

ECOLOGICAL SURVIVAL AND REVOLUTIONARY CHANGE

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OVERVIEW

This document explains why revolutionary change is required for ecological survival, and how this might be achieved. In the first part I discuss the ecological crisis, the rational response to it, and the measures taken to prevent this response. I then address the shift from capitalism to a sustainable economy, the revolutionary change this necessitates, and a youth-oriented strategy to achieve this change. What follows are brief overviews of these six topics.

1. The Ecological Crisis

The ecological crisis is overshoot - the violation of multiple significant environmental limits by the relentless expansion of the global capitalist economy. This crisis, which started around 1950, has two components: the greenhouse gas (GHG) crisis and various non-GHG impacts. The GHG crisis, which is deceptively called "climate change," is an extreme emergency that must be addressed by quickly reducing concentrations to their safe levels. The non-GHG impacts are somewhat less urgent.

2. The Rational Response

The goal in tackling the ecological crisis is not to "avoid the worst consequences" - today's standard formulation - but to minimize humankind's current damage and to repair the damage we've already done. Given the two-sided nature of the crisis, this means the rational response comprises four steps:

1. Minimize current GHG damage by reducing emissions;
2. Repair past GHG damage by reducing concentrations to their safe levels through GHG removal (GGR);
3. Minimize current non-GHG damage by maximizing non-GHG efficiencies;
4. Repair past non-GHG damage through various forms of ecological restoration.

Minimizing current damage will also require sharp reductions in population and consumption levels in the rich countries. The most critical measure of all is solar radiation management (SRM), which can act as a "techno-shield" to prevent runaway global warming while the other measures are implemented.

3. Blocking the Rational Response

The rational response outlined above was blocked because it threatens capitalism, economic growth, and the material interests of the global rich. The method used was to diminish the ecological crisis from overshoot to "climate change", acknowledge the latter to pacify the concerned, and then reject any threatening solutions. The main instrument of this ecocidal obstruction is the IPCC, which downplays or ignores four of the five possible solutions to the GHG crisis: reduced population, reduced consumption, SRM, and GGR.

4. From Capitalism to a Sustainable Economy

Because the rational crisis response cannot be implemented under capitalism, the system must be replaced by a sustainable economy. This will require a social force with sufficient coercive capacity to enforce the shift, a sustainable economic theory, and the minimization of social resistance. The first point is political and is addressed below. My proposed starting point for the economic theory is the Economics of Needs and Limits, or ENL. Social resistance can be minimized by altering capitalism only as required for sustainable well-being - a principle called minimum effective change. The labor market must also be modified so that reduced economic activities result in a shorter work week rather than unemployed workers.

5. The Necessity of Revolutionary Change

This document's core assertion - ecological survival requires revolutionary change - is based on five arguments:

1. Humankind's response to the crisis must be proportionate to the problem. Politically this implies the replacement of the current social leadership with a sustainable group.
2. Our response must be effective before tipping points and points of no return occur. Only revolutionary change permits such short-term solutions.
3. Mainstream sources correctly claim that reaching net-zero emissions will require transformative social change. It follows that the vastly more ambitious safe-concentration approach will require a revolutionary shift.
4. Capitalist societies are ruled not by their governments, but by dominant groups that derive their power from economic ownership and control. Pressuring governments for fundamental change is therefore futile.
5. Revolutionary change is the first, crucial step in species redirection: humankind's ecological shift from an expansionary to a contractionary trajectory.

6. The Youth-Military Strategy

Revolutionary change requires intense anger and energy from below, plus a social entity that can forcibly depose the existing social leadership. In the proposed strategy the young supply much of the anger and energy, and the military supplies the force. Based on U.S. Department of Defense documents, the military understands the environmental threat, but embraces the standard misconceptions and remains intensely loyal to current leaders. The young should therefore educate the military about environmental and political realities, and underscore its professional duty: to safeguard the people. Although the older have as a group dismissed the rational response, as individuals they possess valuable knowledge and experience, and many will likely support the young in their bid for ecological survival.

INTRODUCTION

A fundamental shift in the conditions of human life necessitates a fundamental shift in social arrangements. During Europe's feudal period many key technologies were introduced, including the printing press, windmill, plow, and loom. Although these developments set the stage for a rapid increase in economic production, this did not occur until feudalism gave way to capitalism and social leadership was transferred from landowners to factory owners.

A far deeper and more significant shift has now occurred. The over-expansion of the global economy has spawned an ecological crisis that threatens both humankind and nature. But, just as yesterday's landowners could not adapt to the new technologies by moving to a manufacturing economy, today's capitalists cannot adapt to the ecological crisis by moving to a sustainable economy. Existing social arrangements must therefore be fundamentally altered. *Ecological survival demands revolutionary change.*

In this document I present an analysis and strategy based on this argument. I first describe the ecological crisis, the rational response to it, and the calamitous prevention of this response by social leaders. I then examine how the response might be implemented despite the intense opposition. My assumption is that the reader is disillusioned with today's environmental initiatives - both mainstream and progressive - and is prepared to seriously consider new and challenging ideas.

A. CRISIS AND RESPONSE

1. The Ecological Crisis

Every economy is based on three core processes: the extraction of resources from nature, the use of these resources to satisfy human needs and wants, and the return to nature of the resulting wastes. This flow of extraction, production, consumption, and disposal places strains on the environment that increase with output quantities. If the economy continues to expand, and if higher efficiencies fail to compensate, these strains will eventually exceed natural limits and environmental damage will occur.

In a nutshell, this is what happened to the global economy in the 20th century. Prior to 1950 the environmental pressures rose steadily, but natural limits had not yet been reached and ecological damage was relatively minor. Then the situation changed dramatically. Around this date the atmosphere's CO₂ concentration rose above its long-term maximum of 300 parts per million (ppm), creating an energy imbalance that initiated climate and ocean damage. This was an early indication that the environment was being overwhelmed by humankind's economic activities, and that *ecological overshoot* - the violation of multiple significant environmental limits - had commenced.

These two developments - economic over-expansion and the resulting ecological overshoot - are at the heart of today's ecological crisis. The nature and scope of this crisis are depicted in the diagram below.

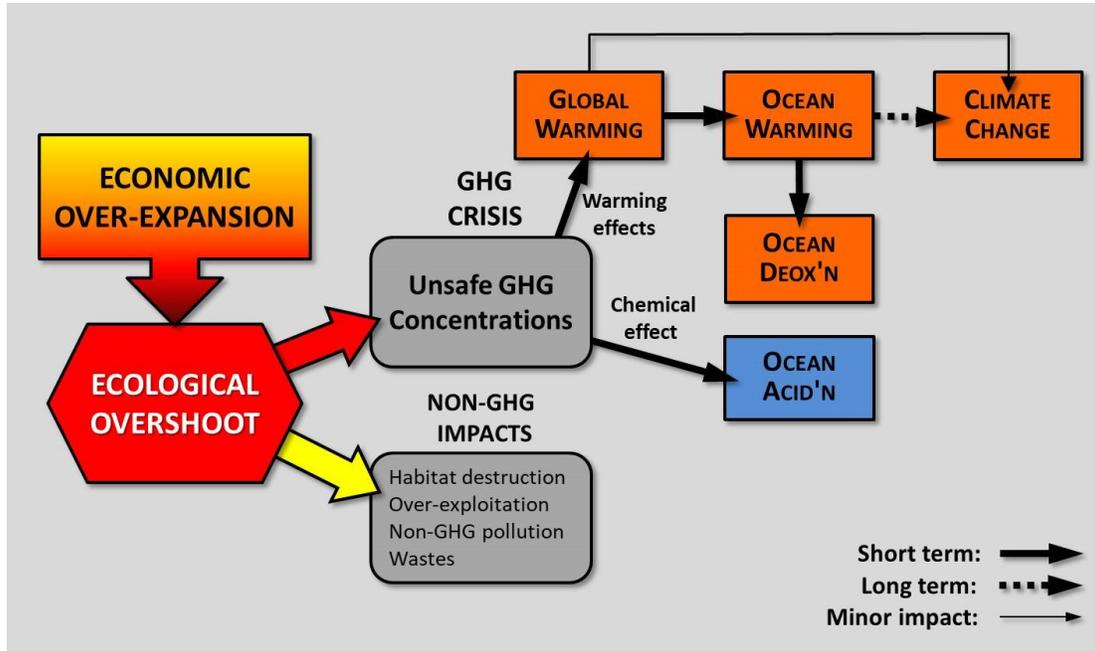


Figure 1 – The Ecological Crisis

As shown, ecological overshoot resulted in two distinct sets of environmental impacts, which together constitute the ecological crisis. The first is the greenhouse gas (GHG) crisis. This is an extreme emergency due to the proximity of tipping points and points of no return (see box), especially in the rapidly melting Arctic. The second are non-GHG impacts such as habitat destruction, the over-exploitation of renewable resources, various forms of non-GHG pollution, and wastes. These can seriously harm ecosystems and reduce biodiversity, but their tipping points are likely further away and they can therefore be addressed at a somewhat lower priority.

The GHG crisis requires extensive clarification because it has been grossly misrepresented by those seeking to avoid fundamental change.

Tipping Points and Points Of No Return

A *tipping point* is the level of environmental impact where damage increases abruptly due to cascading effects, positive feedbacks, or other factors. If the impact passes a critical threshold, a *point of no return* could be reached. At this stage human efforts no longer suffice to reverse the damage, which means that ecosystem collapse is inevitable. For details see [this post](#).

The central point is that this crisis was caused by *unsafe GHG concentrations* - that is, levels of CO₂, methane, nitrous oxide, and other GHGs that have risen above their long-term maximums and have therefore damaged the environment that underpins human civilization. Contrary to facts and logic, today's climate initiatives are focused almost entirely on reducing GHG emissions. Although this approach can slow and eventually halt the rise in concentration levels, it can't reduce them. Emissions should obviously be minimized, but they must be correctly identified as the increments to the concentrations-based problem, not the problem itself. Ignoring or downplaying this basic fact is here called the *emissions fallacy* (see box).

The Emissions Fallacy

Assume that 350 ppm is the safe CO₂ concentration, the current level is 415 ppm, and the annual increase through emissions is 2 ppm. To return to 350 ppm, the logical approach would be to focus on removing the 65 ppm of unsafe CO₂ while also minimizing emissions. It would be illogical to focus instead on the emissions while largely ignoring the existing 65 ppm. The latter approach, which has long dominated policy discussions, is the emissions fallacy. For details see [this post](#).

Another key point is that "climate change" is a confusing and deceptive misnomer for the various effects of unsafe GHGs.

The climate is the first Earth system to be impacted due to the atmosphere's relatively low mass, but this does not mean that climate is the core problem. This becomes obvious when we carefully trace the effects of unsafe GHGs, and if we use the terms "global warming" and "climate change" as defined in the [IPCC glossary](#).

As indicated by the above diagram, the GHG crisis comprises several warming effects and one chemical effect. The first set of effects is caused by global warming. This is defined in the glossary as, "... the gradual increase ... in global surface temperature as one of the consequences of radiative forcing caused by anthropogenic emissions." In less technical language, it refers to the warming of the Earth's surface by the rise in GHG concentrations since the Industrial Revolution.

Global warming has one major and one minor impact. The major impact is the warming of the global ocean, which absorbs about 93% of the incremental energy. The minor impact is the warming of the atmosphere, which absorbs the remaining 7%. This warming makes a small contribution to climate change, and like ocean warming it occurs in the short term.

Next, the warming of ocean water causes deoxygenation in the short term and the bulk of climate change in the longer term. Deoxygenation, or oxygen depletion, occurs in part because oxygen is expelled from water when it is heated. (Other causes are eutrophication through nutrient run-offs from farming and sewage operations, and changes in water stratification and circulation.) Climate change, which the IPCC defines as a prolonged change in the mean and variability of key weather components, is predominantly caused by ocean heat that is released into the atmosphere after a delay of several decades. This delay is due to the thermal inertia associated with the ocean's immense mass. Like a thick pan that takes several minutes to warm on a stove, the ocean warms slowly and releases its heat gradually.

Another GHG impact is ocean acidification. Unlike global warming, which is caused by unsafe levels of all GHGs, ocean acidification is caused by unsafe levels of CO₂ alone. This is because acidification results from the chemical combination of CO₂ with seawater, which produces carbonic acid. The result to date has been an increase in the ocean's acidity by roughly 30% since the pre-industrial period. As with ocean warming, this impact is devastating to marine species and ecosystems.

At this point it should be obvious why "climate change" is incorrect as a reference to the GHG crisis as a whole. Climate change, properly defined, is an *effect* of atmospheric and ocean warming, so it is not a primary or initiating event. As well, it has nothing to do with the chemistry of ocean acidification. If unsafe CO2 levels did not change the climate, ocean acidification would still occur.

The only way out of this confusion is to coin a new term - such as my suggested "GHG crisis" - to refer to the full set of harmful GHG effects. As well, the widely accepted conflation of "climate change" and "global warming" must end. As is transparent from their IPCC definitions, these terms denote two causally related but distinct phenomena.

The fact that the above steps have not been taken is one indication that today's environmental discourse is deeply deceptive. Another such indication is the absence of a simple explanatory diagram such as figure 1 above. For example, nothing like this appears in the 5,000-plus pages of the IPCC's [*Fifth Assessment Report*](#) (2014). But without such visual clarification the concepts and causal relationships that define the GHG crisis remain obscure - which appears to be the intended result. The topic of environmental deception is addressed in some detail below.

SECTION SUMMARY:

- ❖ Ecological overshoot occurred around 1950 when the global economy began to overwhelm the global environment.
- ❖ This event triggered an ecological crisis that has two components: the emergency-level GHG crisis and the less urgent non-GHG impacts.
- ❖ The GHG crisis was caused by GHG concentrations exceeding their safe levels. Reducing emissions as the main solution is irrational because it can't lower these levels. This approach is therefore called the *emissions fallacy*.
- ❖ The GHG crisis comprises several warming effects and one chemical effect.
- ❖ The warming effects, which are caused by all GHGs, are global warming, ocean warming, ocean deoxygenation, and climate change.
- ❖ The chemical effect, which is caused by CO2 alone, is ocean acidification.
- ❖ The use of "climate change" to refer to the GHG crisis as a whole is unscientific and misleading, as is the conflation of "climate change" and "global warming".

2. The Rational Response

After more than half a century of human inaction the ecological crisis has reached a perilous stage. Some tipping points have almost certainly been reached, others are imminent, and points of no return are close behind. Much environmental damage has therefore been done, and much more will inevitably occur before the planet can return to a sustainable state.

Given these rapidly deteriorating conditions, it is important to specify the intended goal in tackling the crisis. As indicated by my title, I believe the appropriate human goal is ecological survival: the non-extinction of our species and the retention of organized human life. What is needed for present purposes, however, is an environmental specification: what is ecologically necessary to achieve this human end?

The goal that is regularly expressed by mainstream sources is to *avoid the worst environmental consequences*. This is a disastrous formulation for two reasons. First, it embraces the *linear fallacy*: the false assumption that any impact reduction will result in a proportional harm reduction, thereby ignoring the existence of tipping points and points of no return. Second, it diverts attention away from the real requirement: to return the environment to a safe and sustainable state.

A much stricter and more survivable goal is this: *minimize the environmental damage we're currently doing, and repair the damage we've already done*. In other words, the correct aim is not to avoid the worst that is conceivable, but to achieve the best that is attainable. I call the two aspects of this best effort the *rational response* to the ecological crisis. When I talk about a solution, I am referring to a component of this response.

With these preliminaries out of the way, let me proceed to the rational response itself. This is summarized in figure 2 below.

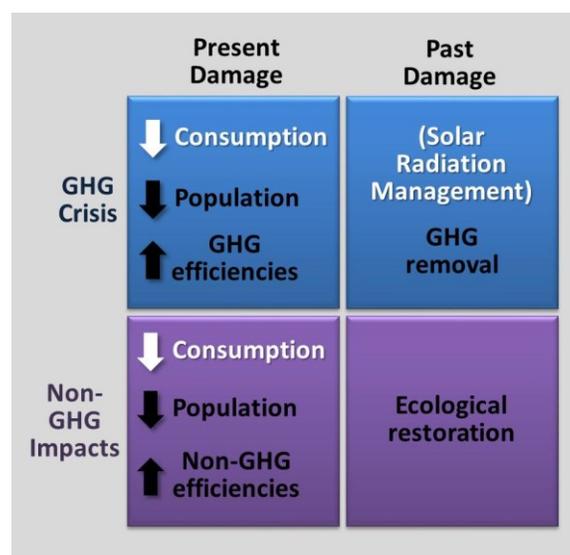


Figure 2 – The rational response to the ecological crisis

As noted in section one, the ecological crisis is divided into the GHG crisis and non-GHG impacts. These components are then split into the damage resulting from present and past economic activities. The applicable solutions are shown within the matrix itself. The white font indicates solutions that can be applied in the short term, and are therefore important for emergency action. "Solar radiation management" is in parentheses because this is a stopgap measure rather than a true solution.

For the GHG crisis, present damage is caused by GHG emissions. This is an environmental impact that can be analyzed through the [IPAT formula](#), which states that impact (I) is a function of population (P), affluence (A), and technology (T). Affluence in this context means average per-capita consumption, and technology means efficiencies. The formula therefore tells us that emissions increase when population and consumption levels increase, and decrease when GHG-related efficiencies increase.

This means that emissions reductions can be achieved by the three factors shown: reduced per-capita consumption, reduced population levels, and increased GHG-related efficiencies. In contrast to current practice, where such reductions are tackled through improved efficiencies alone, *an effective program would include all three solutions*. Particularly important are reductions in consumption and population in the rich world. This is where much of the emissions-based damage originates, and where sharp decreases could significantly reduce humankind's overall environmental damage.

Moving to the past damage caused by GHGs, the task is to restore the energy balance that has been lost through unsafe concentrations (see box). There are two ways to achieve this. The first is to decrease the incoming heat by reflecting the Sun's rays, an approach called solar radiation management (SRM) or solar geoengineering. The second is to increase the outgoing heat by decreasing GHG concentrations. This is called greenhouse gas removal, or GGR. (Until recently this approach was limited to CO₂ and was called CO₂ removal or CDR.)

Energy Balance

The Earth is in energy balance when the energy flowing from the Sun to the Earth is equal to the energy flowing from the Earth into space. Excess GHGs block some of the escaping heat, resulting in an energy imbalance that is the cause of global warming. For details see [this post](#) and [this Wikipedia article](#).

Because the GHG crisis is an emergency, decreased consumption is of particular importance because it is a short-term solution. A population decrease would require significant shifts in the patterns of births and deaths, which might take decades to unfold. Efficiency gains are being emphasized today and incremental costs are inevitably rising, so major improvements there are unlikely. Consumption, by contrast, is a behavioral factor that could change quickly if social attitudes were to radically shift. Most people in the rich world, for example, could stop flying tomorrow with minimal true hardship. (The unemployment that would result from reduced economic activities is addressed below.)

The other short-term measure for the GHG crisis is SRM. GGR fails to qualify because it will require extensive research and development, investments that will likely run to trillions of dollars, and a lengthy period while the excess gases are extracted and sequestered. This means that, although GGR is indispensable for returning GHG concentrations to their safe levels, it cannot achieve this goal before environmental calamities occur. SRM, by contrast, could be implemented within weeks or months, especially with the method of stratospheric aerosol injection.

Of the five GHG solutions, SRM deserves our closest attention, for two reasons. First, it is the only short-term answer to the dire threat of runaway global warming. The method is controversial (see my discussion [here](#)), but there is simply no alternative for quickly slowing the polar meltdowns and preventing catastrophic methane and nitrous oxide releases in the Arctic. Second, SRM has been flagrantly misrepresented. Even respected climate scientists have erroneously portrayed it as a *techno-fix*: a technical method for solving global warming while emissions remain unchecked. This completely ignores SRM's rational application as a *techno-shield*: a stopgap measure to arrest the growing energy imbalance and thus buy our species the time it needs to sharply curtail emissions and aggressively remove GHGs from the atmosphere.

The second part of the rational response is to effectively address the various non-GHG impacts, albeit at a lower level of urgency than the GHG crisis.

Recall that the overall aims are to minimize present damage and repair past damage. For non-GHG impacts the first of these can be achieved by reducing our current impacts, so the IPAT formula again applies. Thus, similar to the GHG crisis, the short-term solution is reduced per-capita consumption, and the two long-term solutions are reduced population and increased non-GHG efficiencies. A good example of the latter is packaging, where the aim is to drastically reduce the amount of cardboard, plastic wrap, etc. used to protect goods. Another is recycling, which reuses manufactured materials and thus decreases the material inputs required to produce useful outputs.

Repairing the past damage from non-GHG impacts entails a range of measures here called *ecological restoration*. Perhaps the most important of these measures is to rationalize land and ocean use by abandoning industrial* agriculture, forestry, fishing, and livestock production, and to place tight restrictions on mining activities. These steps are necessary to reverse the habitat destruction and chemical toxification that are currently driving many species to collapse and extinction. (Rationalizing agriculture and livestock production will also reduce GHG emissions significantly: almost a quarter of today's emissions arise from these and other land-use sectors.) Another critical measure is the Earth's rewilding: the return to nature of the land and ocean spaces that have been so destructively colonized by humankind. Finally, it will be necessary to remove wastes such as plastics from the ocean, pollutants from lakes and rivers, and industrial chemicals from landfills and dumps.

To summarize the above, humankind's rational response to the ecological crisis is to *shield, minimize, and restore*. Our species must first shield itself from runaway global warming through SRM. We must then reverse the planet's overshoot condition by minimizing our ongoing impacts through the IPAT factors: consumption, population, and efficiencies. At the same time we must restore the Earth's energy balance and the integrity of lands, waters, and ecosystems. Our ecological survival thus requires a three-pronged attack on the crisis we face.

* See [Capitalist Logic and ENL Logic](#) for comments on the word "industrial".

SECTION SUMMARY:

- ❖ The goal in tackling the ecological crisis is to minimize humankind's current damage and to repair the damage we've already done.
- ❖ For the GHG crisis this means aggressively reducing emissions and quickly restoring the Earth's energy balance.
- ❖ Emissions can be reduced through GHG efficiency improvements and by lowering consumption and population levels in the rich world. The energy balance can be restored through GGR.
- ❖ For non-GHG impacts the goal means reducing our overall impact and implementing the various components of ecological restoration.
- ❖ Overall impact can be reduced through non-GHG efficiency improvements and by lowering consumption and population levels.
- ❖ Ecological restoration can be achieved by rationalizing land and ocean use, reversing impacts such as habitat destruction and chemical toxification, rewilding the Earth, and removing dangerous wastes.
- ❖ The most critical measure is SRM, which can act as a techno-shield to prevent runaway global warming while the other measures are implemented.
- ❖ The rational response can be summarized as shield, minimize, and restore.

3. Blocking the Rational Response

Because the response outlined above has not been implemented, humankind faces an ecological crisis of existential proportions. Two questions must be answered if our species is to survive: *why* was meaningful action prevented, and *how* were the concerned persuaded to let it happen? (For more detailed discussions of both topics, click "IPCC Critique" [here](#).)

To begin with the "why" question, social leaders have long been aware of the impending crisis and thus the need for decisive action. Sporadic alarms about environmental decline were raised by scientists even during the 1950s, and in 1965 an advisory committee that included industry experts sent a comprehensive report to US President Lyndon Johnson, who then informed Congress. This report, [Restoring the Quality of our Environment](#), describes a wide range of environmental problems, including air pollution, soil contamination, agricultural wastes, and rising CO2 levels. It candidly states that these problems will inevitably worsen as economic growth continues.

By the mid-1960s scientists also suspected that minor climate disturbances could trigger massive and catastrophic changes. Already in 1925 a climate scientist had proposed that the polar regions have only two stable states - glacial and interglacial - and can flip between them from a "slight perturbation". (Spencer Weart, [The Discovery of Global Warming](#), p. 49) This suspicion was strengthened during the 1950s and 1960s, and in the 1980s it was confirmed. (Weart, p. 134) A similar instability applies to the thermohaline circulation (see box), which has major climate impacts. *Leading figures have therefore known for decades not only that ecological overshoot has occurred, but also that human civilization is imperilled by hair-trigger tipping points in the climate system.*

Thermohaline Circulation

Also called the "ocean conveyor belt," this is the large-scale ocean circulation caused by differences in water density at different ocean levels. These differences arise from variations in the water's temperature ("thermo") and salt content ("haline"). For details see [this Wikipedia article](#).

The rational response to the crisis was nevertheless blocked, for two main reasons. The first and more fundamental of these is that it would threaten capitalism and growth. These systemic threats become clear when we examine the solutions to the GHG crisis from the economic and political perspectives. As indicated in figure 2, there are five possible solutions: increased GHG-related efficiencies, SRM, GGR, decreased consumption, and decreased population. The systemic threats are associated with the last four of these.

SRM and GGR are problematic because their wholesale adoption would confirm that the GHG crisis is both real and extremely serious. For capitalism's supporters this would be a humiliating surrender to the environmentally concerned and an admission that strict regulation is required. Of even greater significance is that large-scale interventions in the environment would reveal that capitalism's relentless expansion has transgressed planetary boundaries and caused widespread ecological damage. This could undermine public confidence in the system itself, thereby jeopardizing its future.

Whereas SRM and GGR are "public relations" problems for the system and its supporters, reducing consumption and population levels would concretely threaten growth. Economic expansion relies on increases in both factors, so a growth-dependent economy can reduce neither without causing severe economic and social dislocations. By contrast, efficiency improvements are to some degree consistent

with capitalist logic. This is why such improvements are willingly implemented whenever they result in higher profits, and why they are the only solution that is widely embraced.

The second fundamental reason for blocking the rational response is that the material interests of the global rich are aligned with economic expansion rather than sustainability. Achieving the latter would mean dramatically reduced consumption levels, thereby threatening the most lavish lifestyles in history. Given the realities of human nature, such changes are strongly resisted. This means that the global rich - whether they are young or old, socially rich or socially poor - will tend to embrace efficiency gains because they don't rock the lifestyle boat, but to dismiss reduced consumption because it implies painful material losses. SRM and GGR are similarly resisted because they could destabilize the system that underlies rich-world affluence.

Regarding the "how" question, social leaders have devised a remarkably effective strategy for steering public attention away from the rational response. *Briefly stated, the steps are to distort the ecological crisis, authoritatively acknowledge this distorted version, and then deny all threatening solutions.* The main social instrument used to implement this strategy has been, and remains, the Intergovernmental Panel on Climate Change (IPCC). A few preliminary words are needed about this organization's birth.

The IPCC was established in 1988, around the time when climate scientists were meeting independently in Villach, Austria and Toronto, Canada to discuss the escalating crisis. At these meetings they anxiously called on governments to set strict limits on GHG emissions. According to one science writer, "By the second half of the 1980s many experts were frantic to persuade the world of what was about to happen." (quoted by Weart, p. 146) This scientific activism raised intense fears among conservative forces: "If the process continued in the same fashion ... future groups might make radical environmental pronouncements. *Better to form a new system under the control of government representatives.* Besides, a complex and lengthy study process would restrain any move to take concrete steps to limit emissions." (Weart, p. 152. Emphasis added.)

If Weart's interpretation is correct, the IPCC was not established to solve the GHG crisis. Instead the intention was to transfer control of the issue from action-oriented scientists to the compliant politicians, economists, and negotiators who for the past three decades have ensured that nothing of substance was achieved.

To continue with the "how" question, the ecological crisis was distorted in two ways. First, the IPCC name itself refers exclusively to climate effects, although it was well understood by the late 1980s that the problem is overshoot, which includes ocean damage and non-GHG impacts. Second, these effects were called "climate change" rather than "GHG crisis" or a similar comprehensive term. As explained above, this is misleading because a changing climate is just one of several consequences of global warming, and it excludes ocean acidification. Based on these distortions, the world has for decades addressed a sharply diminished crisis in outrageously muddled terms.

Despite its suspicious birth, the IPCC quickly gained the public's confidence through its association with competent scientists, its detailed technical reports, the daily plaudits it received from mainstream and progressive sources, and its shared Nobel Peace Prize in 2007. The most significant factor, however, was its correct insistence that the GHG crisis is real and serious, and that the deniers are unscientific obstructionists. This posture was extremely appealing to the concerned and drew them tightly into the IPCC's orbit.

Once ensnared in this fashion, however, they were fed the falsehoods that constitute today's standard climate story: reduce GHG emissions instead of concentrations, dismiss SRM* as a crazy techno-fix, delay GGR by several decades, and ignore both consumption and population reductions in the solutions mix. The strategy is thus bait-and-switch: attract the concerned with a respected organization, and then divert them to a tightly restricted solutions set that preserves capitalism, growth, and the lifestyles of the global affluent.

This approach has been highly successful because it is based on sound psychology. The problems are objective realities that can be denied only by the fanatical and deluded. The solutions, however, are in the realm of human thought, which is easily manipulated by social leaders. For example, the replacement of safe GHG concentrations with net-zero emissions as the GHG goal is completely illogical. It has nevertheless been achieved through the IPCC's pervasive use of emission scenarios in its analyses, and by the mantra-like repetition of the word "emissions" instead of "concentrations" in climate agreements and media stories.

Before leaving this topic I must note one final deception because of its recent relevance. As the GHG crisis intensifies, the standard story becomes increasingly suspect. The above strategy must therefore be adjusted as time goes on. This is most readily achieved by broadening the IPCC's problem acknowledgment to coincide with the public's deepening concerns. This was likely the main rationale for the organization's [1.5°C report](#). Given the disasters being experienced at just over 1°C of warming, the longstanding 2°C limit was rapidly losing credibility. The 1.5° C limit demanded by island nations was therefore adopted, although no real changes were made on the solutions side - just faster implementation of the conventional steps. For a more detailed analysis of this subterfuge, see my post [here](#).

* The IPCC has in effect negated SRM as a possible solution. According to the organization's current [website](#), its solutions mandate is to provide "mitigation options". "Mitigation" is defined in the IPCC glossary as reduced GHG sources or enhanced GHG sinks. But SRM falls into neither category: it increases the Earth's reflectivity through methods that are unrelated to GHG flows. This critical measure has therefore been squeezed out of consideration. By contrast, the IPCC's [original solutions mandate](#) was open-ended: to formulate "realistic response strategies." Given today's perilous conditions, these would emphatically include SRM.

SECTION SUMMARY:

- ❖ Although the main environmental threats were understood by 1965, the rational response was blocked because it threatened capitalism, economic growth, and the lifestyles of the global rich.
 - ❖ This prevention was achieved by reducing the ecological crisis from overshoot to "climate change", acknowledging the latter to attract the environmentally concerned, and then restricting solutions to those that pose no systemic or lifestyle threats.
 - ❖ The main social instrument of this deception is the IPCC, which was likely established to transfer control of the climate issue from objective and concerned scientists to system-friendly politicians, economists, and negotiators.
 - ❖ The IPCC correctly recognizes the GHG crisis as a serious problem, but fixates on emissions reductions through efficiency improvements as the main response. This means that four of the five possible solutions - SRM, GGR, decreased consumption, and decreased population, - are rejected or marginalized.
 - ❖ The likely intent of the IPCC's 1.5° C report was to neutralize heightened public concern by broadening the organization's problem acknowledgment while leaving the solutions largely unchanged.
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The following is a summary to this point.

Around 1950 capitalism's relentless economic expansion resulted in ecological overshoot. This triggered an ecological crisis that has two components: the GHG crisis and various non-GHG impacts. The rational response to this calamity includes SRM and a range of measures for minimizing our current damage and repairing the damage we've already done. This response was blocked because it would threaten capitalism, growth, and rich-world lifestyles. The IPCC was likely established in 1988 to spearhead this solutions denial. Its approach is to reduce ecological overshoot to "climate change", attract the concerned by acknowledging this diminished crisis and opposing the deniers, and then reject any threatening measures.

Below I propose an economic and political strategy to overcome the inaction and hopefully achieve a sustainable world.

B. ECOLOGICAL SURVIVAL

1. From Capitalism to a Sustainable Economy

In the above section I outlined the rational response to the ecological crisis. It should be clear, however, that these measures are incompatible with growth-dependent and profit-driven capitalism. For growth to continue, consumption and population levels must rise, not fall. Efficiency improvements are hampered by the profit fixation, which eliminates many technically feasible advances. And, because full implementation of SRM and GGR could expose the system's role in ecological overshoot, these measures are strongly resisted. The inescapable conclusion is that, to fully implement the rational crisis response, capitalism must be quickly transformed into a sustainable economic system. In this section I outline this transformation and how it could be achieved.

As described in the introduction, capitalism arose through a technology-driven transition from the land-based feudal economy. This process took several centuries to unfold. During this time the economic institutions and social relations of the medieval period were gradually replaced by those of the capitalist order, and an economic theory was developed to support the new system. Given today's rapid destruction of the global environment, this languid pace is unavailable to us. What capitalism achieved over several centuries must now be completed within years or possibly a few decades. A new model for fundamental economic change is therefore required.

In my view this model has two components. The first is a social force with sufficient authority and coercive power to rapidly shift the economy onto a sustainable path. This is a political topic that is addressed below. The second is an economic theory that can offer conceptual and analytical guidance to this social force during the restructuring process.

Today's dominant theory, known as standard or neoclassical economics, is useful for analyzing market behavior, but it slavishly reflects capitalism's expansionary logic and is therefore ill-suited to the restructuring task. (For details, see [Capitalist Logic and ENL Logic](#)). Its main alternative, ecological economics, has a massive contradiction at its core: it rejects unsustainable growth, but it clings to unsustainably growing capitalism. The field also made an egregious error when it ignored Herman Daly's warning to avoid the standard concept of subjective use-value because of its potential for environmental harm (see box). Based on these and other deficiencies, ecological economics must also be rejected as the new economic theory.

In the early 1990s, after realizing that neither standard nor ecological economics would serve, I began to develop the required theory on my own. The eventual result was the Economics of Needs and Limits, or ENL. This conceptual framework is based on an ethical principle: *all human beings*,

Daly's Ignored Warning

Herman Daly was one of the founders of ecological economics in the late 1980s. In his book [Steady-State Economics](#) (1977) he had criticized the standard discipline for defining use-value in terms of subjective wants instead of objective needs. His warning was that, "Since subjective individual wants are considered infinite as well as sovereign, there is a tendency for the scale of activity devoted to satisfying them continually to expand." (p. 213) In other words, subjective value is likely to be environmentally destructive. Despite this clear caution by a prestigious thinker, subjective value became one of the field's core principles.

present and future, are of high and equal worth. This means that everyone who participates in the economy deserves equitable treatment in the distribution of outputs, labor, and wastes. Rather than repeating the blunder of ecological economics, ENL defines value and cost in objective terms. This reflects the objective nature of environmental limits, human consumption needs, and the damage to workers in production.

As noted above, the new theory must provide both conceptual and analytical guidance. ENL achieves the first by offering sustainable and human-centered approaches to the core economic sequence: allocation, production, distribution, and consumption. The aim at each stage is maximum well-being, which is defined in terms of physical health and the satisfaction of unmanipulated wants. Outputs are granted environmental resources only to the extent that they serve this end, and overall environmental limits are strictly observed. ENL provides analytical guidance by offering a set of graphical tools based on this perspective. Given sufficient theoretical and quantitative development, these could be used to establish rational objectives for the full range of economic activities. For a detailed description of ENL, see [this book](#), which is available as a [free PDF](#). Also available are a succinct [overview](#) and a more detailed [introduction](#).

Once an ENL-like framework and a qualified social force are in place, the transition to a sustainable economy becomes feasible. To facilitate this transition I propose the principle of *minimum effective change*. This retains as much of capitalism as is consistent with sustainable well-being, thereby minimizing the social resistance to this deeply disruptive shift. For example, properly regulated markets and private economic ownership are potentially consistent with a sustainable world, and should therefore be retained in suitable forms. Capitalism's two critical weaknesses are its innate growth compulsion and its tendency towards excessive inequality. The economic transition should seek to remove these defects while objectively evaluating the system's useful features for incorporation into its sustainable replacement.

Another important way to minimize social resistance is to avoid the unemployment that under capitalism results from reduced economic activities. In ENL this issue is addressed by treating workers not just as inputs to production, but also as human beings whose well-being must be maximized. The framework's logic thus distributes labor equitably among available workers and compensates for reduced activities by shortening the work-week. This solution has been proposed by many others, but here it is derived from first principles. In this context it is not just a good idea socially and environmentally, it is *economically rational*.

Beyond a qualified social force, a new economic theory, and minimal resistance, the post-capitalist transition will require numerous institutional innovations. For example, new institutions will be needed to establish rational economic objectives and to carefully allocate environmental sources and sinks. Existing institutions will have to be modified to monitor environmental performance and to strictly enforce environmental regulations. As well, a reformed labor market must be developed to recognize workers as both human beings and labor inputs. For these and other tasks, extensive intellectual work is required. It will therefore be necessary to re-orient many social thinkers from their current projects to the economic transition.

Because the ecological crisis confronts humankind with a sharp historical discontinuity, the nature of a post-capitalist economy cannot be foreseen. That is, we cannot move towards a specific system such as socialism. Instead we must move away from capitalism under the guidance of sustainable economic principles. *This means that a post-capitalist economy will be the unknowable outcome of a rapid, organic, and theory-driven process.*

SECTION SUMMARY:

- ❖ Because the rational response to the ecological crisis cannot be implemented under capitalism, the world must quickly transition to a sustainable economic system.
- ❖ The primary requirements for this transition are a qualified social force, a new economic theory such as ENL, and the minimization of social resistance.
- ❖ An important way to achieve the latter is to observe the principle of minimum effective change, which alters capitalism only as required for sustainable well-being. Another is to modify the labor market so that reduced economic activities result in a shorter work week rather than unemployed workers.
- ❖ Extensive intellectual work will be required to create suitable economic institutions and to adapt existing institutions to post-capitalist realities.

2. The Necessity of Revolutionary Change

A central fact about the ecological crisis is that *humankind's solutions must be proportionate to the problems we have caused*. Because the problems are massive, the solutions must be massive as well. This is true in the ecological sphere, where extensive destruction over several centuries must now be addressed by vast geoengineering projects. It is also true in the economic sphere, where the longstanding capitalist system must be shunted off the historical stage and replaced by a sustainable economy.

And it applies in the political sphere as well. Today's growth-obsessed leadership has demonstrated that it cannot adjust to ecological constraints. As noted in my introduction, it must therefore be replaced by a group that can implement the rational response and guide the required economic transformation.

Another core fact is that our solutions must be *timely* - that is, they must be effective well before tipping points and points of no return are projected to be reached. This extreme urgency means that solutions which depend on the transformation of popular attitudes or values are doomed to failure. Ecological collapse will interrupt such shifts long before they are complete. The same is true for social movements that will take long periods to mature before becoming significant political factors. Only revolutionary change can act within the time that hopefully remains for preventing environmental disaster.

Given the profound social repercussions of a revolutionary transformation and the fierce opposition it will inevitably provoke, I would like to present three additional arguments to establish its iron-clad necessity. The first relates to alternative solutions to the GHG crisis, the second to the political structure of capitalist societies, and the third to the redirection of our species from expansion to contraction. The alternative GHG solutions are depicted in figure 3 below.

Like the [Keeling curve](#), this graph depicts changes to the atmosphere's CO₂ concentration over time. The upper curve represents the conventional approach of decarbonizing the economy. The goal of net-zero emissions is thus achieved within a specified timeframe. The intent of this approach is to stabilize the concentration level in order to limit global warming to 1.5°C or 2°C. The lower curve represents the safe-concentration approach that is part of the rational response.

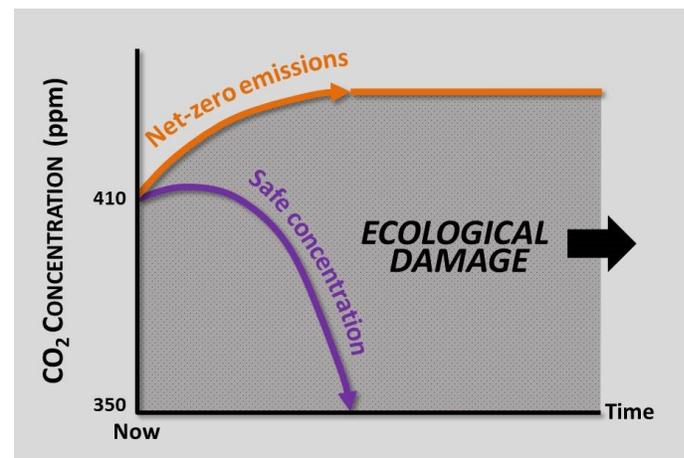


Figure 3 - Two futures for CO₂ concentration

What is noteworthy about the net-zero approach is that, although it is objectively unable to solve the GHG crisis, many mainstream sources see it as unrealistically aggressive and thus virtually impossible to achieve. This strongly indicates that the required solutions cannot be implemented within the prevailing order. Let me substantiate this important claim.

The net-zero approach is inadequate because, as stated in the IPCC's [1.5°C report](#) (p. SPM-5), ecological risk or damage is a function of the rate, peak, and duration of global warming. Ignoring the other

GHGs, warming varies directly with the CO₂ concentration, so the associated damage is roughly proportional to the areas under the curves in figure 3. The graph therefore shows that the damage associated with net-zero emissions is immense and grows rapidly over time. Adopting this approach is thus a virtual guarantee that calamitous tipping points and points of no return will soon be encountered.

The view that net-zero emissions is almost impossible to achieve has been widely expressed. One example is the 1.5°C report itself, which tells us that staying under this limit will require "rapid and unprecedented societal transformation." Another is the [Hothouse Earth](#) report, which states that even the two-degree limit implies "a fundamental change in the role of humans on the planet." The authors also note that modest economic changes won't suffice, and that, "Widespread, rapid, and fundamental transformations will likely be required ..." A third example is the [Losing Earth](#) article in the New York Times, which asserts that staying under the two-degree limit "will take a revolution."

To restate my earlier conclusion: if a transparently inadequate approach to the GHG crisis will almost certainly take capitalism beyond the limits of its adaptability, the vastly more ambitious safe-concentration approach can be achieved only through revolutionary change. The curves in the above diagram thus represent two distinct economic realities, a conclusion that is underscored by the IPCC's mitigation proposals. These include emission scenarios that offer several variations on the upper curve, which can still be sold as attainable under capitalism. However, they completely ignore the lower curve, which is indisputably beyond the system's grasp.

Another argument to establish the necessity of revolutionary change relates to the political structure of capitalist societies, a crucial topic that is discussed in more detail [here](#). The conventional story is that these societies are ruled by governments, which are elected by the people. Thus, if the people can be persuaded that the crisis is a grave threat, they will pressure their elected representatives to implement an effective response. Although this story is widely embraced, it is demonstrably false.

As noted in my introduction, today's capitalist societies arose from European feudalism, a system dominated in each country by a landowning class. As manufacturing flourished after the 16th century, the rising capitalists gradually replaced the landowners as society's ruling force. *At no point during or after this historical process was political power transferred to the people.* On the contrary, historian Eric Hobsbawm has found that the British people were granted parliamentary representation only after capitalist power had been fully entrenched and the working class was no longer a threat to its rule. The Times of London rejected even this restricted freedom until 1914, when working-class support was needed for the war effort. ([Industry and Empire](#), p. 125n)

The true role of government is to represent the people's views and interests in order to make relatively minor adjustments *within the prevailing social order*. If a government instead initiates far-reaching changes that threaten this order - such as the replacement of capitalism with a sustainable economy - it will be quickly undermined and removed from office. History is replete with [examples](#), including the [Iranian coup](#) in 1953, the [Chilean coup](#) in 1973, and the [Egyptian coup](#) in 2013. In each case a democratically elected government was deposed by armed force when its actions threatened the real but hidden rulers.

No country is immune from such seizures of governmental authority - including the United States. In the 1930s American business leaders were horrified by the "creeping socialism" of Roosevelt's New Deal and tried to replace him with a military figurehead. This failed only because Smedley Butler, the chosen pretender, refused to betray his fellow soldiers and citizens. (See box.)

Various terms are used to refer to society's dominant figures, including the 1%, the elite, the oligarchy, the establishment, and the ruling class. I prefer the latter because it is used in some intellectual circles and is politically the most accurate. However, agreement on this point is not essential, so I will use the neutral term "social leadership". This is also broad enough to cover the leaderships of China and Russia, which have adopted capitalism's ecocidal growth model and must also be removed from power.

To summarize this argument, it is futile to pressure governments to make the profound economic changes that are now required.* Therefore the critical first step is to replace the existing, expansionary social leadership with a sustainable alternative - that is, revolutionary change. Once this is achieved, government can play a constructive role by ensuring that the populace is adequately represented during the difficult transition to a sustainable society.

My final argument for revolutionary change is that this is an essential component of what might be called *species redirection*. Because humankind has violated the Earth's environmental limits, our survival depends on the abrupt shift in our ecological trajectory from expansion to contraction. This means that some aspects of human nature must be suppressed while others are strengthened. We must, in a very real sense, become a *different species*. This transformation entails a comprehensive reorientation of our minds, lives, and societies, and is therefore unprecedented in depth and scope. Driving such change is possible only for a social leadership that is fully committed to the sustainability goal. Because current social leaders clearly fail to qualify, they must be replaced by suitable alternatives.

Some scientists are now speculating that the challenge of species redirection is universal in scope. In his book [Light of the Stars](#) astrophysicist Adam Frank concludes that technologically advanced civilizations such as ours are extremely common over cosmic space and time. Because the laws of nature are presumably universal, these civilizations must harvest copious energy and therefore produce copious wastes. This means they have likely faced an overshoot crisis themselves. It is therefore possible that the answer to the [Fermi paradox](#) (if aliens are common then where are they?) is that most species in this predicament were unable to shift their ecological trajectories in time. If Frank is right, it is now our turn to answer a cosmic question: are we sufficiently adaptable to reverse our deadly expansion and to live within the natural limits of our planetary home?

An Abortive American Coup

When the sick and overburdened FDR introduced his New Deal in the 1930s, wealthy business leaders tried to reduce him to a figurehead by giving presidential authority to a "Secretary of General Affairs". The plan was for war hero Smedley Butler to fill this role while FDR was moved aside. Butler instead sabotaged the plot by revealing it to journalists and Congress. Central to this takeover attempt was the American Liberty League, a right-wing organization spearheaded by the Dupont and J.P. Morgan families. For the full story, see Jules Archer's [The Plot to Seize the White House](#).

Although revolutionary change will cause immense social disorder, this will likely be less painful than the indescribable chaos that will result from ecological collapse. Revolutionary change is a conscious strategy that could result in a sustainable future for humankind. Ecological collapse, on the other hand, is an undirected process that will inevitably result in a massive human die-off and the disintegration of our societies and civilization. At this stage a painless future is no longer possible. All we can do is minimize the suffering as we try to prolong our stay on this beautiful planet.

* The same is true for the legal system, which applies a body of laws designed to perpetuate and regulate a capitalist society. Hence the climate-change lawsuits that have been filed in several countries can have little substantive effect.

SECTION SUMMARY:

- ❖ My assertion that capitalist societies must undergo revolutionary change is based on five arguments:
 1. Humankind's response to the ecological crisis must be proportionate to the problem. Politically this implies the replacement of the current social leadership with a sustainable group.
 2. Our response must be timely - that is, effective well before tipping points and points of no return are projected to be reached. This means that strategies based on modified popular perspectives or slow-forming mass movements cannot succeed.
 3. Mainstream sources correctly claim that reaching net-zero emissions will require transformative social change. It is therefore likely that the vastly more ambitious safe-concentration approach will require a revolutionary shift.
 4. Political analysis firmly establishes that capitalist societies are ruled not by their people or governments, but by dominant groups that derive their power from economic ownership and control. Pressuring governments for fundamental change is therefore pointless and self-defeating.
 5. Revolutionary change is the essential first step in species redirection: humankind's ecological shift from an expansionary to a contractionary trajectory. This challenge could be cosmic in scope.
- ❖ Although the social disorder resulting from revolutionary change will be immense, this will be preferable to the indescribable chaos that will result from uncontrolled ecological collapse.

3. The Youth-Military Strategy

Given that revolutionary change is imperative for humankind's ecological survival, how can it be achieved? This is a difficult question because societies are structured for their indefinite continuation, not their radical transformation. The standard modes of change - cultural evolution, corporate initiatives, government policies, etc. - can modify a society within limits, but they cannot transform it in any substantial way. A mode of change that departs from the conventional formulas must therefore be identified.

To establish what this might be, it is useful to examine past revolutions and draw conclusions that are relevant today. One such conclusion is that revolutionary change is possible only if deep and visceral anger is currently being felt towards existing social leaders and arrangements. Marx and Lenin were able to direct working-class rage into revolutionary channels, but only because that rage had already been implanted by gruesome industrial conditions. A second important conclusion is that a social entity with the capacity to forcibly depose the current leaders must currently exist. Any social leadership ultimately relies on force to maintain its rule, so a coercive power must be available to overcome this force. The social entity must currently exist due to the extreme time constraints imposed by ecological decline.

Based on the above considerations, I propose a model for revolutionary change that primarily relies on the young for the visceral anger and revolutionary energy, and that uses the coercive power of the military to depose the current social leadership. See figure 4 below.

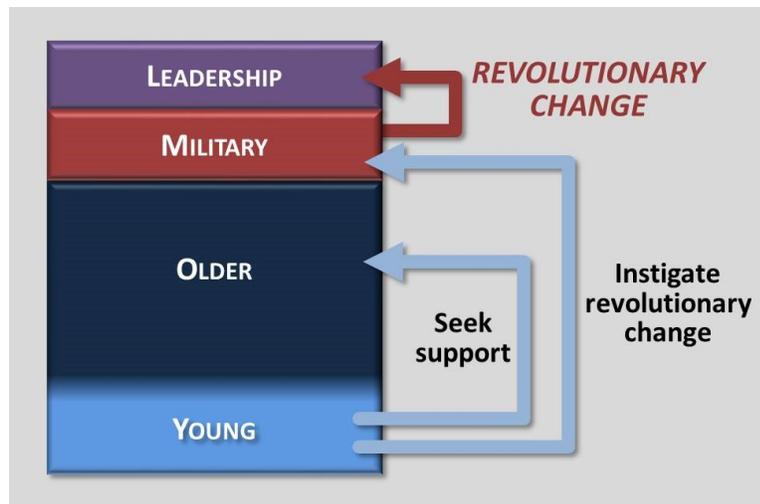


Figure 4 – The youth-military strategy for revolutionary change

This is a highly simplified representation of a capitalist society in that it depicts only those elements that are relevant to revolutionary change. At top is the social leadership, which exercises its dominance through a set of coercive and non-coercive methods called *social control*. Next is the military - the social entity that must apply the necessary force. Below the military is the populace, which is split into two age groups. The young are those who have the most to lose from ecological collapse: people below about thirty years of age. For want of a better term, all other members of the populace are here called the "older".

Today's young are historically unique for two reasons. First, theirs is the generation that will fully experience the brutal realities of a collapsing environment. Baby boomers like me can fear for the future, but at a visceral level we cannot grasp what it means to plunge headlong into the ecological abyss. Second, many among the young will not only suffer intensely and die prematurely, they will see with terrifying clarity that both humankind and nature are in terminal states. Their decision to have children will therefore become an increasingly cruel and unethical choice. Previous generations had the consolation that their deaths were mere episodes in the continuity of human and non-human life. No such solace is available to the young today.

In addition to these and other sources of anger, the young possess a high level of energy, are naturally rebellious towards their elders, communicate effectively using current technologies, and are largely free from work and child-raising responsibilities. The overall effect, I suggest, is to place the young in a position that is roughly analogous to the revolutionary working class of the early industrial period. As indicated in the diagram, the young should direct their anger and energy towards instigating the military to replace the current social leadership.

Regarding the older, their most significant collective attribute is their refusal to fight for the rational crisis response. Although many are keenly aware that unsustainable economic activities are pushing the Earth towards disaster, they have done nothing of substance to halt or even slow the decline. In effect, the older have balanced their self-interest against the interests of the young and the biosphere, and have decided in favor of their self-interest.

Despite this shameful collective behavior, many individuals in this age group are deeply concerned about the young, the environment, and the future. This is especially true for parents, who in many cases are profoundly troubled by the horrors awaiting their children. The older also possess stores of knowledge and experience that will be indispensable in the quest for sustainability. The young must therefore treat the older with strategic ambivalence. As a group they will not abandon their material comforts and safeguard the environment, but as individuals many will likely step forward to help instigate military intervention and manage the economic transition. This is the support that is being sought by the young in the above diagram.

Let me now address the pivotal element in this strategy - the military. As indicated above, deposing the current leadership is possible only for a social entity with the required coercive capacity. In addition, however, the entity must have the will to apply this capacity to the revolutionary task. There is little doubt that most militaries have the equipment, training, and discipline to exert the necessary force. What must be questioned is their potential will.

Two factors are at play here. The first is the military's environmental awareness: does it adequately understand the gravity of the present situation? The second is its ultimate loyalty: given that the interests of the people and their leaders have sharply diverged, which will the military choose to serve?

These questions can to some degree to be answered for the American military. In 2015 the US Department of Defense published a set of [documents](#) about its environmental posture. These reveal that the US military recognizes that, "Climate change is real, serious, and inescapable, and its looming effects ... may prove to be destabilizing on a massive scale." Further, they acknowledge that climate change tipping points have, "... a real potential to wipe out a majority of the population and species on the planet." Unfortunately the documents also embrace the emissions fallacy, downplay the Arctic

emergency, and see geoengineering exclusively as a potential threat by rogue actors, thereby ignoring its essential role in humankind's ecological survival.

Regarding its loyalty, the good news is that the US military sees itself as representing the American nation – that is, the collective interests of the American people. The bad news is that it identifies strongly with capitalism and the current social leadership. This is evident from its concern that an inadequate response to the crisis will stifle economic growth and undermine, "... the Western model of economic development and democracy".

To the degree that these perceptions are typical, the world's militaries understand the gravity of the crisis, but embrace the standard errors about its nature and solutions. They also recognize their ultimate responsibility to the people, but retain their longstanding allegiance to current leaders.

Based on these tentative conclusions, the young should consider two approaches in their instigation efforts. The first is to praise the military's environmental sensitivity while correcting its misconceptions and directing it towards the rational response. The second is to emphasize its responsibility to both the people and the integrity of the national territory. They could point out that the latter is now being "invaded" by rising seas and damaged by elevated temperatures, and that such incursions would be immediately repulsed if they were caused by human actors.

Briefly stated, ***the young must convince the military that its only honorable course is to transfer its allegiance from the current social leadership to the people it ultimately serves.*** This argument could become highly persuasive as the crisis escalates.

If the military responds positively to these pleas, it could replace the social leadership in one of two ways, depending on circumstances. If a sustainable civilian group with sufficient political maturity is available, the military could remain in the background while supporting this group as the new leaders. This is indirect military intervention. If no such group exists, the military could assume power itself with the intention of re-establishing civilian rule as soon as possible. This is direct military intervention. Because sustainable civilian groups are not yet visible in today's societies, direct military intervention seems unavoidable in the initial stage. Perhaps, with sufficient pressure from the young, their concerned parents, and their other supporters, such groups can quickly form and mature, thereby minimizing the period of direct military control.

Besides preventing ecological disaster, there are two other compelling reasons for military involvement. The first is that, given its existing loyalties, the military will likely support a shift to fascism if the populace becomes unmanageable during ecological decline. The intervention I propose would be part of a shift in military allegiance towards the people, which would make this political nightmare less likely. The second reason is that an effective ecological response, driven by military force, may be the only way to prevent nuclear war. International tensions will soar if food becomes scarce and mass migrations escalate. Substantial progress towards a livable environment would therefore be a major contribution to a future without nuclear conflict.

Let me end by clearly distinguishing between the military intervention proposed here and the military coups discussed in the previous section. The purpose of military intervention is to *replace* the current social leadership with a sustainable alternative. It is therefore a revolutionary act. The purpose of a

military coup is to *support* the current social leadership by removing a government that threatens the leadership's power or privileges. It is therefore a non-revolutionary act. Stated differently, military intervention replaces the social leadership for the benefit of the people, whereas a coup replaces the government for the benefit of the social leadership.

SECTION SUMMARY:

- ❖ Revolutionary change requires intense anger and energy, plus a social entity that can forcibly depose the existing social leadership. In my proposed strategy the young supply most of the anger and energy, and the military supplies the force.
- ❖ As a group, the older have consistently dismissed the rational crisis response. However, they possess valuable knowledge and experience, and many concerned individuals - particularly horrified parents - will support the young in their bid for ecological survival.
- ❖ The military appears to understand the environmental threat, but it embraces the IPCC-based misconceptions and remains loyal to current leaders. The young and their supporters should therefore educate the military about environmental realities and underscore its professional duty to safeguard the people and the national territory.
- ❖ If a sustainable civilian group exists, indirect military intervention will be possible. If no such group has appeared, direct intervention will be required.
- ❖ Two additional reasons to shift military loyalties are to minimize the risks of a fascist takeover and nuclear war.

CONCLUDING COMMENTS

In late 2018 Swedish climate activist Greta Thunberg stood before a Stockholm audience and delivered a forceful [presentation](#). The 15-year-old expressed amazement that, despite widespread talk of an existential crisis, no-one is acting as if a crisis actually exists. She also insisted that today's rules won't save the world, so these rules must be changed. Her activist approach - school strike for climate - has been adopted by students around the world.

Although this youth movement is an exciting and necessary development, it is deeply marred by the fact that Thunberg and her followers have embraced the standard GHG story. For them the primary problem is emissions, the solution is renewable energy, and the agents of change are politicians and governments. It is therefore possible that, although millions of fired-up students will soon hit the streets, their horrific futures will remain unchanged because of the lies and distortions they have absorbed. To avert this tragic outcome the young must quickly repudiate the implanted falsehoods and decisively forge an independent path.

The first lesson they must learn is that "changing the rules" means far more than eliminating fossil fuels - it means replacing the current social leadership and moving from capitalism to a sustainable economy. The core requirement for a liveable world is not political will within the prevailing social order, but the political power to create a new and sustainable social order. *Ecological survival demands revolutionary change.*

Another critical lesson for the young is that the falsehoods go much deeper than they realize. The IPCC is not just a conservative organization that is hamstrung by a clumsy review process. It is instead a deliberate stratagem by social leaders to absorb concerns and deny threatening solutions. The primary reason that SRM is dismissed is not that it is risky, but that its large-scale adoption might expose capitalism's role in ecological overshoot, thereby killing the goose that lays the golden eggs.

The third and most difficult lesson is that the older are far less virtuous than the young might think. In her presentation Thunberg rhetorically asked, "Are we evil?" She answered with an emphatic no, explaining that most people don't understand the crisis and the drastic changes required. But numerous people - particularly social leaders and their well-informed supporters - have understood all this for decades. They nevertheless remain fervent supporters of a life-destroying economic system because they have made an obscene ethical decision: *our present is worth more than your future*. This means that, to a disturbing degree, the older are evil. Youth strategies that ignore this grim reality are bound to fail.

My final point is this: Any approach that could succeed in salvaging the biosphere will necessarily be unorthodox and thus appear strange and even shocking. The ecological crisis is now so far advanced that only massive and unfamiliar actions will pull us back from the brink. My proposal for revolutionary change must be assessed in this terrifying context. As a corollary, any approach that feels comfortably familiar cannot possibly work. "Bold" government policies and clean-energy initiatives can thus be dismissed out of hand. Far from being enlightened solutions, such measures reflect the cynical manipulations of a social force that must now be replaced by a sustainable alternative.

For more on this subject please visit
ecologicalsurvival.org.

Feel free to submit your comments, critiques, or questions to
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