# 2ac energy futures

**The 1ac constitutes policy-relevant scholarship; scenario planning and policymaking is necessary to wrestle energy policy out of the hands of the technocratic elite – you must weigh the plan**

**Kuzemko 12** [Caroline Kuzemko, CSGR University of Warwick, Security, the State and Political Agency: Putting ‘Politics’ back into UK Energy, <http://www.psa.ac.uk/journals/pdf/5/2012/381_61.pdf>]

Both Hay (2007) and Flinders and Buller (2006) suggest that there are other forms that depoliticisation can take, or in the terminology of Flinders and Buller ‘tactics’ which politicians can pursue in order to move a policy field to a more indirect governing relationship (Flinders and Buller 2006: 296). For the purposes of understanding the depoliticisation of UK energy policy, however, two of Colin Hay’s forms of depoliticisation are most useful: the ‘… offloading of areas of formal political responsibility to the market…’ and the passing of policymaking responsibility to quasipublic, or independent, authorities (Hay 2007: 82-3). 1 What each of these forms of depoliticisation has in common is the degree to which they can serve, over time, to reduce political capacity by removing processes of deliberation and contestation, thereby reducing the ability for informed agency and choice. In that politics can be understood as being inclusive of processes of deliberation, contestation, informed agency and collective choice the lack of deliberation and capacity for informed agency would result in sub-optimal politics (Hay 2007: 67; cf. Gamble 2000; Wood 2011; Jenkins 2011). There seems little doubt that, with regard to energy as a policy area, the principal of establishing a more indirect governing system had become accepted by UK political elites. One of the very few close observers of UK energy policy from the 1980s to early 2000s claims that both Conservative and New Labour politicians had actively sought to remove energy from politics, making it an ‘economic’ subject: From the early 1980s, British energy policy, and its associated regulatory regime, was designed to transform a state-owned and directed sector into a normal commodity market. Competition and 1 "These"forms"are"referred"to"elsewhere"by"the"author"as"‘marketised’"and"‘technocratic’"depoliticisation"(Kuzemko" 2012b:").liberalization would, its architects hoped, take energy out of the political arena… Labour shared this vision and hoped that energy would drop off the political agenda…. (Helm 2003: 386) 2 As already suggested this paper considers the intention to depoliticise energy to have been reasonably successful. By the early 2000s the Energy Ministry had been disbanded, there was little or no formal Parliamentary debate, energy was not represented at Cabinet level, responsibility for the supply of energy had been passed to the markets, it was regulated by an independent body, and the (cf. Kuzemko 2012b). Furthermore, the newly formed Energy Directorate within the Department of Trade and Industry (DTI), which now had responsibility for energy policy, had no specific energy mandates but instead mandates regarding encouraging the right conditions for business with an emphasis on competition (Helm et al 1989: 55; cf. Kuzemko 2012b: 107). As feared by various analysts who write about depoliticisation as a sub-optimal form of politics, these processes of depoliticisation had arguably resulted in a lack of deliberation about energy and its governance outside of narrow technocratic elite circles. Within these circles energy systems were modelled, language was specific and often unintelligible to others, including generalist politicians or wider publics, and this did, indeed, further encourage a high degree of disengagement with the subject (cf. Kern 2010; Kuzemko 2012b; Stern 1987). Technical language and hiring practices that emphasised certain forms of economic education further isolated elite technocratic circles from political contestation and other forms of knowledge about energy. Arguably, by placing those actors who have been elected to represent the national collective interest at one remove from processes of energy governance the result was a lack of formal political capacity in this policy field. It is worth, briefly, at this point reiterating the paradoxical nature of depoliticisation. Whilst decisions to depoliticise are deeply political, political capacity to deliberate, contest and act in an issue area can be reduced through these processes. Depoliticisation has been an ongoing form of governing throughout the 20 th century it may (Burnham 2001: 464), however, be particularly powerful and more difficult to reverse when underpinned by increasingly dominant ideas about how best to govern. For example Hay, in looking for the domestic sources of depoliticisation in the 1980s and 1990s, suggests that these processes were firmly underpinned by neoliberal and public choice ideas not only about the role of the state but also about the ability for political actors to make sound decisions relating, in particular, to economic governance (Hay 2007: 95-99). Given the degree to which such ideas were held increasingly to be legitimate over this time period depoliticisation was, arguably, genuinely understood by many as a process that would result in better governance (Interviews 1, 2, 3, 15 cf. Hay 2007: 94; Kern 2010). This to a certain extent makes decisions to depoliticise appear both less instrumental but also harder to reverse given the degree to which such ideas become further entrenched via processes of depoliticisation (cf. Kuzemko 2012b: 61-66; Wood 2011: 7).

1ac scenario planning takes into consideration context and assumptions and forms a coherent policy – they could’ve read solvency arguments to disprove our claims

KAVALSKI ‘7 (Emilian; University of Alberta, “The fifth debate and the emergence of complex international relations theory: notes on the application of complexity theory to the study of international life,” Cambridge Review of International Affairs, v. 20 n. 3, September)

In a further examination of the cognitive perspective, some proponents of CIR theory have suggested ‘scenarios’ as tools for the modelling of complexity (Feder 2002; Harcourt and Muliro 2004). Scenarios are defined as ‘imaginative stories of the future that describe alternative ways the present might evolve over a given period of time’ (Heinzen 2004, 4). They focus on subjective interpretations and perceptions. Understanding complexity, therefore, would depend on the relationship between the ‘cognitive schema’ (that is, available knowledge) and the ‘associative network’ (that is, the activation of the links between different concepts) of the observer (Bradfield 2004, 40). The suggestion is that in some sense ‘we create our own consciousness of complexity by seeking it out’ (LaPorte 1975, 329). In this respect, some proponents of CIR theory have asserted the analysis of discourses as an important distinction between human and nonhuman complex systems (Geyer 2003b, 26).14

The intellectual considerations of these epistemological frameworks suggest the challenging conceptual and methodological problems facing CIR theory. On a metatheoretical level, the problem stems from the realization that students of the complexity of international life can never be fully cognizant of the underlying truths, principles and processes that ‘govern reality’ because this would (i) involve (a degree of) simplification of complex phenomena (LaPorte 1975, 50), as well as (ii) imply ‘knowing the not knowable’ (Cioffi-Revilla 1998, 11). As suggested, analytically, the conscious consideration of complexity is hindered by the inherent difficulty of formalizing uncertainty and contingency (Whitman 2005, 105). Some commentators, therefore, have rejected the possibility of constructing comprehensive models for the study of complexity altogether in an attempt to overcome the trap of having to justify their methodologies in ways that are understandable to conventional IR. Therefore, a number of CIR proponents rely on ‘sensemaking’ (Browaeys and Baets 2003, 337; Coghill 2004, 53), ‘whatiffing’ (Beaumont 1994, 171) and other forms of ‘speculative thinking’ (Feder 2002, 114) for their interpretations of the complexity of international life. The claim is that the acceptance of endogeneity as a ‘fact’ of international life provides more insightful modes of analysis than the linear-regression-type approach of traditional IR (Johnston 2005 1040). Without ignoring some controversial aspects of incorporating ontological and epistemological reflection into methodological choices, the claim here is that CIR theory suggests intriguing heuristic devices that both challenge conventional wisdom and provoke analytical imaginations.

Complex international relations theory, therefore, proffers analytical tools both for explaining and understanding discontinuities. It is claimed that its approaches offer ‘antidotes’ to the anxiety that randomness engenders in traditional IR as well as provide a paradigm that accepts uncertainty as inevitable (Feder 2002, 117). Thus, in contrast to the typically linear perceptions of change in mainstream IR— that is, changes in variables occur, but the effect is constant—CIR suggests that ‘things suffer change’. The contention is that the unpredictability of the emergent patterns of international life needs to be conceptualized within the framework of self-organizing criticality—that is, their dynamics ‘adapt to, or are themselves on, the edge of chaos, and most of the changes take place through catastrophic events rather than by following a smooth gradual path’ (Dunn 2007, 99). Complex international relations, in other words, suggests that change entails the possibility of a ‘radical qualitative effect’ (Richards 2000, 1). Therefore, the alleged arbitrariness of occurrences that conventional IR might describe as the effects of randomness (or exogenous/surprising shocks) could (and, in fact, more often than not does) reflect ignorance of their interactions. In fact, the reference to ‘chance’ is merely a metaphor for our lack of knowledge of the dynamics of complexity (Smith and Jenks 2006, 273).

In this respect, CIR theory sketches the fifth debate in the study of international life (see Table 2). Its outlines follow the proposition of the Gulbenkian Commission to break down the division between ‘natural’ and ‘social’ sciences, since both are pervaded by ‘complexity’. Therefore, scholars should not be ‘conceiving of humanity as mechanical, but rather instead conceiving nature as active and creative [to make] the laws of nature compatible with the idea of novelty and of creativity’ (Wallerstein 1996, 61–63). Complex international relations (unlike other IR approaches) acknowledges that patterns of international life are panarchic ‘hybrids’ of physical and social relations (Urry 2003, 18) and advocates such fusion (through the dissolution of the outdated distinction) of scientific realities (Whitman 2005, 45–64). Its complex adaptive thinking in effect challenges the very existence of ‘objective standards’ for the assessment of competing knowledge claims, because these are ‘not nature’s, but rather always human standards, standards which are not given but made . . . adopted by convention by the members of a specific community’ (Hoffmann and Riley 2002, 304). The complex adaptive thinking of CIR theory, therefore, is an instance of ‘true thinking’—‘thinking that looks disorder and uncertainty straight in the face’ (Smith and Jenks 2006, 4).

#### \*\*\*\*Debate is the antidote to state fear mongering—scenario planning by informed groups can counter-act official misinformation; the alternative is political apathy which hardwires governmental lies – this also internal link turns and empirically denies spf

**Kurasawa ‘4**

[Fuyuki. Prof of Sociology @ York Univ of Toronto. Constellations, Vol 11 No 4, 2004. Proquest]

State and market institutions may seek to produce a culture of fear by deliberately stretching interpretations of reality beyond the limits of the plausible so as to exaggerate the prospects of impending catastrophes, or yet again, by intentionally promoting certain prognoses over others for instrumental purposes. Accordingly, regressive dystopias can operate as Trojan horses advancing political agendas or commercial interests that would otherwise be susceptible to public scrutiny and opposition. Instances of this kind of manipulation of the dystopian imaginary are plentiful: the invasion of Iraq in the name of fighting terrorism and an imminent threat of use of ‘weapons of mass destruction’; the severe curtailing of American civil liberties amidst fears of a collapse of ‘homeland security’; the neoliberal dismantling of the welfare state as the only remedy for an ideologically constructed fiscal crisis; the conservative expansion of policing and incarceration due to supposedly spiraling crime waves; and so forth. Alarmism constructs and codes the future in particular ways, producing or reinforcing certain crisis narratives, belief structures, and rhetorical conventions. As much as alarmist ideas beget a culture of fear, the reverse is no less true. If fear-mongering is a misappropriation of preventive foresight, resignation about the future represents a problematic outgrowth of the popular acknowledgment of global perils. Some believe that the world to come is so uncertain and dangerous that we should not attempt to modify the course of history; the future will look after itself for better or worse, regardless of what we do or wish. One version of this argument consists in a complacent optimism perceiving the future as fated to be better than either the past or the present. Frequently accompanying it is a self-deluding denial of what is plausible (‘the world will not be so bad after all’), or a naively Panglossian pragmatism (‘things will work themselves out in spite of everything, because humankind always finds ways to survive’).37 Much more common, however, is the opposite reaction, a fatalistic pessimism reconciled to the idea that the future will be necessarily worse than what preceded it. This is sustained by a tragic chronological framework according to which humanity is doomed to decay, or a cyclical one of the endless repetition of the mistakes of the past. On top of their dubious assessments of what is to come, alarmism and resignation would, if widely accepted, undermine a viable practice of farsightedness. Indeed, both of them encourage public disengagement from deliberation about scenarios for the future, a process that appears to be dangerous, pointless, or unnecessary. The resulting ‘depublicization’ of debate leaves dominant groups and institutions (the state, the market, techno-science) in charge of sorting out the future for the rest of us, thus effectively producing a heteronomous social order. How, then, can we support a democratic process of prevention from below? The answer, I think, lies in cultivating the public capacity for critical judgment and deliberation, so that participants in global civil society subject all claims about potential catastrophes to examination, evaluation, and contestation.

**Their arguments miss the boat—the probability might be low but the risk is still neg higher**

**Wiener 5** (Jonathan B., Perkins Professor of Law, Environmental Policy, and Public Policy at Duke University, and a University Fellow of Resources for the Future, “Book Review: Catastrophe: Risk and Response; Collapse: How societies choose to fail or succeed”, Journal of Public Analysis and Management, Autumn, Volume 24, Issue 4, pp. 885-9)

Moreover, there are at least two major questions about the remedies for risks of catastrophe and collapse. The first is how to prioritize among the wide array of potential end-of-the-world scenarios. The number and diversity of such doomsday forecasts in the literature is bracing, as evidenced by Posner’s own extensive survey, Martin Rees’s Our Final Hour (2003), John Leslie’s The End of the World (1996), and Corey Powell’s article “20 Ways the World Could End” in Discover magazine (Octo- ber 2000), as well as prior retrospective studies cited by Diamond such as Joseph Tainter’s The Collapse of Complex Societies (1988). The lower the probability of catastrophe that one is willing to consider, the greater the number of conceivable catastrophes. Indeed, as the probability asymptotically approaches zero, the num- ber of imaginable scenarios approaches infinity. And if the end of all life on Earth is valued at infinity, rather than at $600 trillion, then the expected value of the cat- astrophic risk is an infinitesimal probability multiplied by an infinite impact. These conundrums make priority-setting nearly impossible. Attempting to sort out which are “real” or “plausible” risks (remember the Y2K computer disaster?) can recapit- ulate the error that Posner seeks to avoid, of neglecting low-probability risks. At the same time, Posner worries that crying wolf—false positives—lull the public into inattention. Diamond argues that we must tolerate some false alarms in order to have warning systems sensitive enough to issue true alarms; zero false alarms would imply the failure to issue some true alarms. His calculus of optimal alarm accuracy is very similar to Posner’s BCA. Ex ante, the real question is not whether the risk is “real” or “true,” but whether the expected value of the low (but non-zero) probability multiplied by the catastrophic impact (with a premium for risk aver- sion) justifies some cost of prevention.

#### Debates by non-government actors about future crises are critical to social movements—distopian visions are mobilizing transnational movements that are effectively pressuring governments into preventing nuclear annihilation

**Kurasawa ‘4**

[Fuyuki. Prof of Sociology @ York Univ of Toronto. Constellations, Vol 11 No 4, 2004. Proquest]

In the twenty-first century, the lines of political cleavage are being drawn along those of competing dystopian visions. Indeed, one of the notable features of recent public discourse and socio-political struggle is their negationist hue, for they are devoted as much to the prevention of disaster as to the realization of the good, less to what ought to be than what could but must not be. The debates that preceded the war in Iraq provide a vivid illustration of this tendency, as both camps rhetorically invoked incommensurable catastrophic scenarios to make their respective cases. And as many analysts have noted, the multinational antiwar protests culminating on February 15, 2003 marked the first time that a mass movement was able to mobilize substantial numbers of people dedicated to averting war before it had actually broken out. More generally, given past experiences and awareness of what might occur in the future, given the cries of ‘never again’ (the Second World War, the Holocaust, Bhopal, Rwanda, etc.) and ‘not ever’ (e.g., nuclear or ecological apocalypse, human cloning) that are emanating from different parts of the world, the avoidance of crises is seemingly on everyone’s lips – and everyone’s conscience. From the United Nations and regional multilateral organizations to states, from non-governmental organizations to transnational social movements, the determination to prevent the actualization of potential cataclysms has become a new imperative in world affairs. Allowing past disasters to reoccur and unprecedented calamities to unfold is now widely seen as unbearable when, in the process, the suffering of future generations is callously tolerated and our survival is being irresponsibly jeopardized. Hence, we need to pay attention to what a widely circulated report by the International Commission on Intervention and State Sovereignty identifies as a burgeoning “culture of prevention,”3 a dynamic that carries major, albeit still poorly understood, normative and political implications. Rather than bemoaning the contemporary preeminence of a dystopian imaginary, I am claiming that it can enable a novel form of transnational socio-political action, a manifestation of globalization from below that can be termed preventive foresight. We should not reduce the latter to a formal principle regulating international relations or an ensemble of policy prescriptions for official players on the world stage, since it is, just as significantly, a mode of ethico-political practice enacted by participants in the emerging realm of global civil society. In other words, what I want to underscore is the work of farsightedness, the social processes through which civic associations are simultaneously constituting and putting into practice a sense of responsibility for the future by attempting to prevent global catastrophes. Although the labor of preventive foresight takes place in varying political and socio-cultural settings – and with different degrees of institutional support and access to symbolic and material resources – it is underpinned by three distinctive features: dialogism, publicity, and transnationalism. In the first instance, preventive foresight is an intersubjective or dialogical process of address, recognition, and response between two parties in global civil society: the ‘warners,’ who anticipate and send out word of possible perils, and the audiences being warned, those who heed their interlocutors’ messages by demanding that governments and/or international organizations take measures to steer away from disaster. Secondly, the work of farsightedness derives its effectiveness and legitimacy from public debate and deliberation. This is not to say that a fully fledged global public sphere is already in existence, since transnational “strong publics” with decisional power in the formal-institutional realm are currently embryonic at best. Rather, in this context, publicity signifies that “weak publics” with distinct yet occasionally overlapping constituencies are coalescing around struggles to avoid specific global catastrophes.4 Hence, despite having little direct decision-making capacity, the environmental and peace movements, humanitarian NGOs, and other similar globally-oriented civic associations are becoming significant actors involved in public opinion formation. Groups like these are active in disseminating information and alerting citizens about looming catastrophes, lobbying states and multilateral organizations from the ‘inside’ and pressuring them from the ‘outside,’ as well as fostering public participation in debates about the future. This brings us to the transnational character of preventive foresight, which is most explicit in the now commonplace observation that we live in an interdependent world because of the globalization of the perils that humankind faces (nuclear annihilation, global warming, terrorism, genocide, AIDS and SARS epidemics, and so on); individuals and groups from far-flung parts of the planet are being brought together into “risk communities” that transcend geographical borders.5 Moreover, due to dense media and information flows, knowledge of impeding catastrophes can instantaneously reach the four corners of the earth – sometimes well before individuals in one place experience the actual consequences of a crisis originating in another. My contention is that civic associations are engaging in dialogical, public, and transnational forms of ethico-political action that contribute to the creation of a fledgling global civil society existing ‘below’ the official and institutionalized architecture of international relations. The work of preventive foresight consists of forging ties between citizens; participating in the circulation of flows of claims, images, and information across borders; promoting an ethos of farsighted cosmopolitanism; and forming and mobilizing weak publics that debate and struggle against possible catastrophes. Over the past few decades, states and international organizations have frequently been content to follow the lead of globally- minded civil society actors, who have been instrumental in placing on the public agenda a host of pivotal issues (such as nuclear war, ecological pollution, species extinction, genetic engineering, and mass human rights violations).

#### The alternative to futuristic scenario-planning is extinction

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Independently of this contractualist justification, global civil society actors are putting forth a number of arguments countering temporal myopia on rational grounds. They make the case that no generation, and no part of the world, is immune from catastrophe. Complacency and parochialism are deeply flawed in that even if we earn a temporary reprieve, our children and grandchildren will likely not be so fortunate unless steps are taken today. Similarly, though it might be possible to minimize or contain the risks and harms of actions to faraway places over the short-term, parrying the eventual blowback or spillover effect is improbable. In fact, as I argued in the previous section, all but the smallest and most isolated of crises are rapidly becoming globalized due to the existence of transnational circuits of ideas, images, people, and commodities. Regardless of where they live, our descendants will increasingly be subjected to the impact of environmental degradation, the spread of epidemics, gross North-South socioeconomic inequalities, refugee flows, civil wars, and genocides. What may have previously appeared to be temporally and spatially remote risks are ‘coming home to roost’ in ever faster cycles. In a word, then, procrastination makes little sense for three principal reasons: it exponentially raises the costs of eventual future action; it reduces preventive options; and it erodes their effectiveness. With the foreclosing of long-range alternatives, later generations may be left with a single course of action, namely, that of merely reacting to large-scale emergencies as they arise. We need only think of how it gradually becomes more difficult to control climate change, let alone reverse it, or to halt mass atrocities once they are underway. Preventive foresight is grounded in the opposite logic, whereby the decision to work through perils today greatly enhances both the subsequent room for maneuver and the chances of success. Humanitarian, environmental, and techno-scientific activists have convincingly shown that we cannot afford not to engage in preventive labor.

#### Policy simulation is key to agency—their claim that fiat’s illusory serves to disempower engagement with the language of power and cedes the political to the karl roves of the world

**Coverstone,5**[MBA(Alan,ActingonActivism,http://home.montgomerybell.edu/~coversa/Acting%20on%20Activism%20(Nov%2017-2005).doc)]

An important concern emerges when Mitchell describes reflexive fiat as a contest strategy capable of “eschewing the power to directly control external actors” (1998b, p. 20).

Describing debates about what our government should do as attempts to control outside actors is debilitating and disempowering. Control of the US government is exactly what an active, participatory citizenry is supposed to be all about. After all, if democracy means anything, it means that citizens not only have the right, they also bear the obligation to discuss and debate what the government should be doing. Absent that discussion and debate, much of the motivation for personal political activism is also lost. Those who have co-opted Mitchell’s argument for individual advocacy often quickly respond that nothing we do in a debate round can actually change government policy, and unfortunately, an entire generation of debaters has now swallowed this assertion as an article of faith. The best most will muster is, “Of course not, but you don’t either!” The assertion that nothing we do in debate has any impact on government policy is one that carries the potential to undermine Mitchell’s entire project. If there is nothing we can do in a debate round to change government policy, then we are left with precious little in the way of pro-social options for addressing problems we face. At best, we can pursue some Pilot-like hand washing that can purify us as individuals through quixotic activism but offer little to society as a whole. It is very important to note that Mitchell (1998b) tries carefully to limit and bound his notion of reflexive fiat by maintaining that because it “views fiat as a concrete course of action, it is bounded by the limits of pragmatism” (p. 20). Pursued properly, the debates that Mitchell would like to see are those in which the relative efficacy of concrete political strategies for pro-social change is debated. In a few noteworthy examples, this approach has been employed successfully, and I must say that I have thoroughly enjoyed judging and coaching those debates. The students in my program have learned to stretch their understanding of their role in the political process because of the experience. Therefore, those who say I am opposed to Mitchell’s goals here should take care at such a blanket assertion.

However, contest debate teaches students to combine personal experience with the language of political power. Powerful personal narratives unconnected to political power are regularly co-opted by those who do learn the language of power. One need look no further than the annual state of the Union Address where personal story after personal story is used to support the political agenda of those in power. The so-called role-playing that public policy contest debates encourage promotes active learning of the vocabulary and levers of power in America. Imagining the ability to use our own arguments to influence government action is one of the great virtues of academic debate. Gerald Graff (2003) analyzed the decline of argumentation in academic discourse and found a source of student antipathy to public argument in an interesting place.

I’m up against…their aversion to the role of public spokesperson that formal writing presupposes. It’s as if such students can’t imagine any rewards for being a public actor or even imagining themselves in such a role. This lack of interest in the public sphere may in turn reflect a loss of confidence in the possibility that the arguments we make in public will have an effect on the world. Today’s students’ lack of faith inthe power of persuasion reflects the waning of the ideal of civic participation that led educators for centuries to place rhetorical and argumentative training at the center of the school and college curriculum. (Graff, 2003, p. 57)

The power to imagine public advocacy that actually makes a difference is one of the great virtues of the traditional notion of fiat that critics deride as mere simulation. Simulation of success in the public realm is far more empowering to students than completely abandoning all notions of personal power in the face of governmental hegemony by teaching students that “nothing they can do in a contest debate can ever make any difference in public policy.” Contest debating is well suited to rewarding public activism if it stops accepting as an article of faith that personal agency is somehow undermined by the so-called role playing in debate. Debate is role-playing whether we imagine government action or imagine individual action. Imagining myself starting a socialist revolution in America is no less of a fantasy than imagining myself making a difference on Capitol Hill. Furthermore, both fantasies influenced my personal and political development virtually ensuring a life of active, pro-social, political participation. Neither fantasy reduced the likelihood that I would spend my life trying to make the difference I imagined. One fantasy actually does make a greater difference: the one that speaks the language of political power. The other fantasy disables action by making one a laughingstock to those who wield the language of power. Fantasy motivates and role-playing trains through visualization. Until we can imagine it, we cannot really do it. **Role-playing without question teaches students to be comfortable with the language of power**, and that language paves the way for genuine and effective political activism.

Debates over the relative efficacy of political strategies for pro-social change must confront governmental power at some point. There is a fallacy in arguing that movements represent a better political strategy than voting and person-to-person advocacy. Sure, a full-scale movement would be better than the limited voice I have as a participating citizen going from door to door in a campaign, but so would full-scale government action. Unfortunately, the gap between my individual decision to pursue movement politics and the emergence of a full-scale movement is at least as great as the gap between my vote and democratic change. They both represent utopian fiat. Invocation of Mitchell to support utopian movement fiat is simply not supported by his work, and too often, such invocation discourages the concrete actions he argues for in favor of the personal rejectionism that under girds the political cynicism that is a fundamental cause of voter and participatory abstention in America today.

#### We solve the spectator phenomenon and staleness

Joyner **1999 Christopher C. Joyner is a Professor of International Law in the Government** Department at Georgetown University, Spring, 1999 [5 ILSA J Int'l & Comp L 377]

Use of the debate can be an effective pedagogical tool for education in the social sciences. Debates, like other role-playing simulations, help students understand different perspectives on a policy issue by adopting a perspective as their own. But, unlike other simulation games, debates do not require that a student participate directly in order to realize the benefit of the game. Instead of developing policy alternatives and experiencing the consequences of different choices in a traditional role-playing game, debates present the alternatives and consequences in a formal, rhetorical fashion before a judgmental audience. Having the class audience serve as jury helps each student develop a well-thought-out opinion on the issue by providing contrasting facts and views and enabling audience members to pose challenges to each debating team.

These debates ask undergraduate students to examine the international legal implications of various United States foreign policy actions. Their chief tasks are to assess the aims of the policy in question, determine their relevance to United States national interests, ascertain what legal principles are involved, and conclude how the United States policy in question squares with relevant principles of international law. Debate questions are formulated as resolutions, along the lines of: "Resolved: The United States should deny most-favored-nation status to China on human rights grounds;" or "Resolved: The United States should resort to military force to ensure inspection of Iraq's possible nuclear, chemical and biological weapons facilities;" or "Resolved: The United States' invasion of Grenada in 1983 was a lawful use of force;" or "Resolved: The United States should kill Saddam Hussein." In addressing both sides of these legal propositions, the student debaters must consult the vast literature of international law, especially the nearly 100 professional law-school-sponsored international law journals now being published in the United States. This literature furnishes an incredibly rich body of legal analysis that often treats topics affecting United States foreign policy, as well as other more esoteric international legal subjects. Although most of these journals are accessible in good law schools, they are largely unknown to the political science community specializing in international relations, much less to the average undergraduate.

By assessing the role of international law in United States foreign policy- making, students realize that United States actions do not always measure up to international legal expectations; that at times, international legal strictures get compromised for the sake of perceived national interests, and that concepts and principles of international law, like domestic law, can be interpreted and twisted in order to justify United States policy in various international circumstances. In this way, the debate format gives students the benefits ascribed to simulations and other action learning techniques, in that it makes them become actively engaged with their subjects, and not be mere passive consumers. Rather than spectators, students become legal advocates, observing, reacting to, and structuring political and legal perceptions to fit the merits of their case.

The debate exercises carry several specific educational objectives. First, students on each team must work together to refine a cogent argument that compellingly asserts their legal position on a foreign policy issue confronting the United States. In this way, they gain greater insight into the real-world legal dilemmas faced by policy makers. Second, as they work with other members of their team, they realize the complexities of applying and implementing international law, and the difficulty of bridging the gaps between United States policy and international legal principles, either by reworking the former or creatively reinterpreting the latter. Finally, research for the debates forces students to become familiarized with contemporary issues on the United States foreign policy agenda and the role that international law plays in formulating and executing these policies. 8 The debate thus becomes an excellent vehicle for pushing students beyond stale arguments over principles into the real world of policy analysis, political critique, and legal defense.

# 2ac scholarship

#### Don’t be an academic—their framework dooms the alt

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Yet the audacious adepts of “theory” constitute themselves the equivalent of a vanguard party—laying out propositions to be admired for their audacity rather than their truth, defending themselves when necessary as victims of stodgy and parochial old-think, priding themselves on their cosmopolitan majesty. “Theory” dresses critical thought in a language that, for all its impenetrability, certifies that intellectuals are central and indispensable to the ideological and political future. The far right might be firmly in charge of Washington, but Foucault (and his rivals) rules the seminars. At a time of political rollback, intellectual flights feel like righteous and thrilling consolations. Masters of “theory,” left to themselves, could choose among three ways of understanding their political role. They could choose the more-or-less Leninist route, flattering themselves that they are in the process of reaching correct formulations and hence (eventually) bringing true consciousness to benighted souls who suffer from its absence. They could choose the populist path, getting themselves off the political hook in the here and now by theorizing that potent forces will **some day,** willy-nilly, gather to upend the system. Or they could reconcile themselves to Frankfurt-style futilitarianism, conceding that history has run into a cul-de-sac and making do nevertheless. In any event, practitioners of “theory” could carry on with their lives, practicing politics by publishing without perishing, indeed, without having to set foot outside the precincts of the academy. As the revolutionary tide has gone out, a vanguard marooned without a rearguard has made the university into an asylum. As many founders and masters of “theory” pass from the scene, the genre has calcified, lost much of its verve, but in the academy verve is no prerequisite for institutional weight, and so the preoccupation and the style go on and on.

#### **Complexity theory is wrong - linear solutions empirically are effective - the alternative dooms the world**

Kurasawa 4 (Professor of Sociology, York University of Toronto, Fuyuki, Constellations Volume 11, No 4, 2004).

Moreover, keeping in mind the sobering lessons of the past century cannot but make us wary about humankind’s supposedly unlimited ability for problemsolving or discovering solutions in time to avert calamities. In fact, the historical track-record of last-minute, technical ‘quick-fixes’ is hardly reassuring. What’s more, most of the serious perils that we face today (e.g., nuclear waste, climate change, global terrorism, genocide and civil war) demand complex, sustained, long-term strategies of planning, coordination, and execution. On the other hand, an examination of fatalism makes it readily apparent that the idea that humankind is doomed from the outset puts off any attempt to minimize risks for our successors, essentially condemning them to face cataclysms unprepared. An a priori pessimism is also unsustainable given the fact that long-term preventive action has had (and will continue to have) appreciable beneficial effects; the examples of medical research, the welfare state, international humanitarian law, as well as strict environmental regulations in some countries stand out among many others. The evaluative framework proposed above should not be restricted to the critique of misappropriations of farsightedness, since it can equally support public deliberation with a reconstructive intent, that is, democratic discussion and debate about a future that human beings would freely self-determine. Inverting Foucault’s Nietzschean metaphor, we can think of genealogies of the future that could perform a farsighted mapping out of the possible ways of organizing social life. They are, in other words, interventions into the present intended to facilitate global civil society’s participation in shaping the field of possibilities of what is to come. Once competing dystopian visions are filtered out on the basis of their analytical credibility, ethical commitments, and political underpinnings and consequences, groups and individuals can assess the remaining legitimate catastrophic scenarios through the lens of genealogical mappings of the future. Hence, our first duty consists in addressing the present-day causes of eventual perils, ensuring that the paths we decide upon do not contract the range of options available for our posterity.42 Just as importantly, the practice of genealogically inspired farsightedness nurtures the project of an autonomous future, one that is socially self-instituting. In so doing, we can acknowledge that the future is a human creation instead of the product of metaphysical and extra-social forces (god, nature, destiny, etc.), and begin to reflect upon and deliberate about the kind of legacy we want to leave for those who will follow us. Participants in global civil society can then take – and in many instances have already taken – a further step by committing themselves to socio-political struggles forging a world order that, aside from not jeopardizing human and environmental survival, is designed to rectify the sources of transnational injustice that will continue to inflict needless suffering upon future generations if left unchallenged.

#### Even if predictions aren’t perfect acting on relative confidence of scenarios materializing is good---the alt is etiher political paralysis or pure reaction

**Ulfelder 11** Jay Ulfelder is Research Director for the Political Instability Task Force, Science Applications International Corporation "Why Political Instability Forecasts Are Less Precise Than We’d Like (and Why It’s Still Worth Doing)" May 5 dartthrowingchimp.wordpress.com/2011/05/05/why-political-instability-forecasts-are-less-precise-than-wed-like-and-why-its-still-worth-doing/

If this is the best we can do, then what’s the point? Well, consider the alternatives. For starters, we might decide to skip statistical forecasting altogether and just target our interventions at cases identified by expert judgment as likely onsets. Unfortunately, those expert judgments are probably going to be an even less reliable guide than our statistical forecasts, so this “solution” only exacerbates our problem.

Alternatively, we could take no preventive action and just respond to events as they occur. If the net costs of responding to crises as they happen are roughly equivalent to the net costs of prevention, then this is a reasonable choice. Maybe responding to crises isn’t really all that costly; maybe preventive action isn’t effective; or maybe preventive action is potentially effective but also extremely expensive. Under these circumstances, early warning is not going to be as useful as we forecasters would like.

If, however, any of those last statements are false–if responding to crises already underway is very costly, or if preventive action is (relatively) cheap and sometimes effective–then we have an incentive to use forecasts to help guide that action, in spite of the lingering uncertainty about exactly where and when those crises will occur.

Even in situations where preventive action isn’t feasible or desirable, reasonably accurate forecasts can still be useful if they spur interested observers to plan for contingencies they otherwise might not have considered. For example, policy-makers in one country might be rooting for a dictatorship in another country to fall but still fail to plan for that event because they don’t expect it to happen any time soon. A forecasting model which identifies that dictatorship as being at high or increasing risk of collapse might encourage those policy-makers to reconsider their expectations and, in so doing, lead them to prepare better for that event.

Where does that leave us? For me, the bottom line is this: even though forecasts of political instability are never going to be as precise as we’d like, they can still be accurate enough to be helpful, as long as the events they predict are ones for which prevention or preparation stand a decent chance of making a (positive) difference.

#### Predictions and scenario building are valuable for decision-making, even if they’re not perfect

**Garrett 12** [Banning, In Search of Sand Piles and Butterflies, director of the Asia Program and Strategic Foresight Initiative at the Atlantic Council.

http://www.acus.org/disruptive\_change/search-sand-piles-and-butterflies]

 “Disruptive change” that produces “strategic shocks” has become an increasing concern for policymakers, shaken by momentous events of the last couple of decades that were not on their radar screens – from the fall of the Berlin Wall and the 9/11 terrorist attacks to the 2008 financial crisis and the “Arab Spring.” These were all shocks to the international system, predictable perhaps in retrospect but predicted by very few experts or officials on the eve of their occurrence. This “failure” to predict specific strategic shocks does not mean we should abandon efforts to foresee disruptive change or look at all possible shocks as equally plausible. Most strategic shocks do not “come out of the blue.” We can understand and project long-term global trends and foresee at least some of their potential effects, including potential shocks and disruptive change. We can construct alternative futures scenarios to envision potential change, including strategic shocks. Based on trends and scenarios, we can take actions to avert possible undesirable outcomes or limit the damage should they occur. We can also identify potential opportunities or at least more desirable futures that we seek to seize through policy course corrections. We should distinguish “strategic shocks” that are developments that could happen at any time and yet may never occur. This would include such plausible possibilities as use of a nuclear device by terrorists or the emergence of an airborne human-to-human virus that could kill millions. Such possible but not inevitable developments would not necessarily be the result of worsening long-term trends. Like possible terrorist attacks, governments need to try to prepare for such possible catastrophes though they may never happen. But there are other potential disruptive changes, including those that create strategic shocks to the international system, that can result from identifiable trends that make them more likely in the future—for example, growing demand for food, water, energy and other resources with supplies failing to keep pace. We need to look for the “sand piles” that the trends are building and are subject to collapse at some point with an additional but indeterminable additional “grain of sand” and identify the potential for the sudden appearance of “butterflies” that might flap their wings and set off hurricanes. Mohamed Bouazizi, who immolated himself December 17, 2010 in Sidi Bouzid, Tunisia, was the butterfly who flapped his wings and (with the “force multiplier” of social media) set off a hurricane that is still blowing throughout the Middle East. Perhaps the metaphors are mixed, but the butterfly’s delicate flapping destabilized the sand piles (of rising food prices, unemployed students, corrupt government, etc.) that had been building in Tunisia, Egypt, and much of the region. The result was a sudden collapse and disruptive change that has created a strategic shock that is still producing tremors throughout the region. But the collapse was due to cumulative effects of identifiable and converging trends. When and what form change will take may be difficult if not impossible to foresee, but the likelihood of a tipping point being reached—that linear continuation of the present into the future is increasingly unlikely—can be foreseen. Foreseeing the direction of change and the likelihood of discontinuities, both sudden and protracted, is thus not beyond our capabilities. While efforts to understand and project long-term global trends cannot provide accurate predictions, for example, of the GDPs of China, India, and the United States in 2030, looking at economic and GDP growth trends, can provide insights into a wide range of possible outcomes. For example, it is a useful to assess the implications if the GDPs of these three countries each grew at currently projected average rates – even if one understands that there are many factors that can and likely will alter their trajectories. The projected growth trends of the three countries suggest that at some point in the next few decades, perhaps between 2015 and 2030, China’s GDP will surpass that of the United States. And by adding consideration of the economic impact of demographic trends (China’s aging and India’s youth bulge), there is a possibility that India will surpass both China and the US, perhaps by 2040 or 2050, to become the world’s largest economy. These potential shifts of economic power from the United States to China then to India would likely prove strategically disruptive on a global scale. Although slowly developing, such disruptive change would likely have an even greater strategic impact than the Arab Spring. The “rise” of China has already proved strategically disruptive, creating a potential China-United States regional rivalry in Asia two decades after Americans fretted about an emerging US conflict with a then-rising Japan challenging American economic supremacy. Despite uncertainty surrounding projections, foreseeing the possibility (some would say high likelihood) that China and then India will replace the United States as the largest global economy has near-term policy implications for the US and Europe. The potential long-term shift in economic clout and concomitant shift in political power and strategic position away from the US and the West and toward the East has implications for near-term policy choices. Policymakers could conclude, for example, that the West should make greater efforts to bring the emerging (or re-emerging) great powers into close consultation on the “rules of the game” and global governance as the West’s influence in shaping institutions and behavior is likely to significantly diminish over the next few decades. The alternative to finding such a near-term accommodation could be increasing mutual suspicions and hostility rather than trust and growing cooperation between rising and established powers—especially between China and the United States—leading to a fragmented, zero-sum world in which major global challenges like climate change and resource scarcities are not addressed and conflict over dwindling resources and markets intensifies and even bleeds into the military realm among the major actors. Neither of these scenarios may play out, of course. Other global trends suggest that sometime in the next several decades, the world could encounter a “hard ceiling” on resources availability and that climate change could throw the global economy into a tailspin, harming China and India even more than the United States. In this case, perhaps India and China would falter economically leading to internal instability and crises of governance, significantly reducing their rates of economic growth and their ability to project power and play a significant international role than might otherwise have been expected. But this scenario has other implications for policymakers, including dangers posed to Western interests from “failure” of China and/or India, which could produce huge strategic shocks to the global system, including a prolonged economic downturn in the West as well as the East. Thus, looking at relatively slowly developing trends can provide foresight for necessary course corrections now to avert catastrophic disruptive change or prepare to be more resilient if foreseeable but unavoidable shocks occur. Policymakers and the public will press for predictions and criticize government officials and intelligence agencies when momentous events “catch us by surprise.” But unfortunately, as both Yogi Berra and Neils Bohr are credited with saying, “prediction is very hard, especially about the future.” One can predict with great accuracy many natural events such as sunrise and the boiling point of water at sea level. We can rely on the infallible predictability of the laws of physics to build airplanes and automobiles and iPhones. And we can calculate with great precision the destruction footprint of a given nuclear weapon. Yet even physical systems like the weather as they become more complex, become increasingly difficult and even inherently impossible to predict with precision. With human behavior, specific predictions are not just hard, but impossible as uncertainty is inherent in the human universe. As futurist Paul Saffo wrote in the Harvard Business Review in 2007, “prediction is possible only in a world in which events are preordained and no amount of actions in the present can influence the future outcome.” One cannot know for certain what actions he or she will take in the future much less the actions of another person, a group of people or a nation state. This obvious point is made to dismiss any idea of trying to “predict” what will occur in the future with accuracy, especially the outcomes of the interplay of many complex factors, including the interaction of human and natural systems. More broadly, the human future is not predetermined but rather depends on human choices at every turning point, cumulatively leading to different alternative outcomes. This uncertainty about the future also means the future is amenable to human choice and leadership. Trends analyses—including foreseeing trends leading to disruptive change—are thus essential to provide individuals, organizations and political leaders with the strategic foresight to take steps mitigate the dangers ahead and seize the opportunities for shaping the human destiny. Peter Schwartz nearly a decade ago characterized the convergence of trends and disruptive change as “inevitable surprises.” He wrote in Inevitable Surprises that “in the coming decades we face many more inevitable surprises: major discontinuities in the economic, political and social spheres of our world, each one changing the ‘rules of the game’ as its played today. If anything, there will be more, no fewer, surprises in the future, and they will all be interconnected. Together, they will lead us into a world, ten to fifteen years hence, that is fundamentally different from the one we know today. Understanding these inevitable surprises in our future is critical for the decisions we have to make today …. We may not be able to prevent catastrophe (although sometimes we can), but we can certainly increase our ability to respond, and our ability to see opportunities that we would otherwise miss.

#### Despite uncertainty, predictions are still necessary and accurate

**Cowen 4** – Economics, George Mason (Tyler, The Epistemic Problem Does Not Refute Consequentialism, http://www.gmu.edu/jbc/Tyler/Epistemic2.pdf, AG)

If we know for sure which remedy works, obviously we should apply that remedy. But imagine now that we are uncertain as to which remedy works. The uncertainty is so extreme that each remedy may cure somewhere between three hundred thousand and six hundred thousand children. Nonetheless we have a slight idea that one remedy is better than the other. That is, one remedy is slightly more likely to cure more children, with no other apparent offsetting negative effects or considerations. Despite the greater uncertainty, we still have the intuition that we should try to save as many children as possible. We should apply the remedy that is more likely to cure more children. We do not say: “We are now so uncertain about what will happen. We should pursue some goal other than trying to cure as many children as possible.” Nor would we cite greater uncertainty about longer-run events as an argument against curing the children. We have a definite good in the present (more cured children), balanced against a radical remixing of the future on both sides of the equation. The definite upfront good still stands firm. Alternatively, let us assume that our broader future suddenly became less predictable (perhaps genetic engineering is invented, which creates new and difficult-to-forecast possibilities). That still would not diminish the force of our reason for saving more children. The variance of forecast becomes larger on both sides of the equation – whether we save the children or not – and the value of the upfront lives remains. A higher variance of forecast might increase the required size of the upfront benefit (to overcome the Principle of Roughness), but it would not refute the relevance of consequences more generally. We could increase the uncertainty more, but consequentialism still will not appear counterintuitive. The remedies, rather than curing somewhere in the range of three to six hundred thousand children, might cure in the broader range of zero to all one million of the children. By all classical statistical standards, this new cure scenario involves more uncertainty than the previous case, such as by having a higher variance of possible outcomes. Yet this higher uncertainty lends little support for the view that curing the children becomes less important. We still have an imperative to apply the remedy that appears best, and is expected the cure the greater number of children. This example may appear excessively simple, but it points our attention to the non- generality of the epistemic critique. The critique appears strongest only when we have absolutely no idea about the future; this is a special rather than a general case. Simply boosting the degree of background generic uncertainty should not stop us from pursuing large upfront benefits of obvious importance.

#### Method focus causes scholarly paralysis

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(Patrick Thadeus, The Conduct of Inquiry in International Relations, p. 57-59)

Perhaps the greatest irony of this instrumental, decontextualized importation of “falsification” and its critics into IR is the way that an entire line of thought that privileged disconfirmation and refutation—no matter how complicated that disconfirmation and refutation was in practice—has been transformed into a license to worry endlessly about foundational assumptions. At the very beginning of the effort to bring terms such as “paradigm” to bear on the study of politics, Albert O. Hirschman (1970b, 338) noted this very danger, suggesting that without “a little more ‘reverence for life’ and a little less straightjacketing of the future,” the focus on producing internally consistent packages of assumptions instead of actually examining complex empirical situations would result in **scholarly paralysis.** Here as elsewhere, Hirschman appears to have been quite prescient, inasmuch as the major effect of paradigm and research programme language in IR seems to have been a series of debates and discussions about whether the fundamentals of a given school of thought were sufficiently “scientific” in their construction. Thus we have debates about how to evaluate scientific progress, and attempts to propose one or another set of research design principles as uniquely scientific, and inventive, “reconstructions” of IR schools, such as Patrick James’ “elaborated structural realism,” supposedly for the purpose of placing them on a firmer scientific footing by making sure that they have all of the required elements of a basically Lakatosian19 model of science (James 2002, 67, 98–103).

The bet with all of this scholarly activity seems to be that if we can just get the fundamentals right, then scientific progress will inevitably ensue . . . even though this is the precise opposite of what Popper and Kuhn and Lakatos argued! In fact, all of this obsessive interest in foundations and starting-points is, in form if not in content, a lot closer to logical positivism than it is to the concerns of the falsificationist philosophers, despite the prominence of language about “hypothesis testing” and the concern to formulate testable hypotheses among IR scholars engaged in these endeavors. That, above all, is why I have labeled this methodology of scholarship neopositivist. While it takes much of its self justification as a science from criticisms of logical positivism, in overall sensibility it still operates in a visibly positivist way, attempting to construct knowledge from the ground up by getting its foundations in logical order before concentrating on how claims encounter the world in terms of their theoretical implications. This is by no means to say that neopositivism is not interested in hypothesis testing; on the contrary, neopositivists are extremely concerned with testing hypotheses, but only after the fundamentals have been soundly established. Certainty, not conjectural provisionality, seems to be the goal—a goal that, ironically, Popper and Kuhn and Lakatos would all reject.

#### Focusing on deliberation in the debate forum challenges elite hold to power, and maintains critical perspective

Hager, professor of political science – Bryn Mawr College, ‘92

(Carol J., “Democratizing Technology: Citizen & State in West German Energy Politics, 1974-1990” *Polity*, Vol. 25, No. 1, p. 45-70)

During this phase, the citizen initiative attempted to overcome its defensive posture and implement an alternative politics. The strategy of legal and technical challenge might delay or even prevent plant construction, but it would not by itself accomplish the broader goal on the legitimation dimension, i.e., democratization. Indeed, it worked against broad participation. The activists had to find a viable means of achieving change. Citizens had proved they could contribute to a substantive policy discussion. Now, some activists turned to the parliamentary arena as a possible forum for an energy dialogue. Until now, parliament had been conspicuously absent as a relevant policy maker, but if parliament could be reshaped and activated, citizens would have a forum in which to address the broad questions of policy-making goals and forms. They would also have an institutional lever with which to pry apart the bureaucracy and utility. None of the established political parties could offer an alternative program. Thus, local activists met to discuss forming their own voting list.

These discussions provoked internal dissent. Many citizen initiative members objected to the idea of forming a political party. If the problem lay in the role of parliament itself, another political party would not solve it. On the contrary, parliamentary participation was likely to destroy what political innovations the extraparliamentary movement had made. Others argued that a political party would give the movement an institutional platform from which to introduce some of the grassroots democratic political forms the groups had developed. Founding a party as the parliamentary arm of the citizen movement would allow these groups to play an active, critical role in institutionalized politics, participating in the policy debates while retaining their outside perspective. Despite the disagreements, the Alternative List for Democracy and Environmental Protection Berlin (AL) was formed in 1978 and first won seats in the Land parliament with 7.2 percent of the vote in 1981.43 The founders of the AL were encouraged by the success of newly formed local green parties in Lower Saxony and Hamburg,44 whose evolution had been very similar to that of the West Berlin citizen move-ment. Throughout the FRG, unpopular administrative decisions affect-ing local environments, generally in the form of state-sponsored indus-trial projects, prompted the development of the citizen initiative and ecology movements. The groups in turn focused constant attention on state planning "errors," calling into question not only the decisions themselves, but also the conventional forms of political decision making that produced them.45 Disgruntled citizens increasingly aimed their critique at the established political parties, in particular the federal SPD/ FDP coalition, which seemed unable to cope with the economic, social, and political problems of the 1970s. Fanned by publications such as the Club of Rome's report, "The Limits to Growth," the view spread among activists that the crisis phenomena were not merely a passing phase, but indicated instead "a long-term structural crisis, whose cause lies in the industrial-technocratic growth society itself."46 As they broadened their critique to include the political system as a whole, many grassroots groups found the extraparliamentary arena too restrictive. Like many in the West Berlin group, they reasoned that the necessary change would require a degree of political restructuring that could only be accomplished through their direct participation in parliamentary politics. Green/alternative parties and voting lists sprang up nationwide and began to win seats in local assemblies. The West Berlin Alternative List saw itself not as a party, but as the parliamentary arm of the citizen initiative movement. One member explains: "the starting point for alternative electoral participation was simply the notion of achieving a greater audience for [our] own ideas and thus to work in support of the extraparliamentary movements and initia-tives,"47 including non-environmentally oriented groups. The AL wanted to avoid developing structures and functions autonomous from the citizen initiative movement. Members adhered to a list of principles, such as rotation and the imperative mandate, designed to keep parliamentarians attached to the grassroots. Although their insistence on grassroots democracy often resulted in interminable heated discussions, the participants recognized the importance of experimenting with new forms of decision making, of not succumbing to the same hierarchical forms they were challenging. Some argued that the proper role of citizen initiative groups was not to represent the public in government, but to mobilize other citizens to participate directly in politics themselves; self-determination was the aim of their activity.48

Once in parliament, the AL proposed establishmento f a temporary parliamentaryco mmissiont o studye nergyp olicy,w hichf or the first time would draw all concernedp articipantst ogetheri n a discussiono f both short-termc hoicesa nd long-termg oals of energyp olicy. With help from the SPD faction, which had been forced into the opposition by its defeat in the 1981 elections, two such commissions were created, one in 1982-83 and the other in 1984-85.49T hese commissionsg ave the citizen activists the forum they sought to push for modernizationa nd technicali nnovation in energy policy.

Although it had scaled down the proposed new plant, the utility had produced no plan to upgrade its older, more polluting facilities or to install desulfurizationd evices. With proddingf rom the energyc ommission, Land and utility experts began to formulate such a plan, as did the citizen initiative. By exposing administrative failings in a public setting, and by producing a modernization plan itself, the combined citizen initiative and AL forced bureaucratic authorities to push the utility for improvements. They also forced the authorities to consider different technological solutions to West Berlin's energy and environmental problems. In this way, the activists served as technological innovators. In 1983, the first energy commission submitted a list of recommendations to the Land parliament which reflected the influence of the citizen protest movement. It emphasized goals of demand reduction and efficiency, noted the value of expanded citizen participation and urged authorities to "investigate more closely the positive role citizen participation can play in achieving policy goals."50 The second energy commission was created in 1984 to discuss the possibilities for modernization and shutdown of old plants and use of new, environmentally friendlier and cheaper technologies for electricity and heat generation. Its recommendations strengthened those of the first commission.51 Despite the non-binding nature of the commissions' recommendations, the public discussion of energy policy motivated policy makers to take stronger positions in favor of environmental protection.

III. Conclusion

The West Berlin energy project eventually cleared all planning hurdles, and construction began in the early 1980s. The new plant now conforms to the increasingly stringent environmental protection requirements of the law. The project was delayed, scaled down from 1200 to 600 MW, moved to a neutral location and, unlike other BEWAG plants, equipped with modern desulfurization devices. That the new plant, which opened in winter 1988-89, is the technologically most advanced and environmen-tally sound of BEWAG's plants is due entirely to the long legal battle with the citizen initiative group, during which nearly every aspect of the original plans was changed. In addition, through the efforts of the Alter-native List (AL) in parliament, the Land government and BEWAG formulated a long sought modernization and environmental protection plan for all of the city's plants. The AL prompted the other parliamentary parties to take pollution control seriously. Throughout the FRG, energy politics evolved in a similar fashion. As Habermas claimed, underlying the objections against particular projects was a reaction against the administrative-economic system in general.

One author, for example, describes the emergence of two-dimensional protest against nuclear energy: The resistance against a concrete project became understood simul-taneously as resistance against the entire atomic program. Questions of energy planning, of economic growth, of understanding of democracy entered the picture. . . . Besides concern for human health, for security of conditions for human existence and protec-tion of nature arose critique of what was perceived as undemocratic planning, the "shock" of the delayed public announcement of pro-ject plans and the fear of political decision errors that would aggra-vate the problem.52 This passage supports a West Berliner's statement that the citizen initiative began with a project critique and arrived at *Systemkritik*.53 I have labeled these two aspects of the problem the public policy and legitima-tion dimensions. In the course of these conflicts, the legitimation dimen-sion emergd as the more important and in many ways the more prob-lematic.

Parliamentary Politics

In the 1970s, energy politics began to develop in the direction Offe de-scribed, with bureaucrats and protesters avoiding the parliamentary channels through which they should interact. The citizen groups them-selves, however, have to a degree reversed the slide into irrelevance of parliamentary politics. Grassroots groups overcame their defensive posture enough to begin to formulate an alternative politics, based upon concepts such as decision making through mutual understanding rather than technical criteria or bargaining. This new politics required new modes of interaction which the old corporatist or pluralist forms could not provide. Through the formation of green/alternative parties and voting lists and through new parliamentary commissions such as the two described in the case study, some members of grassroots groups attempted to both operate within the political system and fundamentally change it, to restore the link between bureaucracy and citizenry.

Parliamentary politics was partially revived in the eyes of West German grassroots groups as a legitimate realm of citizen participation, an outcome the theory would not predict. It is not clear, however, that strengthening the parliamentary system would be a desirable outcome for everyone. Many remain skeptical that institutions that operate as part of the "system" can offer the kind of substantive participation that grass-roots groups want. The constant tension between institutionalized politics and grassroots action emerged clearly in the recent internal debate between "fundamentalist" and "realist" wings of the Greens. Fundis wanted to keep a firm footing outside the realm of institutionalized politics. They refused to bargain with the more established parties or to join coalition governments. Realos favored participating in institutionalized politics while pressing their grassroots agenda. Only this way, they claimed, would they have a chance to implement at least some parts of their program.

This internal debate, which has never been resolved, can be interpreted in different ways. On one hand, the tension limits the appeal of green and alternative parties to the broader public, as the Greens' poor showing in the December 1990 all-German elections attests. The failure to come to agreement on basic issues can be viewed as a hazard of grass-roots democracy. The Greens, like the West Berlin citizen initiative, are opposed in principle to forcing one faction to give way to another. Disunity thus persists within the group. On the other hand, the tension can be understood not as a failure, but as a kind of success: grassroots politics has not been absorbed into the bureaucratized system; it retains its critical dimension, both in relation to the political system and within the groups themselves. The lively debate stimulated by grassroots groups and parties keeps questions of democracy on the public agenda.

Technical Debate

In West Berlin, the two-dimensionality of the energy issue forced citizen activists to become both participants in and critics of the policy process. In order to defeat the plant, activists engaged in technical debate. They won several decisions in favor of environmental protection, often proving to be more informed than bureaucratic experts themselves. The case study demonstrates that grassroots groups, far from impeding techno-logical advancement, can actually serve as technological innovators.

The activists' role as technical experts, while it helped them achieve some success on the policy dimension, had mixed results on the legitimation dimension. On one hand, it helped them to challenge the legitimacy of technocratic policy making. They turned back the Land government's attempts to displace political problems by formulating them in technical terms.54 By demonstrating the fallibility of the technical arguments, activists forced authorities to acknowledge that energy demand was a political variable, whose value at any one point was as much influenced by the choices of policy makers as by independent technical criteria.

Submission to the form and language of technical debate, however, weakened activists' attempts to introduce an alternative, goal-oriented form of decision making into the political system. Those wishing to par-ticipate in energy politics on a long-term basis have had to accede to the language of bureaucratic discussion, if not the legitimacy of bureaucratic authorities. They have helped break down bureaucratic authority but have not yet offered a viable long-term alternative to bureaucracy. In the tension between form and language, goals and procedure, the legitima-tion issue persists. At the very least, however, grassroots action challenges critical theory's notion that technical discussion is inimical to democratic politics.55 Citizen groups have raised the possibility of a dialogue that is both technically sophisticated and democratic.

In sum, although the legitimation problems which gave rise to grass-roots protest have not been resolved, citizen action has worked to counter the marginalization of parliamentary politics and the technocratic character of policy debate that Offe and Habermas identify. The West Berlin case suggests that the solutions to current legitimation problems may not require total repudiation of those things previously associated with technocracy.56

In Berlin, the citizen initiative and AL continue to search for new, more legitimate forms of organization consistent with their principles. No permanent Land parliamentary body exists to coordinate and con-solidate energy policy making.57 In the 1989 Land elections, the CDU/ FDP coalition was defeated, and the AL formed a governing coalition with the SPD. In late 1990, however, the AL withdrew from the coali-tion. It remains to be seen whether the AL will remain an effective vehi-cle for grassroots concerns, and whether the citizenry itself, now includ-ing the former East Berliners, will remain active enough to give the AL direction as united Berlin faces the formidable challenges of the 1990s. On the policy dimension, grassroots groups achieved some success. On the legitimation dimension, it is difficult to judge the results of grass-roots activism by normal standards of efficacy or success. Activists have certainly not radically restructured politics. They agree that democracy is desirable, but troublesome questions persist about the degree to which those processes that are now bureaucratically organized can and should be restructured, where grassroots democracy is possible and where bureaucracy is necessary in order to get things done. In other words, grassroots groups have tried to remedy the Weberian problem of the marginalization of politics, but it is not yet clear what the boundaries of the political realm should be. It is, however, the act of calling existing boundaries into question that keeps democracy vital. In raising alternative possibilities and encouraging citizens to take an active, critical role in their own governance, the contribution of grassroots environmental groups has been significant. As Melucci states for new social movements in general, these groups mount a "symbolic" challenge by proposing "a different way of perceiving and naming the world."58 Rochon concurs for the case of the West German peace movement, noting that its effect on the public discussion of secur-ity issues has been tremendous.59 The effects of the legitimation issue in the FRG are evident in increased citizen interest in areas formerly left to technical experts. Citizens have formed nationwide associations of environmental and other grassroots groups as well as alternative and green parties at all levels of government. The level of information within the groups is generally quite high, and their participation, especially in local politics, has raised the awareness and engagement of the general populace noticeably.60 Policy concessions and new legal provisions for citizen participation have not quelled grassroots action. The attempts of the established political parties to coopt "green" issues have also met with limited success. Even green parties themselves have not tapped the full potential of public support for these issues. The persistence of legitima-tion concerns, along with the growth of a culture of informed political activism, will ensure that the search continues for a space for a delibera-tive politics in modern technological society.61

# 2ac enviro justice

#### Violence is proximately caused – root cause logic is poor scholarship

**Sharpe**, **10** [Matthew, lecturer, philosophy and psychoanalytic studies, and Goucher, senior lecturer, literary and psychoanalytic studies – Deakin University,, Žižek and Politics: An Introduction, p. 231 – 233]

We realise that this argument, which we propose as a new ‘quilting’ framework to explain Žižek’s theoretical oscillations and political prescriptions, raises some large issues of its own. While this is not the place to further that discussion, we think its analytic force leads into a much wider critique of ‘Theory’ in parts of the latertwentieth- century academy, which emerged following the ‘cultural turn’ of the 1960s and 1970s in the wake of the collapse of Marxism. Žižek’s paradigm to try to generate all his theory of culture, subjectivity, ideology, politics and religion is psychoanalysis. But a similar criticism would apply, for instance, to theorists who feel that the method Jacques Derrida developed for criticising philosophical texts can meaningfully supplant the methodologies of political science, philosophy, economics, sociology and so forth, when it comes to thinking about ‘the political’. Or, differently, thinkers who opt for Deleuze (or Deleuze’s and Guattari’s) Nietzschean Spinozism as a new metaphysics to explain ethics, politics, aesthetics, ontology and so forth, seem to us candidates for the same type of criticism, as a reductive passing over the empirical and analytic distinctness of the different object fields in complex societies.

In truth, we feel that Theory, and the continuing line of ‘master thinkers’ who regularly appear particularly in the English- speaking world, is the last gasp of what used to be called First Philosophy. The philosopher ascends out of the city, Plato tells us, from whence she can espie the Higher Truth, which she must then bring back down to political earth. From outside the city, we can well imagine that she can see much more widely than her benighted political contemporaries. But from these philosophical heights, we can equally suspect that the ‘master thinker’ is also always in danger of passing over the salient differences and features of political life – differences only too evident to people ‘on the ground’. Political life, after all, is always a more complex affair than a bunch of ideologically duped fools staring at and enacting a wall (or ‘politically correct screen’) of ideologically produced illusions, from Plato’s timeless cave allegory to Žižek’s theory of ideology.

We know that Theory largely understands itself as avowedly ‘post- metaphysical’. It aims to erect its new claims on the gravestone of First Philosophy as the West has known it. But it also tells us that people very often do not know what they do. And so it seems to us that too many of its proponents and their followers are mourners who remain in the graveyard, propping up the gravestone of Western philosophy under the sign of some totalising account of absolutely everything – enjoyment, différance, biopower . . . Perhaps the time has come, we would argue, less for one more would- be global, allpurpose existential and political Theory than for a **multi- dimensional and interdisciplinary critical theory** that would challenge the chaotic specialisation neoliberalism speeds up in academe, which mirrors and accelerates the splintering of the Left over the last four decades. This would mean that we would have to shun the hope that one method, one perspective, or one master thinker could single- handedly decipher all the complexity of socio- political life, the concerns of really existing social movements – which specifi cally does not mean mindlessly celebrating difference, marginalisation and multiplicity as if they could be suffi cient ends for a new politics. It would be to reopen critical theory and non- analytic philosophy to the other intellectual disciplines, most of whom today pointedly reject Theory’s legitimacy, neither reading it nor taking it seriously.

#### A focus on epistemology is bad – creates endless paradigm wars -- we can know things absent epistemological analysis

**Wendt, 98** [professor of international security at OSU, Alexander, “On Constitution and Causation in International Relations,” British International Studies Association]

As a community, we in the academic study of international politics spend too much time worrying about the kind of issues addressed in this essay. The central point of IR scholarship is to increase our knowledge of how the world works, not to worry about how (or whether) we can know how the world works. What matters for IR is ontology, not epistemology. This doesn’t mean that there are no interesting epistemological questions in IR, and even less does it mean that there are no important political or sociological aspects to those questions. Indeed there are, as I have suggested above, and as a discipline IR should have more awareness of these aspects. At the same time, however, these are questions best addressed by philosophers and sociologists of knowledge, not political scientists. Let’s face it: most IR scholars, including this one, have little or no proper training in epistemology, and as such the attempt to solve epistemological problems anyway will inevitably lead to confusion **(**after all**,** after 2000 years, even the specialists are still having a hard time). Moreover, as long as we let our research be driven in an open-minded fashion by substantive questions and problems rather than by epistemologies and methods, there is little need to answer epistemological questions either. It is simply not the case that we have to undertake an epistemological analysis of how we can know something before we can know it, a fact amply attested to by the success of the natural sciences, whose practitioners are only rarely forced by the results of their inquiries to consider epistemological questions. In important respects we do know how international politics works, and it doesn’t much matter how we came to that knowledge. In that light, going into the epistemology business will distract us from the real business of IR, which is international politics. Our great debates should be about first-order issues of substance**,** like the ‘first debate’ between Realists and Idealists,not second-order issues of method.

Unfortunately, it is no longer a simple matter for IR scholars to ‘just say no’ to epistemological discourse. The problem is that this discourse has already contaminated our thinking about international politics, helping to polarize the discipline into ‘paradigm wars’. Although the resurgence of these wars in the 1980s and 90s is due in large part to the rise of post-positivism, its roots lie in the epistemological anxiety of positivists, who since the 1950s have been very concerned to establish the authority of their work as Science. This is an important goal, one that I share, but its implementation has been marred by an overly narrow conception of science as being concerned only with causal questions that can be answered using the methods of natural science. The effect has been to marginalize historical and interpretive work that does not fit this mould, and to encourage scholars interested in that kind of work to see themselves as somehow not engaged in science. One has to wonder whether the two sides should be happy with the result. Do positivists really mean to suggest that it is not part of science to ask questions about how things are constituted, questions which if those things happen to be made of ideas might only be answerable by interpretive methods? If so, then they seem to be saying that the double-helix model of DNA, and perhaps much of rational choice theory, is not science. And do post-positivists really mean to suggest that students of social life should not ask causal questions or attempt to test their claims against empirical evidence? If so, then it is not clear by what criteria their work should be judged, or how it differs from art or revelation. On both sides, in other words, the result of the Third Debate’s sparring over epistemology is often one-sided, intolerant caricatures of science.

No root cause – that’s their argument on the risk flow – not possible to disentangle to the extent necessary to solve

#### Nuke war outweighs structural violence – prioritizing structural violence makes preventing war impossible

Boulding 78 [Ken, is professor of economics and director, Center for Research on Conflict Resolution, University of Michigan, “Future Directions in Conflict and Peace Studies,” The Journal of Conflict Resolution, Vol. 22, No. 2 (Jun., 1978), pp. 342-354]

Galtung is very legitimately interested in problems of world poverty and the failure of development of the really poor. He tried to amalga- mate this interest with the peace research interest in the more narrow sense. Unfortunately, he did this by downgrading the study of inter- national peace, labeling it "negative peace" (it should really have been labeled "negative war") and then developing the concept of "structural violence," which initially meant all those social structures and histories which produced an expectation of life less than that of the richest and longest-lived societies. He argued by analogy that if people died before the age, say, of 70 from avoidable causes, that this was a death in "war"' which could only be remedied by something called "positive peace." Unfortunately, the concept of structural violence was broadened, in the word of one slightly unfriendly critic, to include anything that Galtung did not like. Another factor in this situation was the feeling, certainly in the 1960s and early 1970s, that nuclear deterrence was actually succeeding as deterrence and that the problem of nuclear war had receded into the background. This it seems to me is a most dangerous illusion and diverted conflict and peace research for ten years or more away from problems of disarmament and stable peace toward a grand, vague study of world developments, for which most of the peace researchers are not particularly well qualified. To my mind, at least, the quality of the research has suffered severely as a result.' The complex nature of the split within the peace research community is reflected in two international peace research organizations. The official one, the International Peace Research Association (IPRA), tends to be dominated by Europeans somewhat to the political left, is rather, hostile to the United States and to the multinational cor- porations, sympathetic to the New International Economic Order and thinks of itself as being interested in justice rather than in peace. The Peace Science Society (International), which used to be called the Peace Research Society (International), is mainly the creation of Walter Isard of the University of Pennsylvania. It conducts meetings all around the world and represents a more peace-oriented, quantitative, science- based enterprise, without much interest in ideology. COPRED, while officially the North American representative of IPRA, has very little active connection with it and contains within itself the same ideological split which, divides the peace research community in general. It has, however, been able to hold together and at least promote a certain amount of interaction between the two points of view. Again representing the "scientific" rather than the "ideological" point of view, we have SIPRI, the Stockholm International Peace Research Institute, very generously (by the usual peace research stand- ards) financed by the Swedish government, which has performed an enormously useful service in the collection and publishing of data on such things as the war industry, technological developments, arma- ments, and the arms trade. The Institute is very largely the creation of Alva Myrdal. In spite of the remarkable work which it has done, how- ever, her last book on disarmament (1976) is almost a cry of despair over the folly and hypocrisy of international policies, the overwhelming power of the military, and the inability of mere information, however good, go change the course of events as we head toward ultimate ca- tastrophe. I do not wholly share her pessimism, but it is hard not to be a little disappointed with the results of this first generation of the peace research movement. Myrdal called attention very dramatically to the appalling danger in which Europe stands, as the major battleground between Europe, the United States, and the Soviet Union if war ever should break out. It may perhaps be a subconscious recognition-and psychological denial-of the sword of Damocles hanging over Europe that has made the European peace research movement retreat from the realities of the international system into what I must unkindly describe as fantasies of justice. But the American peace research community, likewise, has retreated into a somewhat niggling scientism, with sophisticated meth- odologies and not very many new ideas. I must confess that when I first became involved with the peace research enterprise 25 years ago I had hopes that it might produce some- thing like the Keynesian revolution in economics, which was the result of some rather simple ideas that had never really been thought out clearly before (though they had been anticipated by Malthus and others), coupled with a substantial improvement in the information system with the development of national income statistics which rein- forced this new theoretical framework. As a result, we have had in a single generation a very massive change in what might be called the "conventional wisdom" of economic policy, and even though this conventional wisdom is not wholly wise, there is a world of difference between Herbert Hoover and his total failure to deal with the Great Depression, simply because of everybody's ignorance, and the moder- ately skillful handling of the depression which followed the change in oil prices in 1-974, which, compared with the period 1929 to 1932, was little more than a bad cold compared with a galloping pneumonia. In the international system, however, there has been only glacial change in the conventional wisdom. There has been some improvement. Kissinger was an improvement on John Foster Dulles. We have had the beginnings of detente, and at least the possibility on the horizon of stable peace between the United States and the Soviet Union, indeed in the whole temperate zone-even though the tropics still remain uneasy and beset with arms races, wars, and revolutions which we cannot really afford. Nor can we pretend that peace around the temper- ate zone is stable enough so that we do not have to worry about it. The qualitative arms race goes on and could easily take us over the cliff. The record of peace research in the last generation, therefore, is one of very partial success. It has created a discipline and that is something of long-run consequence, most certainly for the good. It has made very little dent on the conventional wisdom of the policy makers anywhere in the world. It has not been able to prevent an arms race, any more, I suppose we might say, than the Keynesian economics has been able to prevent inflation. But whereas inflation is an inconvenience, the arms race may well be another catastrophe. Where, then, do we go from here? Can we see new horizons for peace and conflict research to get it out of the doldrums in which it has been now for almost ten years? The challenge is surely great enough. It still remains true that war, the breakdown of Galtung's "negative peace," remains the greatest clear and present danger to the human race, a danger to human survival far greater than poverty, or injustice, or oppression, desirable and necessary as it is to eliminate these things. Up to the present generation, war has been a cost and an inconven- ience to the human race, but it has rarely been fatal to the process of evolutionary development as a whole. It has probably not absorbed more than 5% of human time, effort, and resources. Even in the twenti- eth century, with its two world wars and innumerable smaller ones, it has probably not acounted for more than 5% of deaths, though of course a larger proportion of premature deaths. Now, however, advancing technology is creating a situation where in the first place we are developing a single world system that does not have the redundancy of the many isolated systems of the past and in which therefore if any- thing goes wrong everything goes wrong. The Mayan civilization could collapse in 900 A.D., and collapse almost irretrievably without Europe or China even being aware of the fact. When we had a number of iso- lated systems, the catastrophe in one was ultimately recoverable by migration from the surviving systems. The one-world system, therefore, which science, transportation, and communication are rapidly giving us, is inherently more precarious than the many-world system of the past. It is all the more important, therefore, to make it internally robust and capable only of recoverable catastrophes. The necessity for stable peace, therefore, increases with every improvement in technology, either of war or of peace.

#### switching to thorium reactors prevents the need for more uranium mining

**Clark, 09** [Thorium nuclear power Switching from uranium to thorium as our primarily nuclear fuel could lead to cheaper, safer and more sustainable nuclear power, The Guardian, <http://www.guardian.co.uk/environment/2009/jul/13/manchester-report-nuclear>]

The uranium that makes conventional [nuclear power](http://www.guardian.co.uk/environment/nuclearpower) possible has a number of significant disadvantages. For one thing, [uranium reactors generate large quantities of waste](http://www.guardian.co.uk/environment/nuclear-waste). Much of this remains dangerous for thousands of years, and a proportion of it can be used to produce weapons-grade plutonium. A second issue is that uranium is a comparatively scarce material, which exists in significant quantities in only a small number of countries. The theoretical risk of giant explosions caused by uranium reactors is a further concern. For all of these reasons, a growing number of scientists and [energy](http://www.guardian.co.uk/environment/energy) experts believe that the world should switch from uranium to thorium as its primary nuclear fuel. Compared to uranium, thorium is far more abundant as well as much more energy-dense. In addition, the waste products generated by thorium are virtually impossible to turn into plutonium – and they remain dangerous for hundred of years rather than thousands. There are a number of different ways to use thorium to produce electricity. In Manchester, Kirk Sorensen made the case for liquid-fluoride reactors. This technology was developed by the US military in the 1950s and 1960s and was shown to have many benefits. For example, reactors of this type can be smaller than conventional uranium reactors, partly thanks to their low-pressure operation. Despite its early promise, research into liquid-fluoride thorium reactors was abandoned – the most likely reason being that the technology offered no potential for producing nuclear weapons. Sorensen estimates that between 5,000-6,000 tonnes of thorium could produce as much energy as the world currently consumes each year.

#### And, it causes an immediate cessation of mining

Barton, ‘9 [Charles, retired counselor, writes for Energy From Thorium, “The Liquid Fluoride Thorium Paradigm,” http://www.theoildrum.com/node/4971/]

LFTR(s) are 100-300 times more fuel efficient than LWRs. In addition to solving the nuclear waste problem, they can operate for several centuries using only uranium and thorium that has already been mined. Thus they eliminate the criticism that mining for nuclear fuel will use fossil fuels and add to the greenhouse effect.

#### And, eliminating nuclear power doesn’t solve – only thorium eliminates current uranium and toxic waste stockpiles

Rhodes, 12 [February, Professor Chris Rhodes is a writer and researcher. He studied chemistry at Sussex University, earning both a B.Sc and a Doctoral degree (D.Phil.); rising to become the youngest professor of physical chemistry in the U.K. at the age of 34. A prolific author, Chris has published more than 400 research and popular science articles (some in national newspapers: The Independent and The Daily Telegraph) He has recently published his first novel, "University Shambles" was published in April 2009 (Melrose Books), “Hopes Build for Thorium Nuclear Energy”, <http://oilprice.com/Alternative-Energy/Nuclear-Power/Hopes-Build-for-Thorium-Nuclear-Energy.html>]

There is much written to the effect that thorium might prove a more viable nuclear fuel, and an energy industry based upon it, than the current uranium-based process which serves to provide both energy and weapons - including "depleted uranium" for armaments and missiles. There are different ways in which energy might be extracted from thorium, one of which is the accelerator-driven system (ADS). Such accelerators need massive amounts of electricity to run them, as all particle accelerators do, but these are required to produce a beam of protons of such intensity that until 10 years ago the prevailing technology meant that it could not have been done. As noted below, an alternative means to use thorium as a fuel is in a liquid fluoride reactor (LFR), also termed a molten salt reactor, which avoids the use of solid oxide nuclear fuels. Indeed, China has made the decision to develop an LFR-based thorium-power programme, to be active by 2020.¶ Rather like nuclear fusion, the working ADS technology is some way off, and may never happen, although Professor Egil Lillestol of Bergen University in Norway is pushing that the world should use thorium in such ADS reactors. Using thorium as a nuclear fuel is a laudable idea, as is amply demonstrated in the blog "Energy from Thorium" (<http://thoriumenergy.blogspot.com/>). However, the European Union has pulled the plug on funding for the thorium ADS programme, which was directed by Professor Carlo Rubbia, the Nobel Prize winner, who has now abandoned his efforts to press forward the programme, and instead concentrated on solar energy, which was another of his activities. Rubbia had appointed Lillestol as leader of the CERN physics division over two decades ago, in 1989, who believes that the cause is not lost.¶ Thorium has many advantages, not the least being its greater abundance than uranium. It is often quoted that there is three times as much thorium as there is uranium. Uranium is around 2 - 3 parts per million in abundance in most soils, and this proportion rises especially where phosphate rocks are present, to anywhere between 50 and 1000 ppm. This is still only in the range 0.005% - 0.1% and so even the best soils are not obvious places to look for uranium. However, somewhere around 6 ppm as an average for thorium in the Earth's crust is a reasonable estimate. There are thorium mineral deposits that contain up to 12% of the element, located at the following tonnages in Turkey (380,000), Australia (300,000), India (290,000), Canada and the US combined (260,000)... and Norway (170,000), perhaps explaining part of Lillestol's enthusiasm for thorium based nuclear power. Indeed, Norway is very well endowed with natural fuel resources, including gas, oil, coal, and it would appear, thorium.¶ An alternative technology to the ADS is the "Liquid Fluoride Reactor" (LFR), which is described and discussed in considerable detail on the <http://thoriumenergy.blogspot.com/> blog, and reading this has convinced me that the LFR may provide the best means to achieve our future nuclear energy programme. Thorium exists naturally as thorium-232, which is not of itself a viable nuclear fuel. However, by absorption of relatively low energy "slow" neutrons, it is converted to protactinium 233, which must be removed from the reactor (otherwise it absorbs another neutron and becomes protactinium 234) and allowed to decay over about 28 days to uranium 233, which is fissile, and can be returned to the reactor as a fuel, and to breed more uranium 233 from thorium. The "breeding" cycle can be kicked-off using plutonium say, to provide the initial supply of neutrons, and indeed the LFR would be a useful way of disposing of weapons grade plutonium and uranium from the world's stockpiles while converting it into useful energy.¶ The LFR makes in-situ reprocessing possible, much more easily than is the case for solid-fuel based reactors. I believe there have been two working LFR's to date, and if implemented, the technology would avoid using uranium-plutonium fast breeder reactors, which need high energy "fast" neutrons to convert uranium 238 which is not fissile to plutonium 239 which is. The LFR is inherently safer and does not require liquid sodium as a coolant, while it also avoids the risk of plutonium getting into the hands of terrorists. It is worth noting that while uranium 235 and plutonium 239 could be shielded to avoid detection as a "bomb in a suitcase", uranium 233 could not, because it is always contaminated with uranium 232, which is a strong gamma-ray emitter, and is far less easily concealed.¶ It has been claimed that thorium produces "250 times more energy per unit of weight" than uranium. Now this isn't simply a "logs versus coal on the fire" kind of argument, but presumably refers to the fact that while essentially all the thorium can be used as a fuel, the uranium must be enriched in uranium 235, the rest being "thrown away" and hence wasted as "depleted" uranium 238 (unless it is bred into plutonium). If both the thorium and uranium were used to breed uranium 233 or plutonium 239, then presumably their relative "heat output" weight for weight should be about the same as final fission fuels? If this is wrong, will someone please explain this to me as I should be interested to know?¶ However, allowing that the LFR in-situ reprocessing is a far easier and less dangerous procedure, the simple sums are that contained in 248 million tonnes of natural uranium, available as a reserve, are 1.79 million tonnes of uranium 235 + 246.2 million tonnes of uranium 238. Hence by enrichment 35 million tonnes (Mt) of uranium containing 3.2% uranium 235 (from the original 0.71%) are obtained. This "enriched fraction" would contain 1.12 Mt of (235) + 33.88 Mt of (238), leaving in the other "depleted" fraction 248 - 35 Mt = 213 Mt of the original 248 Mt, and containing 0.67 Mt (235) + 212.3 Mt (238). Thus we have accessed 1.79 - 0.67 = 1.12 Mt of (235) = 1.12/224 = 4.52 x 10\*-3 or 0.452% of the original total uranium. Thus on a relative basis thorium (assuming 100% of it can be used) is 100/0.452 = 221 times as good weight for weight, which is close to the figure claimed, and a small variation in enrichment to a slightly higher level as is sometimes done probably would get us to an advantage factor of 250!¶ Plutonium is a by-product of normal operation of a uranium-fuelled fission reactor. 95 to 97% of the fuel in the reactor is uranium 238. Some of this uranium is converted to plutonium 239 and plutonium 241 - usually about 1000 kg forms after a year of operation. At the end of the cycle (a year to 2 years, typically), very little uranium 235 is left and about 30% of the power produced by the reactor actually comes from plutonium. Hence a degree of "breeding" happens intrinsically and so the practical advantage of uranium raises its head from 1/250 (accepting that figure) to 1/192, which still weighs enormously in favour of thorium!¶ As a rough estimate, 1.4 million tonnes of thorium (about one third the world uranium claimed, which is enough to last another 50 years as a fission fuel) would keep us going for about 200/3 x 50 = 3,333 years. Even if we were to produce all the world's electricity from nuclear that is currently produced using fossil fuels (which would certainly cut our CO2 emissions), we would be O.K. for 3,333/4 = 833 years. More thorium would doubtless be found if it were looked for, and so the basic raw material is not at issue. Being more abundant in most deposits than uranium, its extraction would place less pressure on other fossil fuel resources used for mining and extracting it. Indeed, thorium-electricity could be piped in for that purpose.¶ It all sounds great: however, the infrastructure would be huge to switch over entirely to thorium, as it would to switch to anything else including hydrogen and biofuels. It is this that is the huge mountain of resistance there will be to all kinds of new technology. My belief is that through cuts in energy use following post peak oil (and peak gas), we may be able to produce liquid fuels from coal, possibly using electricity produced from thorium, Thorium produces less of a nuclear waste problem finally, since fewer actinides result from the thorium fuel cycle than that from uranium. Renewables should be implemented wherever possible too, in the final energy mix that will be the fulcrum on which the survival of human civilization is poised.

#### Ignorance to the technical details of energy causes policy failure

Hendriks 2k9 (Carolyn, Crawford School of Economics and Government The Australia National University “Securing public legitimacy for long-term energy Reforms” PUBLIC POLICY NETWORK CONFERENCE THE AUSTRALIAN NATIONAL UNIVERSITY

This paper explores the democratic challenges facing governments as they seek to develop and legitimize energy reforms. States are under multiple pressures to reform energy policies: climate change, declining sources of affordable fossil fuels, and geopolitical concerns about ‘security of supply’. To date most of the emphasis has been on the technological and economic aspects of energy reform. This has been at the expense of considering the political implications of energy reforms, particularly the capacity of states to design long term policies that are publicly legitimate. Citizens are increasingly demanding more policy action on energy issues, yet the technical nature of energy policy leaves them excluded from policy debates. But this exclusion will have implications for securing the broader public legitimacy for future energy reforms particularly if they impose significant costs on the public, and require lifestyle and behavioural changes. The imperative for public involvement is even stronger when we consider that in the future citizens may be not only energy consumers but also energy producers, for example if energy generation shifts to the household level. Drawing on preliminary empirical insights from Australia, this paper considers how governments might seek to ensure that their decisions and actions on long term energy reform are supported democratically. A comparative research project is proposed for pursuing these themes further.

**Abandoning nature causes extinction**

**Soulé 95** – Natural Resources Professor, California (Michael and Gary Lease, Reinventing Nature?, p 159-60, AG)

The decision has already been made in most places. Some of the ecological myths discussed here contain, either explicitly or implicitly, the idea that nature is self-regulating and capable of caring for itself. This notion leads to the theory of management known as benign neglect—nature will do fine, thank you, if human beings just leave it alone. Indeed, a century ago, a hands-off policy was the best policy. Now it is not. Given nature's current fragmented and stressed condition, neglect will result in an accelerating spiral of deterioration. Once people create large gaps in forests, isolate and disturb habitats, pollute, overexploit, and introduce species from other continents, the viability of many ecosystems and native species is compromised, resiliency dissipates, and diversity can collapse. When artificial disturbance reaches a certain threshold, even small changes can produce large effects, and these will be compounded by climate change.' For example, a storm that would be considered normal and beneficial may, following widespread clearcutting, cause disastrous blow-downs, landslides, and erosion. If global warming occurs, tropical storms are predicted to have greater force than now. Homeostasis, balance, and Gaia are dangerous models when applied at the wrong spatial and temporal scales. Even fifty years ago, neglect might have been the best medicine, but that was a world with a lot more big, unhumanized, connected spaces, a world with one-third the number of people, and a world largely unaffected by chain saws, bulldozers, pesticides, and exotic, weedy species. The alternative to neglect is active caring—in today's parlance, an affirmative approach to wildlands: to maintain and restore them, to become stewards, accepting all the domineering baggage that word carries. Until humans are able to control their numbers and their technologies, **management is the only viable alternative** to massive attrition of living nature.

#### Techno-optimism is key to prevent extinction

**Bostrom 3** PhD from the London School of Economics (Nick, 2003, “Transhumanism FAQ”, http://www.paulbroman.com/myspace/Transhumanism\_FAQ.txt) \

Population increase is an issue we would ultimately have to come to grips with even if healthy life-extension were not to happen. Leaving people to die is an unacceptable solution. A large population should not be viewed simply as a problem. Another way of looking at the same fact is that it means that many persons now enjoy lives that would not have been lived if the population had been smaller. One could ask those who complain about overpopulation exactly which people’s lives they would have preferred should not have been led. Would it really have been better if billions of the world’s people had never existed and if there had been no other people in their place? Of course, this is not to deny that too-rapid population growth can cause crowding, poverty, and the depletion of natural resources. In this sense there can be real problems that need to be tackled. How many people the Earth can sustain at a comfortable standard of living is a function of technological development (as well as of how resources are distributed). New technologies, from simple improvements in irrigation and management, to better mining techniques and more efficient power generation machinery, to genetically engineered crops, can continue to improve world resource and food output, while at the same time reducing environmental impact and animal suffering. Environmentalists are right to insist that the status quo is unsustainable. As a matter of physical necessity, things cannot stay as they are today indefinitely, or even for very long. If we continue to use up resources at the current pace, without finding more resources or learning how to use novel kinds of resources, then we will run into serious shortages sometime around the middle of this century. The deep greens have an answer to this: they suggest we turn back the clock and return to an idyllic pre-industrial age to live in sustainable harmony with nature. The problem with this view is that the pre-industrial age was anything but idyllic. It was a life of poverty, misery, disease, heavy manual toil from dawn to dusk, superstitious fears, and cultural parochialism. Nor was it environmentally sound – as witness the deforestation of England and the Mediterranean region, desertification of large parts of the middle east, soil depletion by the Anasazi in the Glen Canyon area, destruction of farm land in ancient Mesopotamia through the accumulation of mineral salts from irrigation, deforestation and consequent soil erosion by the ancient Mexican Mayas, overhunting of big game almost everywhere, and the extinction of the dodo and other big featherless birds in the South Pacific. Furthermore, it is hard to see how more than a few hundred million people could be maintained at a reasonable standard of living with pre-industrial production methods, so some ninety percent of the world population would somehow have to vanish in order to facilitate this nostalgic return. Transhumanists propose a much more realistic alternative: not to retreat to an imagined past, but to press ahead as intelligently as we can. The environmental problems that technology creates are problems of intermediary, inefficient technology, of placing insufficient political priority on environmental protection as well as of a lack of ecological knowledge. Technologically less advanced industries in the former Soviet-bloc pollute much more than do their advanced Western counterparts. High-tech industry is typically relatively benign. Once we develop molecular nanotechnology, we will not only have clean and efficient manufacturing of almost any commodity, but we will also be able to clean up much of the mess created by today’s crude fabrication methods. This would set a standard for a clean environment that today’s traditional environmentalists could scarcely dream of.

#### Managerialism key to avert nuclear conflict that would preclude solvency for the alt

http://www.commondreams.org/views04/1230-05.htm Gwynne **Dyer** December 30, 200**4** is a Canadian journalist based in London whose articles are published in 45 papers worldwide. This is an abridged version of the last chapter in his updated book, War, first published in 1985. His latest book is Future: Tense. The Coming Global Order, published by McClelland and Stewart. by the Toronto Star The End of War Our Task Over the Next Few Years is to Transform the World of Independent States into a Genuine Global Village by Gwynne Dyer

War is deeply embedded in our history and our culture, probably since before we were even fully human, but weaning ourselves away from it should not be a bigger mountain to climb than some of the other changes we have already made in the way we live, given the right incentives. And we have certainly been given the right incentives: The holiday from history that we have enjoyed since the early '90s may be drawing to an end, and another great-power war, fought next time with nuclear weapons, may be lurking in our future. The "firebreak" against nuclear weapons use that we began building after Hiroshima and Nagasaki has held for well over half a century now. But the proliferation of nuclear weapons to new powers is a major challenge to the stability of the system. So are the coming crises, mostly environmental in origin, which will hit some countries much harder than others, and may drive some to desperation. Add in the huge impending shifts in the great-power system as China and India grow to rival the United States in GDP over the next 30 or 40 years and it will be hard to keep things from spinning out of control. With good luck and good management, we may be able to ride out the next half-century without the first-magnitude catastrophe of a global nuclear war, but the potential certainly exists for a major die-back of human population. We cannot command the good luck, but good management is something we can choose to provide. It depends, above all, on preserving and extending the multilateral system that we have been building since the end of World War II. The rising powers must be absorbed into a system that emphasizes co-operation and makes room for them, rather than one that deals in confrontation and raw military power. If they are obliged to play the traditional great-power game of winners and losers, then history will repeat itself and everybody loses. Our hopes for mitigating the severity of the coming environmental crises also depend on early and concerted global action of a sort that can only happen in a basically co-operative international system. When the great powers are locked into a military confrontation, there is simply not enough spare attention, let alone enough trust, to make deals on those issues, so the highest priority at the moment is to keep the multilateral approach alive and avoid a drift back into alliance systems and arms races. And there is no point in dreaming that we can leap straight into some never-land of universal brotherhood; we will have to confront these challenges and solve the problem of war within the context of the existing state system. The solution to the state of international anarchy that compels every state to arm itself for war was so obvious that it arose almost spontaneously in 1918. The wars by which independent states had always settled their quarrels in the past had grown so monstrously destructive that some alternative system had to be devised, and that could only be a pooling of sovereignty, at least in matters concerning war and peace, by all the states of the world. So the victors of World War I promptly created the League of Nations. But the solution was as difficult in practice as it was simple in concept. Every member of the League of Nations understood that if the organization somehow acquired the ability to act in a concerted and effective fashion, it could end up being used against them, so no major government was willing to give the League of Nations any real power. Instead, they got World War II, and that war was so bad — by the end the first nuclear weapons had been used on cities — that the victors made a second attempt in 1945 to create an international organization that really could prevent war. They literally changed international law and made war illegal, but they were well aware that all of that history and all those reflexes were not going to vanish overnight. It would be depressing to catalogue the many failures of the United Nations, but it would also be misleading. The implication would be that this was an enterprise that should have succeeded from the start, and has failed irrevocably. On the contrary; it was bound to be a relative failure at the outset. It was always going to be very hard to persuade sovereign governments to surrender power to an untried world authority which might then make decisions that went against their particular interests. In the words of the traditional Irish directions to a lost traveler: "If that's where you want to get to, sir, I wouldn't start from here." But here is where we must start from, for it is states that run the world. The present international system, based on heavily armed and jealously independent states, often exaggerates the conflicts between the multitude of human communities in the world, but it does reflect an underlying reality: We cannot all get all we want, and some method must exist to decide who gets what. That is why neighboring states have lived in a perpetual state of potential war, just as neighboring hunter-gatherer bands did 20,000 years ago. If we now must abandon war as a method of settling our disputes and devise an alternative, it only can be done with the full co-operation of the world's governments. That means it certainly will be a monumentally difficult and lengthy task: Mistrust reigns everywhere and no nation will allow even the least of its interests to be decided upon by a collection of foreigners. Even the majority of states that are more or less satisfied with their borders and their status in the world would face huge internal opposition from nationalist elements to any transfer of sovereignty to the United Nations. The good news for humans is that it looks like peaceful conditions, once established, can be maintained. And if baboons can do it, why not us? The U.N. as presently constituted is certainly no place for idealists, but they would feel even more uncomfortable in a United Nations that actually worked as was originally intended. It is an association of poachers turned game-keepers, not an assembly of saints, and it would not make its decisions according to some impartial standard of justice. There is no impartial concept of justice to which all of mankind would subscribe and, in any case, it is not "mankind" that makes decisions at the United Nations, but governments with their own national interests to protect. To envision how a functioning world authority might reach its decisions, at least in its first century or so, begin with the arrogant promotion of self-interest by the great powers that would continue to dominate U.N. decision-making and add in the crass expediency masquerading as principle that characterizes the shifting coalitions among the lesser powers in the present General Assembly: It would be an intensely political process. The decisions it produced would be kept within reasonable bounds only by the need never to act in a way so damaging to the interest of any major member or group of members that it forced them into total defiance, and so destroyed the fundamental consensus that keeps war at bay. There is nothing shocking about this. National politics in every country operates with the same combination: a little bit of principle, a lot of power, and a final constraint on the ruthless exercise of that power based mainly on the need to preserve the essential consensus on which the nation is founded and to avoid civil war. In an international organization whose members represent such radically different traditions, interests, and levels of development, the proportion of principle to power is bound to be even lower. It's a pity that there is no practical alternative to the United Nations, but there isn't. If the abolition of great-power war and the establishment of international law is truly a hundred-year project, then we are running a bit behind schedule but we have made substantial progress. We have not had World War III, and that is thanks at least in part to the United Nations, which gave the great powers an excuse to back off from several of their most dangerous confrontations without losing face. No great power has fought another since 1945, and the wars that have broken out between middle-sized powers from time to time — Arab-Israeli wars and Indo-Pakistani wars, mostly — seldom lasted more than a month, because the U.N.'s offers of ceasefires and peacekeeping troops offered a quick way out for the losing side. If you assessed the progress that has been made since 1945 from the perspective of that terrifying time, the glass would look at least half-full. The enormous growth of international organizations since 1945, and especially the survival of the United Nations as a permanent forum where the states of the world are committed to avoiding war (and often succeed), has already created a context new to history. The present political fragmentation of the world into more than 150 stubbornly independent territorial units will doubtless persist for a good while to come. But it is already becoming an anachronism, for, in every other context, from commerce, technology, and the mass media to fashions in ideology, music, and marriage, the outlines of a single global culture (with wide local variations) are visibly taking shape. It is very likely that we began our career as a rising young species by exterminating our nearest relatives, the Neanderthals, and it is entirely possible we will end it by exterminating ourselves, but the fact that we have always had war as part of our culture does not mean that we are doomed always to fight wars. Other aspects of our behavioral repertoire are a good deal more encouraging. There is, for example, a slow but quite perceptible revolution in human consciousness taking place: the last of the great redefinitions of humanity. At all times in our history, we have run our affairs on the assumption that there is a special category of people (our lot) whom we regard as full human beings, having rights and duties approximately equal to our own, and whom we ought not to kill even when we quarrel. Over the past 15,000 or 20,000 years we have successively widened this category from the original hunting-and-gathering band to encompass larger and larger groups. First it was the tribe of some thousands of people bound together by kinship and ritual ties; then the state, where we recognize our shared interests with millions of people whom we don't know and will never meet; and now, finally, the entire human race. There was nothing in the least idealistic or sentimental in any of the previous redefinitions. They occurred because they were useful in advancing people's material interests and ensuring their survival. The same is true for this final act of redefinition: We have reached a point where our moral imagination must expand again to embrace the whole of mankind. It's no coincidence that the period in which the concept of the national state is finally coming under challenge by a wider definition of humanity is also the period that has seen history's most catastrophic wars, for they provide the practical incentive for change. But the transition to a different system is a risky business: The danger of another world war which would cut the whole process short is tiny in any given year, but cumulatively, given how long the process of change will take, it is extreme. That is no reason not to keep trying. Our task over the next few generations is to transform the world of independent states in which we live into some sort of genuine international community. If we succeed in creating that community, however quarrelsome, discontented, and full of injustice it will probably be, then we shall effectively have abolished the ancient institution of warfare. Good riddance.

#### Globalized technological thought is good. Rejecting technological thought also rejects technological innovation and dooms us to extinction. This also defends our ontology

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Well, then let's not do that, huh? Well, no, not hardly, because without that use of fertilizers we couldn't produce the food to feed the population. We just couldn't do it. Here are some comparisons."

If you used no fertilizers or pesticides you could get 500 kilograms of grain from a hectare in a dry climate and as much as 1000 kilograms in a humid cli­mate. If you got organic and used animal manure as fertilizer, assuming you could find enough, you might get as much as 2000 kilograms per hectare. For a sense of scale, the average in the United States, where recall we only get half the food value to hectare as the intensively farmed Chinese crop land, we get about 4500 kilograms per hectare on the average. In serious cornfields with fertilizer, irrigation, and pesticides, the value is 7000 kilograms per hectare.

Modern mechanized, chemically supported agriculture produces 7 to 14 times the food that you would get without those advantages. Even the best organic farming would produce only 30 to 45% of the food value you would get from the same sized chemically fertilized farm, and that is assuming you could get the manure you needed to make it work.

In very stark terms, without the chemically enhanced farming we would have probably something like one-fifth the food supply we have now. That means four-fifths the population would not be fed, at least as we are organized now. So, no, just giving up on fertilizers is not in the deal.

However, we could get the hydrogen and energy from sources other than natural gas. Nuclear energy could be used to provide electricity to extract hydrogen from water and produce the process heat required to combine the hydrogen and nitrogen from the air. That is just a thought to stick in your mind. While we are looking at energy use in agriculture, here are a few more numbers for you.10 If you look at the energy input into agriculture and the energy you get out, you see some interesting facts. By combining the energy used to make fertilizers and pesticides, power irrigation, and run the farm machinery in the United States, we use about 0.7 kcal of fossil fuel energy for each 1 kcal of food we make. This doesn't include the energy needed to process and transport the food. In Europe where they farm more intensely, the amount of energy out is just about the same as energy in. In Germany and Italy the numbers are 1.4 and 1.7 kcal energy input to each 1 kcal output respectively. The point is you need energy to feed people, well at least a lot of people.

Which gets us back to Cohen and his question. One of the studies he examined looked at a "self-sustaining solar energy system." For the United States, this would replace all fossil energy and provide one-fifth to one-half the current energy use. The conclusion of the study was that this would either produce" a significant reduction in our standard of living ... even if all the energy conservation measures known today were adopted" or if set at the current standard of living, "then the ideal U.S. population should be targeted at 40-100 million people." The authors of that study then cheerfully go on to point out that we do have enough fossil fuel to last a least a century, as long as we can work out the pesky environmental problems. So, you can go to a "self-sustaining" energy economy as long as you are willing to shoot between 2 out of 3 and 6 out of 7 of your neighbors.

And this is a real question. The massive use of fossil fuel driven agriculture to provide the fertilizers and pesticides, and power the farm equipment, is a) vitally important to feed everyone, and b) something we just can't keep up in a business-as-usual fashion. Sustainable means you can keep doing it. Fossil energy supplies are finite; you will run out some time. Massive use of fossil energy and the greenhouse gases they produce also may very well tip the planet into one of those extinction events in which a lot of very bad things happen to a lot of the life on the earth.

O.K. to Cohen's big question, how many people can the earth support? What it comes down to is that the "Well, it depends" answer depends on

• what quality of life you will accept,

• what level of technology you will use, and

• what level of social integration you will accept.

We have seen some of the numbers regarding quality of life. Clearly if you are willing to accept the Bangladesh diet, you can feed 1.8 times more people than if you chose the United States diet.

If you choose the back-to-nature, live like our hearty forefathers, level of technology, you can feed perhaps one-fifth as many people as you can with modern chemical fertilized agriculture. The rest have to go.

And here is the tough one. You can do a lot better, get a lot more people on the planet, if you just force a few things. Like, no more land wasted in growing grapes for wine or grains for whiskey and beer. No cropland used for tobacco. No more grain wasted on animals for meat, just grain for people. No more rich diets for the rich countries, share equally for everyone. No more trade barriers; too bad for the farmers in Japan and France, those countries would just have to accept their dependence on other countries for their food. It is easy to see that at least some of those might actually be a pretty good thing; however, the kicker is how do you get them to happen? After all, Mussolinill did make the trains run on time. How could you force these things without a totalitarian state? Are you willing to give up your ability to choose for yourself for the common good? It is not pretty, is it?

Cohen looked at all the various population estimates and concluded that most fell into the range of 4 to 16 billion. Taking the highest value when researchers offered a range, Cohen calculated a high median of 12 billion and taking the lower part of the range a low median of 7.7 billion. The good news in this is 12 billion is twice as many people as we have now. The bad news is that the projections for world population for 2050 are between 7.8 and 12.5 billion. That means we have got no more than 50 years before we exceed the nominal carrying capacity of the earth. Cohen also offers a qualifying observation by stating the "First Law of Information," which asserts that 97.6% of all statistics are made up. This helps us appreciate that application of these numbers to real life is subject to a lot of assumptions and insufficiencies in our understanding of the processes and data.

However, we can draw some insights from all of this. What it comes down to is that if you choose the fully sustainable, non-fossil fuel long-term options with only limited social integration, the various estimates Cohen looked at give you a number like 1 billion or less people that the earth can support. That means 5 out of 6 of us have got to go, plus no new babies without an offsetting death.

On the other hand, if you let technology continue to do its thing and perhaps get even better, the picture need not be so bleak. We haven't made all our farmland as productive as it can be. Remember, the Chinese get twice the food value per hectare as we do in the United States. There is also a lot of land that would become arable if we could get water to it. And, of course, in case you need to go back and check the title of this book, there are alternatives to fossil fuels to provide the energy to power that technology.

So given a positive and perhaps optimistic view of technology, we can look to some of the high technology assumption based studies from Cohen's review. From the semi-credible set of these, we can find estimates from 19 to 157 billion as the number of people the earth could support with a rough average coming in about 60 billion. This is a good time to be reminded of the First Law of Information. The middle to lower end of this range, however, might be done without wholesale social reprogramming. Hopefully we would see the improvement in the quality of life in the developing countries as they industrialize and increase their use of energy. Hopefully, also this would lead to a matching of the reduction in fertility rates that has been observed in the developed countries, which in turn would lead to an eventual balancing of the human population.

The point to all this is the near-term future of the human race depends on technology. If we turn away from technology, a very large fraction of the current and future human race will starve. If we just keep on as we are, with our current level of technology and dependence on fossil fuel resources, in the near term it will be a race between fertility decrease and our ability to feed ourselves, with, frankly, disaster the slight odds-on bet. In a slightly longer term, dependence on fossil fuels has got to lead to either social chaos or environmental disaster. There are no other end points to that road. It doesn't go anywhere else.

However, if we accept that it is technology that makes us human, that technology uniquely identifies us as the only animal that can choose its future, we can choose to live, choose to make it a better world for everyone and all life. This means more and better technology. It means more efficient technology that is kinder to the planet but also allows humans to support large numbers in a high quality of life. That road is not easy and has a number of ways to screw up. However, it is a road that can lead to a happier place, a better place.

Two Concluding Thoughts on the Case for Technology

Two more points and I will end my defense of technology. First, I want to bring you back from all the historical tour and all the numbers about population to something more directly personal. Let me ask you two questions.

What do you do for a living?

What did you have for breakfast?

Don't see any connection between these questions or of their connection to·the subject of technology? Don't worry, the point will come out shortly. I am just trying to bring the idea of technology back from this grand vision to its impact on your daily life.

Just as a wild guess, your answer to the first question was something that, say 500 years ago, didn't even exist. If we look 20,000 years ago, the only job was" get food." Even if you have a really directly socially valuable job like a medical doctor, 20,000 years ago you would have been extraneous. That is, the tribe couldn't afford you. What, no way! A doctor could save lives, surely a tribe would value such a skill. Well, sure, but the tribe could not afford taking one of their members out of the productive */I* getting the food" job for 20 years while that individual learned all those doctor skills.

If you examine the "what you do for a living" just a bit I think you will see a grand interconnectedness of all things. I personally find it pretty remarkable that we have a society that values nuclear engineers enough that I can make a living at it. Think about it. Somehow what I have done has been of enough value that, through various taxpayer and utility ratepayers, society has given me enough money for food and shelter. The tribe 20,000 years ago wouldn't have put up with me for a day.

You see, that is why we as humans are successful, wildly successful in fact. We work together. "Yeah, sure we do," you reply, " read a newspaper lately?" Well, *O.K.,* we fuss and fight a good deal and some of us do some pretty stupid and pretty mean things. But the degree of cooperation is amazing if you just step back a bit.

O.K., what did you have for breakfast: orange juice, coffee, toast, maybe some cereal and milk? Where do these things come from? Orange juice came from Florida or California. Coffee came from South America. Bread for the toast came perhaps from Kansas; cereal, from the Mid-West somewhere. The jam on the toast may have come from Oregon, or maybe Chile. Milk is probably the only thing that came from within a hundred miles of your breakfast table. Think about it. There were hundreds of people involved in your breakfast. Farmers, food-processing workers, packaging manufacturers, transportation people, energy producers, wholesale and retail people. Perhaps each one only spent a second on their personal contribution to your personal breakfast, but they touch thousands of other people's breakfasts as well. In turn, you buying the various components of your breakfast supported, in your part, all those people. They in turn, in some way or another, bought whatever you provide to society that allowed you to buy breakfast. Pretty amazing, don't you think?

Now when you look at all that, think about what ties all the planetwide interconnection, Yep, you guessed it: technology. Without technology, you get what is available within your personal reach, and what you produce is available only to those who are near enough that you can personally carry it to them on your own two feet. Technology makes our world work. It gives you personally a productive and socially valuable way to make both a living and to provide your contribution to the rest of us**.**

I want you to stop a minute and really think about that. What would your life be like without technology? Could you do what you currently do? Would anyone be able to use what you do? Would anyone pay you for that? "But I am a school teacher," you say, "of course, they would pay me!" Are you sure? Why do you need schools if there is no technology? All I need is to teach the kid how to farm and how to hunt. Sons and daughters can learn that by working in the fields along with their parents. See what I mean?

Now, I have hopefully reset your brain. Sure, you are still going to be hit with daily "technology is bad" messages. Hopefully, you are a bit more shielded against that din, and you have been given some perspective to balance that message and are prepared to see the true critical value of technology to human existence. The point is that technology is what makes us human. Without it, we are just slightly smarter monkeys.

You may feel that 6 billion of us are too many, and that may very well be. I personally don't know how to make that value decision. Which particular person does one select as being one of the excess ones?

However, the fact is that there are 6 billion of us, and it looks like we are headed for 10 to 12 billion in the next 50 years, Without not only the technology we have, but significantly better and more environmentally friendly technology, the world is going to get ugly as we approach these numbers,

On the other hand, with the right technologies we can not only support those numbers, we can do it while we close the gap between the haves and have-nots. We can make it a better place for everyone. It takes technology and the energy to drive it. Choosing technology is what we have to do to secure the evolutionary selection of us as a successful species, Remember, some pages back in discussing the unlikely evolutionary path to us, I said we are not the chosen, unless. Unless we choose us. This is what I meant. We are totally unique in all of evolutionary history. We humans have the unique ability and opportunity to choose either our evolutionary success or failure. A choice of technology gives us a chance. A choice rejecting technology dooms us as a species and gives the cockroaches the chance in our place. Nature doesn't care what survives, algae seas, dinosaurs, humans, cockroaches, or whatever is successful. If we care, we have to choose correctly.

As an aside, let me address a point of philosophy here. If any of this offends your personal theology, I offer this for your consideration. Genesis tells us God gave all the Earth to humanity and charged us with the stewardship thereof. So it is ours to use as well as we can. That insightful social philosopher Niccolo Machiavelli put it this way in 1501:

"What remains to be done must be done by you; since in order not to deprive us of our free will and such share of glory as belongs to us, God will not do everything Himself."

*O.K.,* you are saying, "I give." You have beaten the socks off me. Technology is good; technology is the identifying human trait and our only hope. But what is this stuff about choosing technology or not? Technology just happens doesn't it? I mean, technology always advances, it always has, so why the big deal?

Well, that is my last point on technology. It doesn't always just happen, and people have chosen to turn away from technology. In what might have seemed at the time to be a practical social decision, huge future implications were imposed on many generations to come. It has happened. Let me take you on one more trip through history. I think you will find it enlightening. In *Guns, Germs, and Steel,* Jared Diamond explores the question of why the European societies came to be dominate over all the other human cultures on earth. It is a fascinating story and provides a lot of insight into how modern societies evolved. In moving through history, he comes across a very odd discontinuity. He observes that if you came to earth from space in the year 1400 A.D., looked around, and went home to write your research paper on the probable future of the earth, you would clearly conclude the Chinese would run the entire planet shortly. Furthermore, you could conclude they would do it pretty darn well. If those same extraterrestrial researchers were to pop into their time machine and come back to earth in any year from say 1800 to now, they would be totally amazed to see China as a large, but relatively backward, country, struggling to catch up with their European and American peers.

To understand the significance of this, you have to go on that research trip with the extraterrestrials and look at China before 1400. In *The Lever af Riches,* Joel Mokyr dedicates one chapter looking at the comparisons of technology development in China to that in Europe. He lists the following as technology advantages China had in the centuries before 1400:

• Extensive water control projects, alternately draining and irrigating

land, significantly boosting agricultural production

• Sophisticated iron plow introduced sixth century B.C.

• Seed drills and other farm tools, introduced around 1000 *A.D.*

• Chemical and organic fertilizers and pesticides used

• Blast furnaces and casting of iron as early as 200 B.C., not known in Europe until fourteenth century

• Advanced use of power sources in textile production, not seen in Europe until the Industrial Revolution

• Invention of compass around 960 A.D.

• Major advances in maritime technology (more in a bit on this)

• Invention of paper around 100 A.D. (application as toilet paper by *590 A.D.).*

In the year 1400 AD., China was a world power, perhaps the only true world power. Their technology in agriculture, textiles, metallurgy, and maritime transportation were far in advance of any other country. They had a strong central government and a very healthy economy.

Their naval strength provides a real insight into the degree of this dominance. Dr. Diamond sends us to an extremely readable book *When China Ruled the Seas-The Treasure Fleet of the Dragon Throne 1405-1433* by Dr. Louise Levathes. Dr. Levathes takes us on an inside tour of the Chinese empire during these years. She focuses on the great treasure fleets that China set forth in these early years of the fifteenth century. In her book she has a wonderful graphic that overlays a Chinese vessel of the treasure fleet (-1410) with Columbus's *St. Maria* (1492). At 85 feet in length and three masts, the *St. Maria* is dwarfed by the nine-masted, 400-foot-long Chinese vessel.

The Chinese sailed fleets of these magnificent vessels throughout oceans of South Asia, to India, and even as far as the eastern coast of Africa. With this naval domination China claimed tribute from Japan, Korea, the nations of the Malay Archipelago, and various states within what is now India. Through both trade and the occasional application of military force, China provided an enlightened and progressive direction for all the nations within this sphere of influence. If two princes in India were fighting over a throne, it was the recognition, or lack thereof, from the Chinese emperor that decided who would rule. Setting a policy of religious inclusion and tolerance, the Chinese engaged the Arabian traders and calmed religious disputes within Asia.

With applications of power sources in textiles and advanced metallurgy, the Chinese were in the same position in 1400 as the British were in 1750, ready to launch into the Industrial Revolution. They traded with nations thousands of miles from home with vast, sophisticated shipping fleets. They were poised to extend this trade all the way to Europe and perhaps find the New World by going east instead of the European's going west in search of the rich Chinese markets.

But if we pop into that extraterrestrial time machine and drop into China in 1800, we find a technologically backward nation, humbled by a relatively small force of Europeans with "modern" military technology who wantonly imposed their will on the Chinese. The Chinese have been struggling to catch up with European and American technology ever since and so far not quite being able to do that. The domination of China by the Japanese during World War II shows how complete the turnaround was. In 1400 Japan was but one of many vassal states huddled about the feet of the Imperial Chinese throne. In 1940 the Japanese military crushed the Chinese government while marching on to control much of South Asia.

What could have happened to turn this clear champion of technology, trade, enlightened leadership with all its advantages over both its neighbors and yet-distant foreign competitors into such a weak, backward giant?

Mokyr goes through a pretty complete list of potential causes. He looks at diet, climate, and inherent philosophical mindset rejecting each as a credible actor mainly on the bases that all of these conditions were present during the period of technological and economic growth as well as the subsequent stagnation. Therefore, these were not determining factors in the turnabout. In the end he concludes, as does Diamond and Levathes, that it was just politics.

Yep, that is right. It was good, old human politics. Dr. Levathes gives us a delightful insider's view of the personalities and politics of Imperial progressions during this critical time period. To make a short story of it, the party that had been in control during the expansionist period supported the great treasure fleets, commerce with foreign nations, use and expansion of technology, and a rather harsh control of the rival party. The rival party was based on Confucian philosophy that preached a rigid, inward-looking, controlled existence.

When the Confucian party gained control of the throne, they had their opportunity to push back on the prior ruling party that had oppressed them so harshly for so long. And they did. They wanted nothing to do with foreigners; we have all we need at home, here in China, they said. The fleet was disbanded and the making of ocean-going vessels forbidden. Technology was no longer "encouraged." Again, their position was what we have is good enough, stop with all this new nonsense. Over a period of just a few years, the course of the entire nation was shifted from what would have appeared to be a bright future as the leading power in the world to a large, but relatively insignificant, backwater, rich in history and culture, but all backward looking to a former glory.

That was it. A shift in the political agenda. At the time, to the leaders in control, one that made sense. Focus at home, use what you have now, create order, discipline, control. In 50 years Japanese pirates controlled the coast of China, and the former ruler of the seas from Asia to Africa could not get out of their harbors safely.

So, you see **if the "technology is bad" message gets incorporated into too many of our daily decisions,** we can turn from our bright future into something else. The difference is that this time the stakes are much higher than they were in fifteenth century China. If we, in the developed nations, make the wrong choices, we doom all of humanity by our folly. It is not just that we miss the potential bright future, we miss the chance to avoid the combined human population growth and resources exhaustion disaster coming at us like a runaway train. Technology is the only way to prevent that train wreck. We can hear the siren's call of anti-technology, come back to nature and let the train run us down in a bloody mess, or we can try our best to use technology wisely and win free to make a better life for everyone.