Environmental Ethics and Land Management ENVR E-120

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... Water Issues (final points from last week)

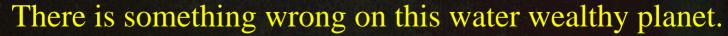


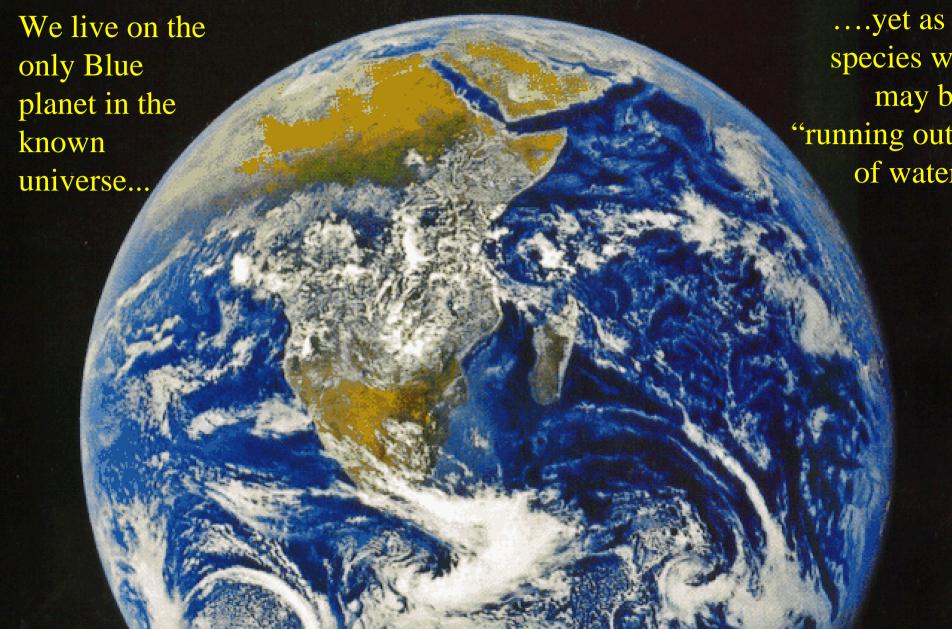
Timothy C. Weiskel

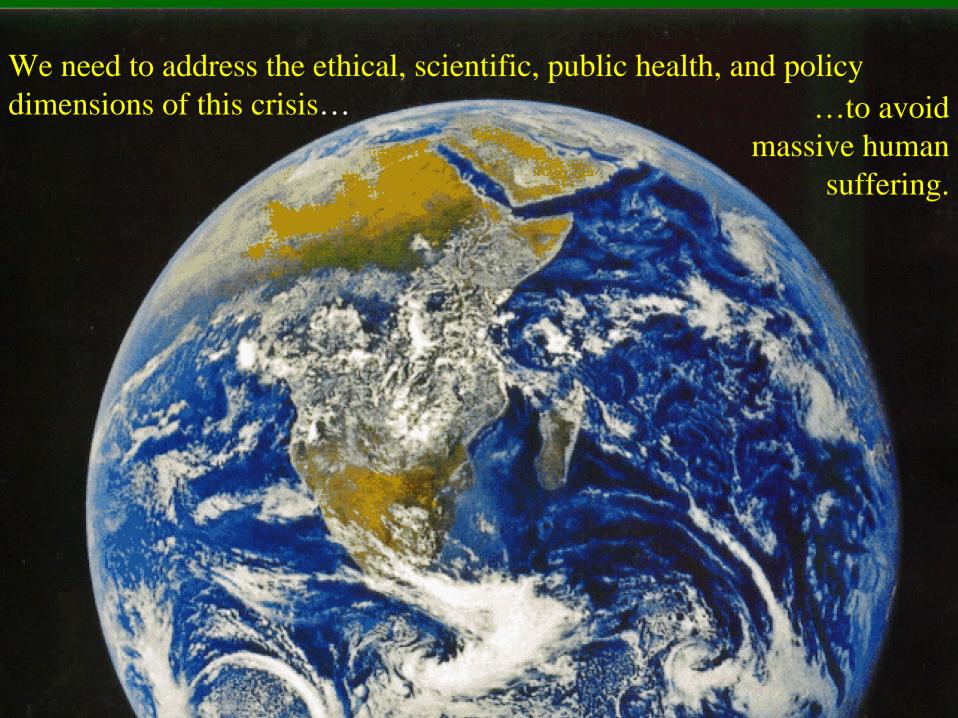
Session – 9 16 November 2006

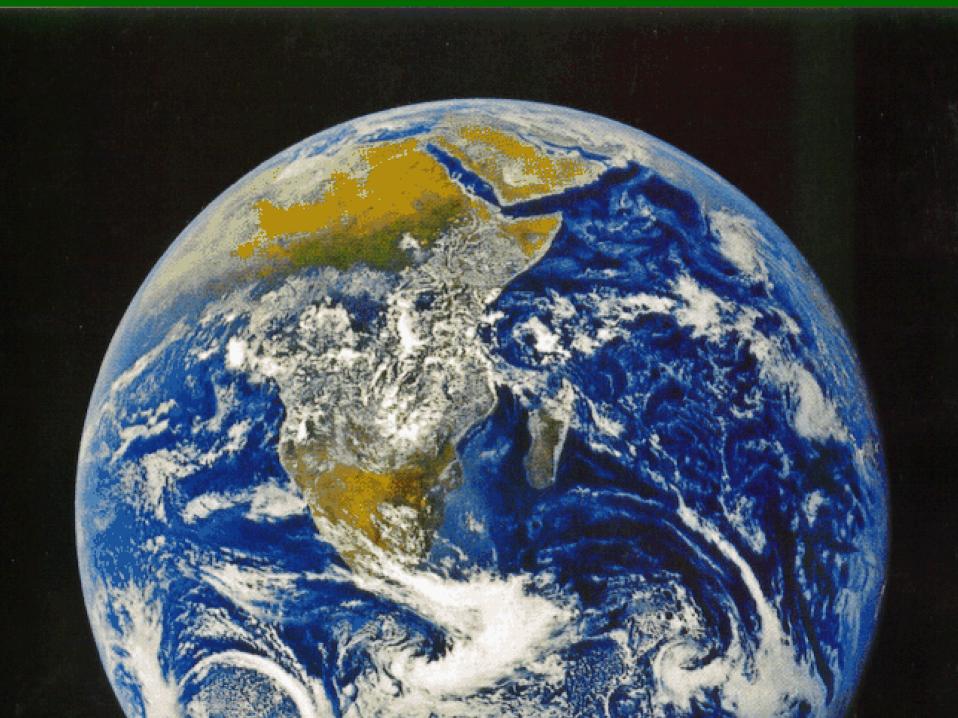
Harvard University Extension School Fall Semester 2006

























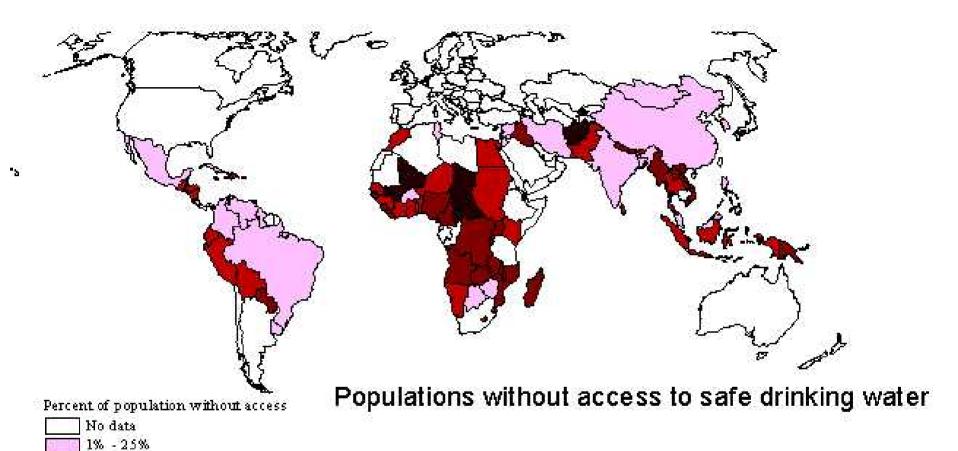
"That image of the earth has become, like the Cross and the Crescent, an icon of almost religious significance."

James Lovelock, 1996

Can we learn to survive sustainably within the rhythms of the biogeochemical cycling of its water --this symbol and substance of life?



We live on the only Blue Planet in the known universe.



from The World's Water The Biennial Report on Freshwater Resources (Gleick 1998)

26% - 50%

51% - 75%

76% - 100%

Global Water Resources: Vulnerability from Climate Change and Population Growth

Charles J. Vörösmarty, 1,2,4,5* Pamela Green, 1,2,4
Joseph Salisbury, 1,3,4 Richard B. Lammers 1,2,4

The future adequacy of freshwater resources is difficult to assess, owing to a complex and rapidly changing geography of water supply and use. Numerical experiments combining climate model outputs, water budgets, and socioeconomic information along digitized river networks demonstrate that (i) a large proportion of the world's population is currently experiencing water stress and (ii) rising water demands greatly outweigh greenhouse warming in defining the state of global water systems to 2025. Consideration of direct human impacts on global water supply remains a poorly articulated but potentially important facet of the larger global change question.

Greenhouse warming continues to dominate the world's science and policy agenda on global change. One fundamental concern is the impact of this climate change on water supply (I, 2). The question of how human society directly influences the state of the terrestrial water cycle has received much less attention, despite the

water demand (RWD) defined as the ratio of water withdrawal or water use to discharge. We consider the domestic and industrial sectors (DI/Q), irrigated agriculture (A/Q), and their combination (DIA/Q) on a mean annual basis. Each ratio determines the degree to which humans interact with sustainable water supply and

differences were then applied to a baseline (13) to generate the future patterns of runoff (16). Mean global runoff varied in response to climate change from an increase of <1 mm year⁻¹ (HadCM2/WBM) to a decrease of 17 mm year⁻¹ (CGCM1/WBM) (17). With each runoff field, more substantial changes could be found at local and regional scales. CGCM1/WBM gave the strongest climate change signal, and we use it to exemplify key findings derived from both models.

Domestic and industrial water demand was determined by population and per capita use statistics. The geography of contemporary urban and rural population was developed from a 1-km data set (18). Future population distribution was determined from projections of the percent change in total, rural, and urban population from 1985 to 2025 (19) applied to the 1-km urban and rural population maps. Country-level water withdrawal statistics (19) were used to estimate contemporary water demands, but they first required standardization and spatial disaggregation (20). The geography of agricultural water demand was computed from irrigated land area and national use statistics (21). Future demands for all sectors were based on population growth, economic development.

REPORTS

Contemporary Population Relative to Demand per Discharge Stress Threshold (DIA/Q = 0.4)

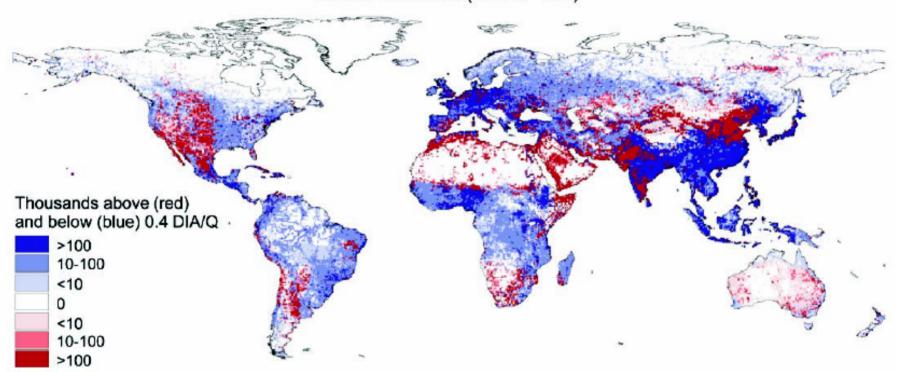
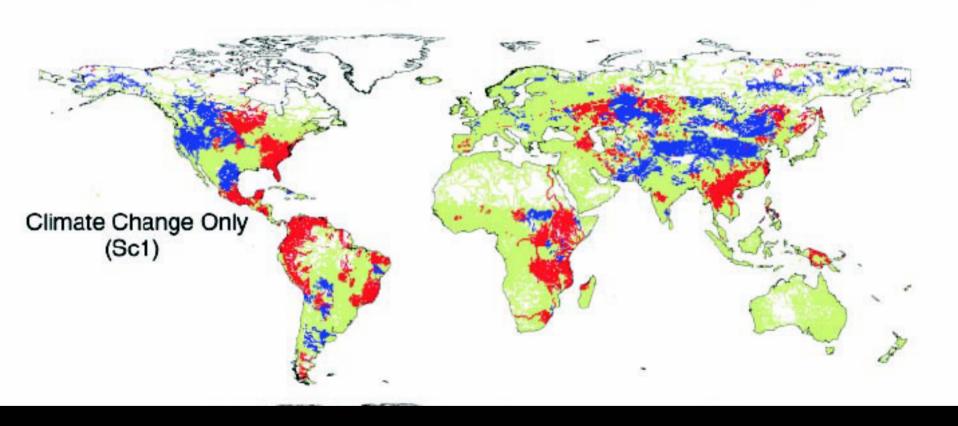
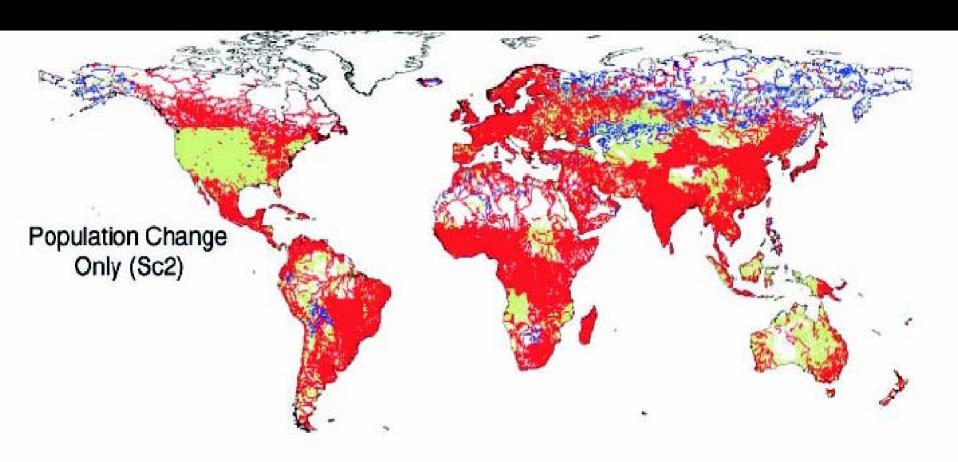


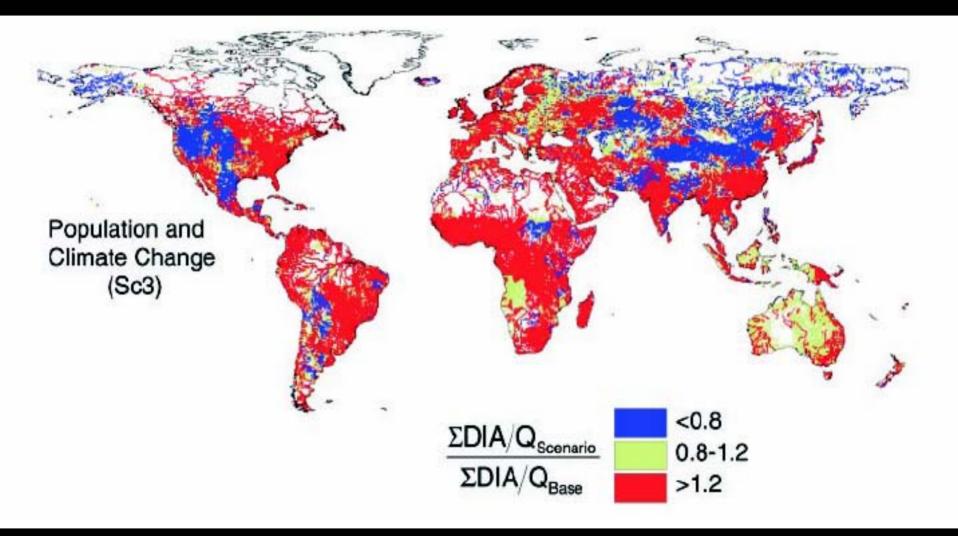
Fig. 1. The global distribution of population in 1985 with respect to the relative water stress threshold of DIA/Q=0.4 indicating severe water scarcity (10). A 30' spatial resolution is used. This mapping reflects a mean global runoff of $\sim 40,000 \text{ km}^3 \text{ year}^{-1}$ and aggregate water withdrawals of 3100 km³ year⁻¹. These estimates are highly dependent on contemporary water use statistics,

which reflect a degree of uncertainty. Recent reviews (5, 36) show year 2000 global water withdrawals from assessments made even as late as 1987 to vary by $>1300 \text{ km}^3 \text{ year}^{-1}$. National-level water use statistics (18) for some countries are decades old. Runoff estimates for some regions may also be biased (9,13). Results should be viewed with appropriate caution.

Relative Change in Demand per Discharge







Worldview and Eco-Logic

All of the water problems that we experience globally will accentuate the difference in worldviews between those of peasant societies and those of industrial, marketintegrated societies.

This is because, as Justus von Liebig pointed out, all life forms depend not on the average supply of all available inputs, but rather upon on *the continuous supply of the scarcest necessary resource -- the limiting resource*.

Market Logic vs. Eco-Logic

Peasant economics works on the logic of Leibig's Law of the minimum.

Market logic for a resource is to "price" it according to is scarcity. The problem with price is that it can only work as a mechanism for signaling scarcity where there is *effective* demand -- that is, *ability to pay* in the marketplace.

Where there is no ability to pay, price is not an effective means of allocating resources, because without ability to pay, "price signals" are not activated. There may be a dire need, but there is a "market failure" when there is no means to pay.

Tim Weiskel - 20

A mega-question is now emerging globally.

It is clear that we must learn to value water, but:

- Should we "price" water?
- If water becomes privatized and priced, what will be the predictable consequences and ethical implications of coming water shortages?
- If water is *not* privatized and priced what will happen?



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Selling Canada's water

Martin O'Malley and John Bowman CBC News Online | June 2001

INTRODUCTION

Canada lucked out in the global water sweeps. We are near the top of water-rich nations, trailing only Brazil, Russia and China.

Thanks to the replenishing cycle of rain and evaporation, the amount of water on Earth has remained the same over the past four billion years. Only in this generation has there been concern that we may be ruining our water supply. Of all the water on our planet, 97.5 per cent is sea water and three-quarters of the remaining 2.5 per cent is



Introduction

Gerry White's story

Maude Barlow's story

Conclusion

WATER

Index

Facts and figures

Treatment methods

Selling Canada's water

Drinking water Q & A

Cryptosporidium





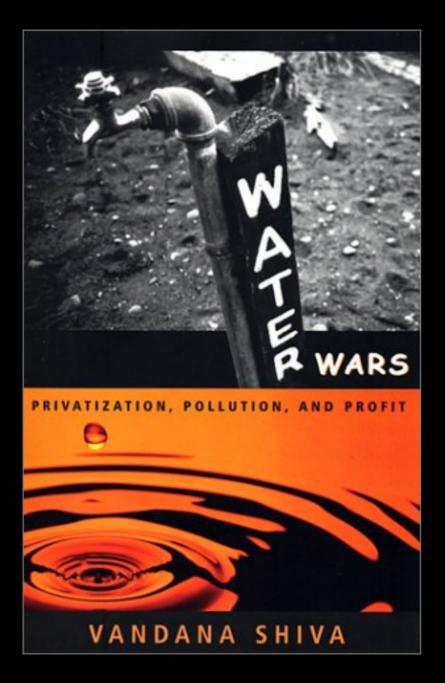
On the only blue planet in the known universe, we have turned seas into deserts.

The question is:

As a species can we develop legal systems, market mechanisms and ethical norms -- forms of self-imposed, self-restraint -- that will enable us to survive our considerable capacity to exhaust even the most abundant resources?









Click Controls to Pause, Start, or Stop

"Leasing the Rain," Now - Frontline/World, (5 July 2002) - Part II







Course Utility Page

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Class Related Events

Course Calendar - Fall 2006



Library Resources:

- Harvard Library (HOLLIS Connection)

- The Environmental Information Center

- Environmental Science and Public Policy Archives

Class Resources

Week 10

Week 9 Week 8

Week 7

Week 6

Week 5

[Click Icon on Screen to Start ==>]



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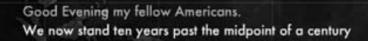












































Course Utility Page

Related Events

Course Calendar - Fall 2006

Class Videos

Library Resources:

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Class Resources

Week 9 Week 8 Week 7

Week 6

Week 5

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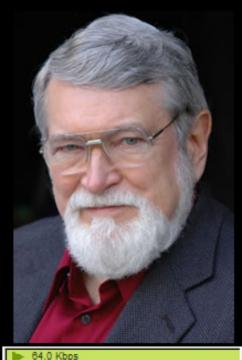
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David Korten and the Great Turning

NPR - Making Contact 18 October 2006

You wouldn't have expected David Korten to raise any doubts about the global economy and its ability to solve poverty and environmental damage if you knew him in the 1980s. At that time, he was working for the U.S. Agency for International Development, touting the benefits of international investment in South East Asia. Then something changed.

Far from creating universal prosperity, Korten observed that the economic models of the organizations he worked for were producing devastating consequences for people and planet. In 1992 he wrote "When Corporations Rule the World," his deeper examination



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Land Management and Waste: Toxic & Nuclear Waste Issues



Timothy C. Weiskel

Session – 9 16 November 2006

Harvard University Extension School Fall Semester 2006



Toxic Substances

- Non-Point Pollution Agricultural Waste and Diffused Industrial Chemicals in surface and ground water.
- Point Source Pollution Industrial Chemicals (conceptually simple, difficult politically & economically Especially internationally. Case of MTBE * * * *).
- International Aspects of Toxic Waste <u>Larry Summers's</u> famous contribution *
- POP Problems and Pesticide Debate
- POP Treaty 21 May 2001

Nuclear Waste and Contamination

Warning Signs - A Series of "Accidents"

Three Mile Island

Chernobyl

Korea Nuclear Accident

Germans Phase out Nuclear Energy

But in United States: "Renaissance" of the Nuclear Option

Nuclear Waste in America: Yucca Mountain

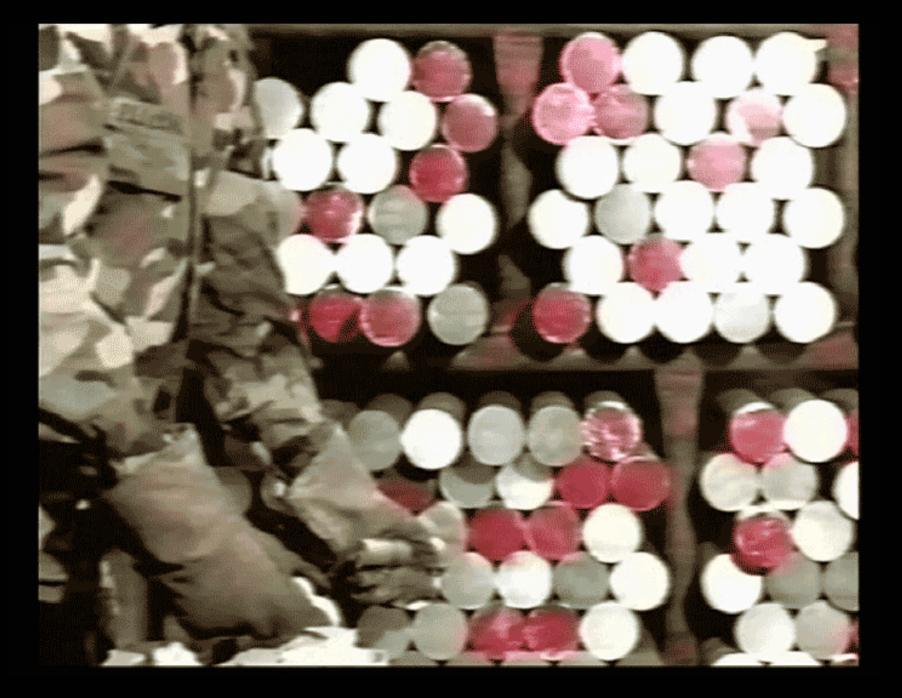
Depleted Uranium: <u>America Introduces Nuclear</u>
<u>Weaponry</u> to International Conflicts – <u>Balkans</u>,
<u>Afghanistan</u> & <u>Iraq</u> *



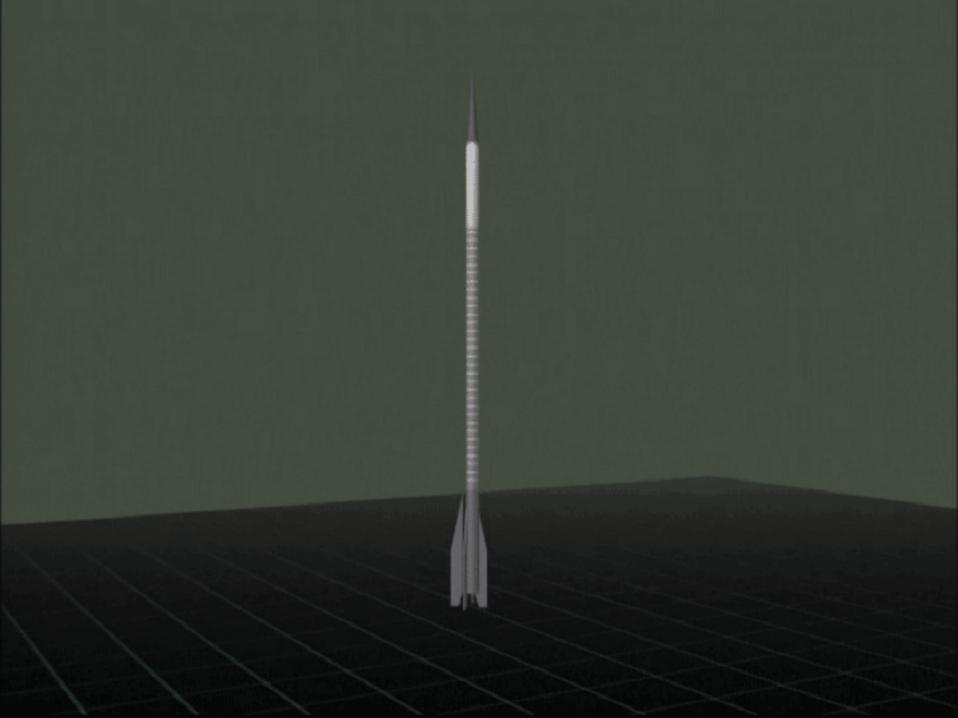
But first,....











Radioactivity

US ARMY TRAINING FILM

Radioactivity

US ARMY TRAINING FILM

Heavy Metal Toxicity Open Wounds
Inhalation
Ingestion



Last Updated: Tuesday, 22 November 2005, 15:42 GMT

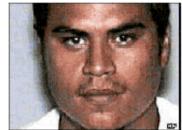
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US 'dirty bomb' suspect charged

A US citizen held for more than three years on suspicion of planning an attack with a "dirty bomb" has been indicted on criminal charges in Miami.

Jose Padilla been under military arrest since 2002 and was one of only two US citizens designated an enemy combatant.



Jose Padilla was arrested at Chicago airport in May 2002

The Bush administration had resisted calls to try him in civilian courts, and last month a court upheld its right to hold Mr Padilla indefinitely.

The US Attorney General is to discuss the indictment at a news conference.

Mr Padilla was arrested at Chicago Airport in May 2002 on suspicion of planning to detonate a conventional bomb laced with radioactive material.

Reports say Mr Padilla has been charged with conspiracy to commit murder and aid terrorists.

Lawyers had challenged Mr Bush's right to hold Mr Padilla indefinitely as an "enemy combatant".

They argued that the president was exceeding his authority by denying such prisoners access to lawyers and courts.

IN LEGAL SHIFT, U.S. CHARGES DETAINEE IN TERRORISM CASE

Suspect Held as Enemy Combatant Now Goes to Criminal Court

By ERIC LICHTBLAU

WASHINGTON, Nov. 22 — The Bush administration brought terrorism charges on Tuesday against Jose Padilla in a criminal court after holding him for three and a half years in a military brig as an enemy combatant once accused in a "dirty bomb" plot.

The decision to remove Mr. Padilla from military custody and charge him in the civilian system averts what had threatened to be a constitutional showdown over the president's authority to detain him and other American citizens as enemy combatants without formal charges.

The administration had faced a deadline next Monday to file its legal arguments with the Supreme Court in the Padilla case, which the Justice Department said it now considers

"moot."

The indictment is narrower in scope than the previous accusations that the Bush administration has made publicly against Mr. Padilla, and it makes no direct mention of Al Qaeda or the more far-ranging plots on American soil that the administration had linked to him.

After Mr. Padilla was arrested in May 2002 at O'Hare Airport in Chicago, John Ashcroft, then the attorney general, interrupted a trip to Moscow to announce on television that the authorities had foiled an effort by Mr. Padilla and other Qaeda operatives to detonate a radioactive or "dirty" bomb on American streets.

In June 2004, senior Justice Department officials went further, using newly declassified documents —

Um, About That Dirty Bomb?

Almost three and a half years ago, the Bush administration announced that it had arrested a Chicago-born man named Jose Padilla while he was entering the United States to explode a "dirty bomb" and blow up apartment buildings. The attorney general, John Ashcroft, said Mr. Padilla was a Qaedatrained terrorist so dangerous that he was being tossed into a Navy brig and the key was being thrown away.

The administration hotly defended its right to hold Mr. Padilla without legal process because he was declared an unlawful enemy combatant, one of the new powers that President Bush granted himself after 9/11. The administration fought the case up to the Supreme Court. Mr. Padilla's plot was thwarted, the Justice Department claimed, only because of the government's ability to hold suspected terrorists in secretive prisons where they were sweated, to put it mildly, for information. The "dirty bomb" plot supposedly was divulged by a top Qaeda member who had been interrogated 100 times at one such location.

Never mind. As of yesterday, Mr. Padilla stopped being an unlawful combatant, and the new attorney general, Alberto Gonzales, refused even to talk about that issue. Mr. Padilla is not going to be charged with planning to explode bombs, dirty or otherwise, in the United States. Just in time for the administration to prod Congress on extending the

Patriot Act and to avoid having to argue the case before the Supreme Court, Mr. Padilla was charged with aiding terrorists in other countries and will be turned over to civilian authorities.

Mr. Padilla was added late in the game, and in a minor role, to a continuing case against four other men. He faces serious charges that carry a possible life sentence, but they do nothing to clear up the enormous legal questions created by this case, nor do they have the remotest connection with the original accusations.

The Padilla case was supposed to be an example of why the administration needs to suspend prisoners' rights when it comes to the war on terror. It turned out to be the opposite. If Mr. Padilla was seriously planning a "dirty bomb" attack, he can never be held accountable for it in court because the illegal conditions under which he has been held will make it impossible to do that. If he was only an inept fellow traveler in the terrorist community, he is excellent proof that the government is fallible and needs the normal checks of the judicial system. And, of course, if he is innocent, he was the victim of a terrible injustice.

The same is true of the hundreds of other men held at Guantánamo Bay and in the C.I.A.'s secret prisons. This is hardly what Americans have had in mind hearing Mr. Bush's constant assurances since Sept. 11, 2001, that he will bring terrorists to justice.

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"All the News That's Fit to Print"

The New York Times

Late Edition

New York: Today, partly sunny, cooler, high 48. Tenight, partly cloudy, low 35. Tenner rew, partly sunny, chilly winds, high 44. Yesterday, high 63, low 55. Weather map is on Page D8.

VOL. CLV. . No. 53,415

Capacight © 2005 The New York Times

NEW YORK, THURSDAY, DECEMBER 1, 2005

ONE DOLLAR

BUSH GIVES PLAN FOR IRAQ VICTORY AND WITHDRAWAL

NO 'ARTIFICIAL' DEADLINES

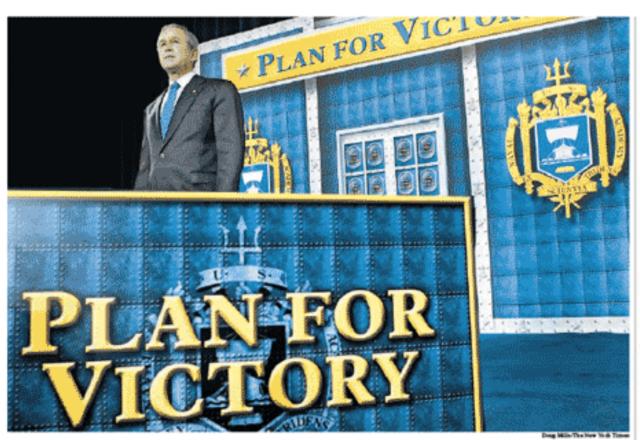
Strategy Loosely Follows Methods the U.S. Has Used in Afghanistan

By DAVID E. SANGER

ANNAPOLIS, Md., Nov. 30 — Two and a half years after the American invasion of Iraq, President Bush laid out Wednesday what he called a strategy for victory, vowing not to pull out on "artificial timetables set by politicians" but at the same time offering the first gämpse of his plan for extricating American forces.

In a speech here to cheering midshipmen at the United States Naval Academy, Mr. Bush described a military strategy for Iraq that koosely follows methods being adopted in Afghanistan: focusing American forces on terrorists who could reach beyond the country's borders and leaving the Iraqis to deal with insurgents and the remnants of Saddam Husssein's government.

"We will continue to shift from providing security and conducting operations against the enemy nationwide



President Bush yesterday just before his speech at the United States Naval Academy counseling "time and patience" in the war in Iraq.

ALITO FILE SHOWS STRATEGY TO CURB ABORTION RULING

REAGAN-ERA MEMO ON ROE

As Justice Dept. Lawyer, He Supported States in Adding Restrictions

By DAVID D. KIRKPATRICK

WASHINGTON, Nov. 30 — As a lawyer in the Reagan Justice Department, the Supreme Court nominee Samuel A. Alito Jr. played an integral role in devising legal strategy to pare back the landmark abortion rights case Roev. Wade, documents disclosed Wednesday show.

Judge Alito argued in a 1985 memorandum to the Reagan administration's solicitor general that two pending Supreme Court cases were an 'opportunity to advance the goals of overruling Roe v. Wade and, in the meantime, of mitigating its effects."

And in a strongly worded 17-page legal analysis, he recommended advancing the administration's ultimate case against Roe by defending state regulations requiring doctors to provide women seeking abortions with information about fet al development the risks and "unforeaceable".



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NEWS GLOBAL

Features

Washington's secret nuclear war

By Shaheen Chughtai

Tuesday 14 September 2004, 22:17 Makka Time, 19:17 GMT

Illegal weapons of mass destruction have not only been found in Iraq but have been used against Iraqis and have even killed US troops.

But Washington and its allies have tried to cover up this outrage because the chief culprit is the US itself, argue American and other experts trying to expose what they say is a war crime.



The US has drapped toppes of

Last Updated: Monday, 14 November 2005, 06:47 GMT

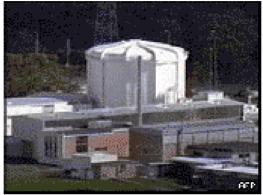
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'Nuclear link' to terror suspects

A nuclear research reactor was a possible target for a group of men arrested on terrorism charges last week in Australia, police have said.

Three of the 18 men arrested had been stopped near the reactor outside Sydney last December, a police document said.



The Lucas Heights site is the country's only nuclear reactor

Police also alleged that some of the men attended militarystyle training camps in the country's outback.

Defence lawyers say there is no evidence of a planned attack and the case is politically motivated.

The details of the police case against the men emerged as authorities in Brisbane ordered all trains and buses to stop during Monday's rush hour, following telephoned threats.

Public transport was halted between 1645 (0645GMT) and 1715, but later resumed without incident after the calls were assumed to have been hoaxes.

'Cut lock'

British Review Of Energy To Include Atomic Power

By ALAN COWELL

LONDON, Nov. 29 — Prime Minister Tony Blair announced Tuesday that Britain may reverse its current reluctance to build new nuclear power plants, despite opposition from environmental groups.

Mr. Blair's announcement reflected a nascent European debate that could presage a significant shift in energy policies. Finland in particular has already broken ranks with the opposition to nuclear power that has seized much of the Continent since the Chernobyl disaster in 1986. And while France derives around 80 percent of its electricity from nuclear power, countries like Germany and Britain may be poised to re-evaluate their previous pledges to phase out nuclear power by the early 2020's.

Mr. Blair said Britain would make its decision by next summer. And in Britain...

"Nuclear protest disrupts Blair speech," BBC News Online, (29 November 2005).

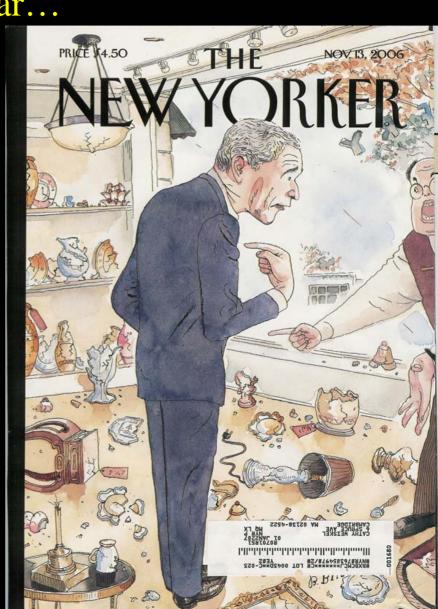
Mid or long term results of new nuclear policy are not yet clear...

What if ...?

What if we took consequentialist ethics seriously?

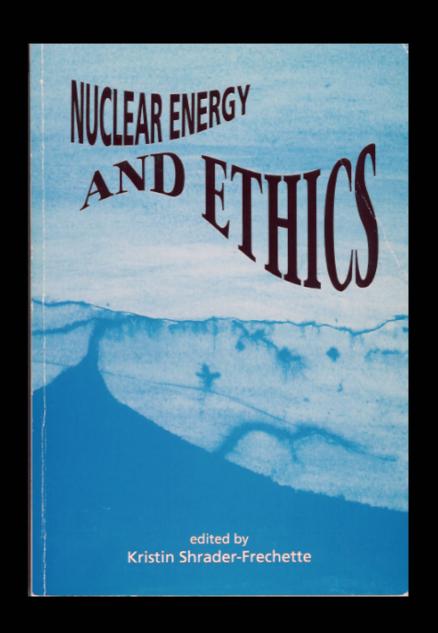
A basic principle of all consequentialist ethics can be stated simply:

"You are responsible for the predictable consequences of your own actions."



Nuclear Energy use is likely to be on the increase in the coming years....

....partially because it is being promoted as a "climate friendly" energy option.

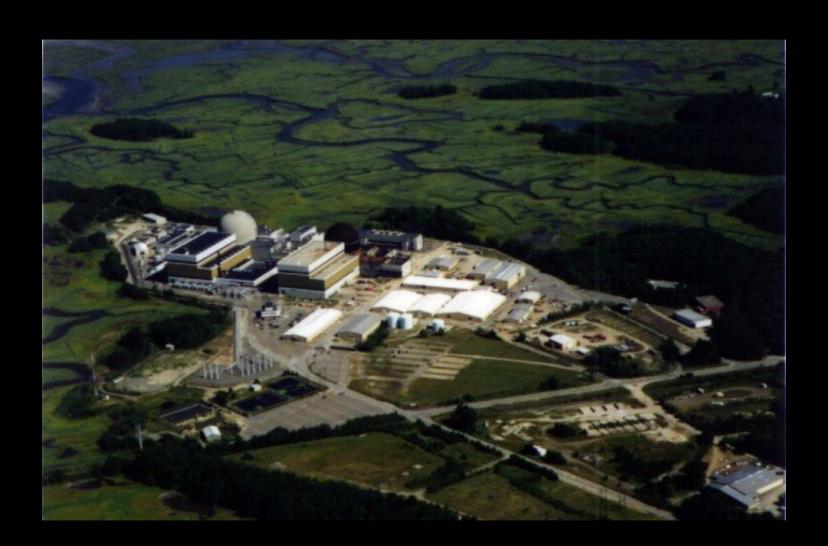




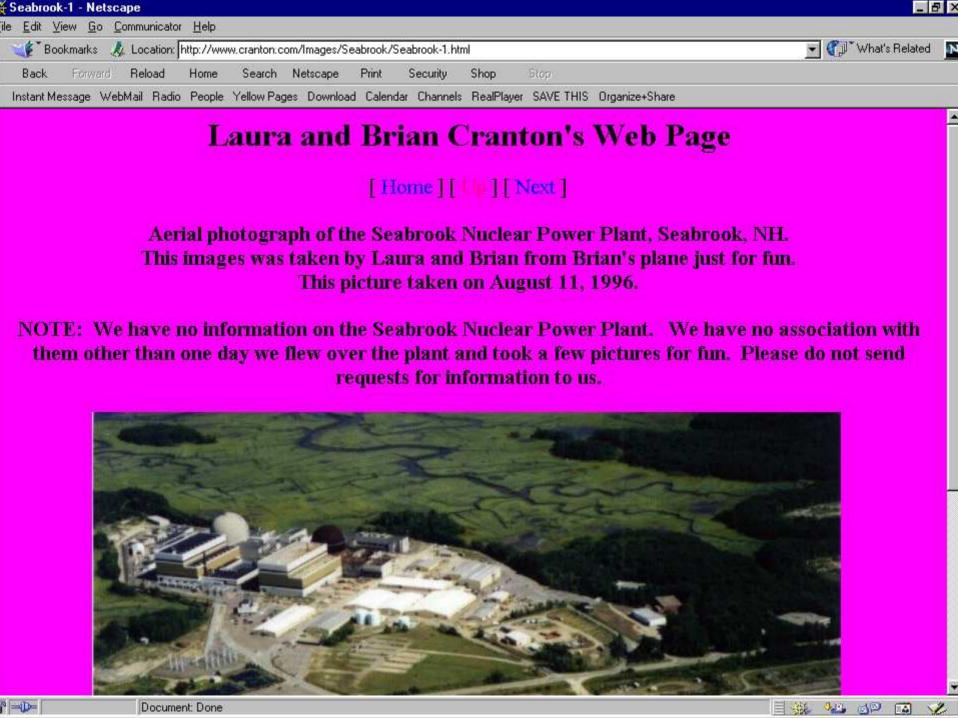












"We can't claim we haven't been warned...."



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Land Management and Waste: Toxic & Nuclear Waste Issues



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