrlich, 1990). All of the birth control technologies needed to produce this reduction in birth rates are already available. What, then, keeps people from reducing their birth rates?

The problems in stemming population growth in less-developed countries are complex and daunting, but they have been productively addressed by social scientists (cf. Severy, 1993). Space here allows only a few observations, confined to the situation in the United States. The American public has only recently become aware that several cherished social institutions have unintentionally fostered ecologically inappropriate outcomes. For example, there are ways in which the tax code, the welfare system, and immigration policies have contributed to the overpopulation of the country (see Hardin, 1993). These policies, misguided in some ways, were instituted in response to real problems and were energized by the good intentions of their creators. The current U.S. tax code, however, may encourage large families (through a \$2,250 tax exemption per child per year). The current welfare system is responsive to the needs of children born into poverty, but critics claim that the system might encourage some to have larger families so they may obtain increased welfare payments. Similarly, the current immigration policy supplies cheap labor that may help American businesses be competitive internationally. However, that policy may also lessen population pressures in other countries, relieving overpopulation which might have encouraged those countries to reduce their birth rates somewhat. Over time, such policies might undermine individuals' intentions to do their part to stem global overpopulation.

Information That Obscures the Need for Change

When exposed to global population trends (see Oskamp, 2000), many people express surprise that the world population is growing so rapidly. There are several reasons why many people lack a basic awareness of disturbing population trends. The distribution of palliative information by some in U.S. society is one reason. The following example illustrates how technically correct information can be used to promote incorrect conclusions, thus reducing (rather than enhancing) people's awareness of ecological issues.

Students in an ecological psychology course helped write an editorial on the connection between global overpopulation and dwindling grain stocks that was published in the *Chicago Tribune* (Howard, 1996). A week after the article appeared, an anonymous letter arrived. Inside were four professionally produced pamphlets entitled *World Population Facts*, *Total Fertility Rates Are Plunging Worldwide*, *The World Can Feed Its People*, and *More Grain on Less Land*. These pamphlets were accompanied by a scribbled note that simply said, "Chicken Little—the

sky is *not* falling." Messages contained in the four pamphlets were quite consistent with one another. They claimed that, if anything, society ought to worry about there being too few rather than too many people on Earth, and that gains by modern agriculture would be more than able to meet global food demand. Of course, the students were quite disturbed by the disparity between the "facts" offered in these pamphlets and their understanding of trends in population and in food production and consumption.

A senior took it upon himself to find out how the pamphlets' authors could interpret the world population situation so differently than did Ehrlich and Ehrlich (1990), Gore (1992), Howard (1997), and Oskamp (2000, Figure 3). The first few lines of the *Total Fertility Rates Are Plunging Worldwide* (no date) pamphlet give the flavor of its message:

Throughout the world birth rates and total fertility rates are plunging faster and further than ever recorded in human history. Despite all the apocalyptic doomsday predictions of certain overpopulation propagandists, the fact is that population growth in many countries are [*sic*] already below replacement levels and the world's growth rate is rapidly approaching that figure. (p. 1)

By the end of the pamphlet, a naive reader might be convinced that the species's real threat is this plunging fertility problem rather than overpopulation.

To analyze these claims, the student obtained data from the *World Population Profile* (U.S. Department of Commerce, 1996) revealing that the world population growth rate has declined from 2.0% per year during the period of 1960–1970, to 1.8% for 1970–1980, to 1.7% for 1980–1990. However, the annual increments in global population actually *increased* during that period from 67 million per year (for the 1960–1970 period) to 75 million per year (for the 1970–1980 period) to 82 million per year (for the 1980–1990 period).

These data show that the pamphlet was technically correct, in that the annual *growth* rate has been declining since about 1965. However, this fact should not allay fears of overpopulation. Records for increases in the world's total human population continue to be broken year after year, with little prospect for this trend reversing in the foreseeable future. The mathematics of these apparently incompatible truths is really quite simple. Compare the year 1965 with 1997 to see how compatible declining annual growth rates can be with a rapidly increasing human population:

$$\begin{aligned} \text{In 1965: } & 3.3 \text{ billion (population)} \times .021 \text{ (growth rate)} \\ & = 70 \text{ million people annual increase (births - deaths).} \end{aligned}$$

$$\begin{aligned} \text{In 1997: } & 5.9 \text{ billion (population)} \times .0165 \text{ (growth rate)} \\ & = 92 \text{ million people annual increase (births - deaths).} \end{aligned}$$

Cultural Evolution to Combat Ecologically Inappropriate Beliefs

Several recent books by psychologists (Gardner & Stern, 1996; Howard, 1997; McKenzie-Mohr & Oskamp, 1995; Winter, 1996) include proposals for cultural evolution. They are designed to produce more ecologically viable worldviews, attitudes, and lifestyles. Each book illuminates in its own way certain cognitive tendencies (e.g., failing to consider the societal costs of individual actions, assigning monetary values to all things, overweighing short-term considerations in decision making) that contribute to the numerous ecological problems humanity now faces. By continually showing these tendencies at work in human action, the authors might improve readers' awareness of issues and perspectives that would suggest more ecologically benign attitudes, actions, and lifestyles.

When exposed to technologies like compact fluorescent bulbs, geothermal heating and cooling systems, extremely fuel-efficient cars, and so forth, many people immediately recognize their ecological value. However, research reveals that few consumers make the financial sacrifices necessary to overpay greatly (in the short run) for an ecologically and economically beneficial (in the long run) technology (Howard, Delgado, Miller, & Gubbins, 1993; Howard, Noethe, Delgado, & Fleming, in press). Thus, for most people, more than a simple change in ecological awareness is required. Rather, a more fundamental reassessment of basic beliefs and thinking algorithms is needed. As Ellis (1994) has noted, believing irrational thoughts can make one's psychological life miserable. Similarly, there are many beliefs that might prove ecologically destructive to the world in the next century.

Schwartz (1986) demonstrated that three important contemporary belief systems—rational economic man theory, behavioral psychology, and sociobiology—represent slight variations on a common theme. Each applies the same basic idea to a different content domain of human action. First, in most contemporary economic theories, utility maximization is assumed to drive human actions (Herrnstein, 1990). Similarly, human action is understood by some behavioral psychologists as people's attempts to maximize reinforcements while minimizing punishments (Schwartz, 1986). Finally, in sociobiology, actions are thought to be the result of attempts by "selfish genes" to maximize the number of their kind that make their way into the next generation's gene pool (Dawkins, 1989).

Herrnstein (1990) emphasized that belief in the maximization vision of human action now represents the most basic, unexamined assumption about human nature:

Not just economics, but all the disciplines dealing with behavior, from political philosophy to behavioral biology, rely increasingly on the idea that humans and other organisms tend to maximize utility, as formalized in modern economic theory. . . . The scattered dissenters to the theory are often viewed as just that—scattered and mere dissenters to an orthodoxy almost as entrenched as a religious dogma. (p. 356)

The behavior maximization theme represents a vision of human nature that will spawn many ecologically destructive beliefs for the 21st century. The Appendix presents nine "killer thoughts" from Howard (1997) that result from the current maximization and optimization view of human nature. Because the beliefs sketched in the Appendix will lead to overconsumption by affluent people (and nations), they thus have become toxic. Notice that when these thoughts developed, in the underpopulated world of the 19th century, they were quite appropriate for that world of 1 to 1.5 billion people (where the Industrial Revolution was just gaining momentum). However, these thoughts will be quite dangerous for the 21st century (of 8 to 20 billion people), characterized by overstressed waste sinks (e.g., polluted air, rivers, oceans, landfills) and crashing ecosystems.

One example of an ecologically inappropriate belief is "the future is to be discounted." In case after case where ecosystems are being stressed, there is extravagant present consumption with little or no regard for the buildup of wastes that will jeopardize everyone's future (Durning, 1992). Economists view each person as having a *subjective discount rate*. The following examples illustrate how subjective discount rates are calculated. Suppose I told you that you have just won \$1 million that I will pay to you as a lump sum 10 years from now. You are happy, unless you heavily discount the future (i.e., you have a high subjective discount rate). People with high subjective discount rates might actually have a negative reaction to having to wait 10 years to get their money that is stronger than their positive reaction to the windfall.

Imagine that I offered to blunt your negative reaction to having to wait (i.e., to delay gratification) by offering to give you \$900,000 now in lieu of your \$1 million a decade from now. Would you take my offer? Most people would jump at the offer, which suggests that they have a subjective discount rate of 1% or higher (they would take 10% less money to get it 10 years earlier). Would you take \$500,000 now? Many people would do so. Their subjective discount rate would be 7% or higher (because compounding \$500,000 at that rate would reach \$1 million in 10 years). Money has a utility of use for people. If one believes he or she can make more money by investing an immediate payment (even though much of that gain will be lost to taxes), one might reasonably adopt a higher subjective discount rate.

For ecologists, present consumption (rather than present investment) is the concern because it eats into (rather than adds to) future values (e.g., should people consume oil now or conserve it for future generations?). Given this kind of choice, small subjective discount rates are generally preferred. In situations where present investment is pitted against future value, the individual both bears the costs of not consuming (e.g., the \$900,000) immediately and also reaps the future benefits. However, in cases where present consumption is pitted against future benefits, the individual reaps the benefits of present consumption (e.g., purchasing and driving a gas-guzzling au-

tomobile), whereas the future costs (e.g., less oil available for future generations, pollution problems) are borne by society in general or by future generations (Ehrlich & Ehrlich, 1991; Hardin, 1993). These circumstances make present consumption a tenacious adversary for psychologists to attempt to reduce.

Current research suggests that people's subjective discount rates typically run from 5% to 15% (Noethe, 1996). Psychologically speaking, higher subjective discount rates suggest one's willingness to give up pleasurable events in the future to gratify oneself in the present or one's willingness to endure greater punishment in the future (by repaying principle plus interest) to escape from a present problem. Unfortunately, people (corporations and countries also) who are in debt have much higher subjective discount rates than do solvent people, corporations, and nations, because debtors (as opposed to net creditors) are more likely to be desperate for money in the present. The latest trap for desperate people is the payday loan company (or the money store), where people with a job and a checking account can easily get short-term loans (of a few weeks) of a few hundred dollars. If one does the math of these transactions, they typically reveal subjective discount rates (and annual interest rates also) from 700% to 1,000%. How do such practices escape U.S. usury laws? Technically, no interest is charged, but the "transaction costs" would translate into obscenely high interest rates if they were labeled as interest (Kilborn, 1999).

Prescient psychologists have long recognized the seductiveness of the current materialist and consumerist society, and they have warned us against its corrupting influences. For instance,

The capitalist system, in order to sell its plethora of manufactured goods, has had to enlist the help of the motivation researcher and the Madison Avenue ad agency to get rid of the excessive and ever growing pile of manufactured goods not really needed in our society. To encourage consumption in the absence of real need and to associate status and self-esteem with wasteful consumption, it has been necessary to encourage relatively mindless impulse buying and self-gratification. By now, we have raised several generations of people on endless and repetitive exhortations that it is all right to yield to impulse, to buy without guilt, and to consume without shame. Installment buying may have been the fatal blow to the self-denial of the Protestant ethic. (Albee, 1977, p. 150)

Madison Avenue's advertisement propaganda, urging people to adopt wasteful, consumption-oriented lifestyles, represents an important ecologically destructive force against which children and adults need to be inoculated. Contrary to the consumerist vision of life, wasteful overconsumption, unbridled greed, and short-term myopia should be understood as destructive vices.

The Challenge of Reengineering Wasteful Systems

Over time, people have institutionalized wasteful and destructive lifestyles by creating systems (e.g., business, po-

litical, educational, legal) that virtually demand that individuals stress their ecosystems. It may be difficult for many readers to appreciate arguments against such basic beliefs as the value of the current so-called "free market" capitalism (Howard, 1997). To change human attitudes and behaviors in radical ways, the systems that serve to train and to maintain daily behaviors need to be reengineered. Again, misleading information may move people in the wrong direction. Consider the following startling claim made by Passell (1996):

Substitute 500,000 electric cars for the same number of new gasoline-powered ones in Los Angeles—a plausible number for the year 2010—and what happens? Not much. Peak levels of ozone are reduced, but only from 200 parts per billion to 199. The current safe level is estimated to be 120 parts per billion, and new research suggests that the target should be lowered to around 70 parts per billion to meet the law's requirement to eliminate all health risk. . . . The fact is, we'd not get any benefit from electric cars. (p. D2)

This remarkable conclusion is based on research by Lave, Russell, Hendrickson, and McMichael (1996). The claim that ozone levels would be reduced from 200 to 199 parts per billion is true only if one assumes that all of Los Angeles's additional electricity will be produced by dirty sources (from natural gas and coal), which was the procedure used to calculate the projected ozone figure of 199. Thus, the source of pollution would simply be moved from tailpipes to electricity-generating plants. However, Los Angeles does not produce electricity solely from polluting sources: Wind, photovoltaic, geothermal, and hydroelectric sources are already being used. With every passing year, more and more of Los Angeles' electricity will be produced by nonpolluting methods (Henderson, 1981). In fact, over time the estimate of 199 parts of ozone per billion made by Lave et al. will be more misleading than it already is.

Lave et al.'s (1996) scientific thought experiment represented a fundamentally disingenuous argument from the start. However, it is an exercise that sheds light on the problems of making changes within wasteful systems. In addition to using some highly suspect assumptions and facts (as noted above), Lave et al. asked what would happen if one put a super-efficient component (electric cars) into a ghastly, inefficient energy-production system (the current hydrocarbon-based electricity production methods) and then concluded that the immediate results would be disappointing. That is like asking what efficiencies would be obtained if one put a modern, high performance carburetor into a Model T Ford. If the car would run at all, it surely would not show great efficiencies. The rest of a Model T's engine is not equipped to take advantage of the new carburetor's performance efficiencies. Rather than recognizing that society cannot totally redesign an inefficient, polluting energy system overnight and replace it with an efficient, nonpolluting system, Lave et al. incorrectly concluded that society should not change to using electric cars. Massive changes may need to be undertaken piecemeal over long periods of time. The efficiencies of any one component may only be fully realized after other parts of

the system also have been improved. However, it is important to adopt long-range time frames (i.e., not to discount the future) when considering such crucial issues. For example, if Los Angeles obtained all of its electricity from less polluting renewable sources (e.g., sunlight, wind, tides, geothermal energy), then the contribution to ozone by 500,000 electric automobiles in Lave et al.'s example would have been roughly zero!

A first step toward reengineering the wasteful power generation system, which is currently incapable of adequately taking advantage of electric cars, might be to initiate a *green tax* (Hawkin, 1993). A green tax would give nonpolluting sources of electricity a chance to gain a greater percentage of the electricity generation market. Green taxes are used only when polluting *and* nonpolluting market choices are available (e.g., both compact fluorescent and incandescent bulbs). Rather than coarsely labeling some energy sources as "good" and others as "bad," in the case of electricity generation a more precise tailoring of taxes could be developed. A panel of environmental experts might rank the various fuel sources with respect to many factors (e.g., amount and types of pollutants, domestically available vs. imported, renewable vs. nonrenewable), yielding the following hypothetical ranking of the undesirability of each fuel source:

Source Undesirability: Coal = Oil > Natural gas
> Hydro > Solar = Wind = Geothermal
Maximum green tax: 100% = 100% > 50%
> 25% > 0% = 0% = 0%.

The lower line indicates the percentage of some maximum level of green tax (e.g., \$0.03 per kilowatt hour of electricity generated) to be placed on each energy source (named above) for producing electricity. Thus, the price of nonrenewable, polluting, imported fuel sources would increase dramatically. Conversely, people using renewable, nonpolluting, domestic fuel sources would pay no green tax. Such taxes could be phased in over many years, and the trillions of dollars raised might be used to lower federal income tax rates (Hawkin's, 1993, suggested use), to reduce the national debt, or to provide grants to develop more energy-efficient technologies. Green taxes are very versatile tools and represent one of many ways that changes in the U.S. tax system could facilitate environmental reforms. As another example, the problem of ozone depletion (caused by chlorofluorocarbons) might have been solved by imposing green taxes rather than the phased-in bans that were used. Similarly, establishing a green tax on the sale of inefficient gasoline-powered automobiles could increase the ratio of fuel-efficient to fuel-inefficient cars on U.S. highways.

Some might object that green taxes represent unwelcome intrusions into the actions of the free marketplace. Many authorities (e.g., Hardin, 1993; Henderson, 1981; Howard, 1997) have argued that the present markets are not free and properly functioning precisely because not all of

the real costs of various goods and services are included in their market prices. Green taxes would allow additional, real costs (e.g., the costs of emitting greenhouse gases, producing acid rain, depleting nonrenewable resources, destroying natural habitats) to be entered into market prices. Whereas many of the destructive consequences of business practices are currently being treated as externalities (i.e., factors that can be ignored), green taxes would internalize these externalities and thus would produce a more complete free market that would better protect the environment.

The renewable, efficient, and nonpolluting technologies that will dominate the 21st century are at a disadvantage in a marketplace that will not charge inefficient, polluting, nonrenewable competitors for their negative impacts. Economists should delineate the total costs (by including *all* inputs and outputs) of the current systems, thereby changing the habit of 20th century economists of externalizing the real ecological costs of producing and disposing of products (Hardin, 1993; Hawkin, 1993; Henderson, 1981). Citizens might endorse green taxes as a way of protecting their environment and also raising revenues.

Many people are now repulsed by the environmental destruction produced by the current business, economic, and political systems. Still, little societal change seems to be occurring. Perhaps this is because people's ecologically appropriate attitudes, beliefs, and dreams are not yet developed enough to motivate them to change the systems (e.g., economic, political, social, legal) in ways that will then alter their ecologically destructive lifestyles. My recent, unsuccessful experience in trying to block the repeal of the nation's 4.3 cent gas tax was instructive. After hearing of the connection between the tax and ecological issues, many colleagues and students gave their wholehearted support to my cause. Once aware of issues, most people will do their best to support a system (a green tax in this case) that helps others behave appropriately. However, it is very difficult to even understand the environmental impact that political and economic choices and policies will produce (Howard, 1997). It appears that more self-change by each person is required to produce the enormous changes necessary to chart a sustainable course for the world. By supporting like-minded people and policies, psychologists can nurture the collective dream of a human nature and a society that can live in peace with the many other biological species that make up the web of life (Wilson, 1992).

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Appendix

Killer Thoughts for a World With Limits

1. Consumption will produce happiness (and consumption is “needed”)
 - I’ll be happy when I get that new Lexus, my home on the beach, etc.
 - Shopping as a form of relaxation; catalog shopping; The Shopping Network
 - The belief that if consumers stop buying, then people will lose jobs
2. The future is to be steeply “discounted”
 - We are the “Now generation,” so we don’t need to think (or worry) about the future. We’ll “worry about that later”
 - Buy now—make no payments until next year (as individuals given a line of credit, or as a nation with an enormous national debt)
3. Present consumption is preferred to investment in (or conservation for) the future
 - Short-term rewards and punishments are greatly overvalued relative to long-term consequences in the calculus of decision making
 - No one speaks for the rights of the next generation (e.g., draining the Social Security Trust Funds)
 - Debt is now as natural as breathing
4. Growth is good
 - GDP [gross domestic product] must always increase
 - An undeveloped resource is a wasted resource
 - More of a “good” (e.g., people, products) is preferred to less
5. Free-market capitalism is the best system
 - “Greed is good”—we should all get as much as we can
 - The CC–PP game (communized costs—privatized profits) (Hardin, 1993)
 - Systems should encourage greater human economic activity (throughput)
6. Paying less (for something) is better than paying more
 - Cheap gas (or electricity, or water, etc.) is preferred to expensive commodities regardless of their real, total costs
- Keep prices as low as possible by externalizing whatever costs possible
- Government support for “commons situations” (e.g., leasing federal land for grazing) is a great “deal”
7. If it ain’t broke (yet)—don’t fix it
 - Collapse occurs long after an ecosystem’s carrying capacity has been exceeded
 - We don’t need to act for the sake of “uncertain” projections about, for example, global warming, ozone depletion, food shortages, etc.
 - If it’s not my problem, it’s not a problem (e.g., social security, starvation)
8. Until scientists can prove a phenomenon beyond scientific doubt, society doesn’t need to act on it
 - No one can prove that smoking causes lung cancer
 - Risks should be managed by the free market
 - Ecological threats are more like people (innocent until proven guilty) than like drugs (guilty until proven innocent)
9. Innovations (technological and others) can push back biological limits indefinitely
 - Malthus was “wrong” because of the “green revolution”
 - We don’t need to worry about unintended, negative consequences of technological “solutions” (the fact that solutions often produce a new and different set of problems). The “next” technological breakthrough will solve the problem
 - Some still think we could ship excess people to another planet

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