Lecture 24

The Waste of the World

Neglected Geographies
The Waste of the World

I. Wasting Away
II. Time Bombs
III. The Six Rs
IV. Capitalist Imperatives
I. Wasting Away

A. Wastelands
B. By-Products
C. End of the Line
D. Dumps
The Trail of Extraction

- Get in, get rich, get out
Mine Wastelands

Abandoned mines across US
Oil Wastelands
Timber Wastelands

- Slash & Burn

Cutover Forest in 1911

Photo courtesy of the Wisconsin DNR
Rivers Be Damned
I. Wasting Away

A. Wastelands
B. By-Products
C. End of the Line
D. Dumping
Waste from Industry

- Waste is a normal by-product of production
- 2/3 of waste is industrial
Geography of Industrial Wastes

- Rivers, lakes & ponds
- Coast & ocean
- Groundwater – leaks & injection
- Brownfields
Construction Wastes

- Wood
- Metal
- Plastic
- Sediment
- Concrete
Agricultural Wastes

- Estimated over 4 billion tons of solid wastes are generated in the United States yearly. The sources are:
  - Animal Wastes 50%
  - Mining & Refining 27%
  - Agricultural 14%
  - Industrial 3%
  - Municipal 6%
Living Downstream

- Waste dispersal
- Downwind
- Downstream
- Underground
- Out to sea

Bay Area oil refinery flares make emissions soar
I. Wasting Away

A. Wastelands
B. By-Products
C. •End of the Line
D. Dumps
Post-Consumer Waste

- Household trash
  - Vast & varied
- Fuel & fumes
- Cars, heating, etc.
- Human waste
- & Pets, too

2003 Total Waste Generation—236 Million Tons (before recycling)

- Paper 35.2%
- Yard Trimmings 12.1%
- Food Scraps 11.7%
- Plastics 11.3%
- Metals 8.0%
- Rubber, Leather, and Textiles 7.4%
- Glass 5.3%
- Wood 5.8%
- Other 3.4%
Wasted Products

The Guardian
John Vidal, Friday April 15, 2005

More than 30% of food is thrown away in the UK.

15% in manufacturing and 21% in distribution, retailing and consumption.

It is estimated that the wasted food is worth between £8bn and £16bn a year.

....modern food production methods may appear efficient, "but the reality is that large-scale manufacturing and rigid supply chains are creating very significant quantities of waste".
I. Wasting Away

A. Wastelands
B. By-Products
C. End of the Line
D. Dumps
Mass Wasting

The endpoint of mass production

- Solid waste
  - 236 million tons per year, US
  - 4.5 pounds per person/day

- Sewage (liquid waste)
Garbage Collection

- Geography of garbage
  - Cans & dumpsters
  - Truck routes
  - Transfer stations
  - Recycle stations

- Municipal waste is, at most, 20% of the reported total waste stream, according to state of Pennsylvania estimate
Endgame: Municipal Dumps

- Sanitary Landfills (not)
Hinter-landfills

Regional Waste-by-Rail System
- Puente Hills MRF
- Other MRFs
- Other MRFs
- C&D Local Rail Yards
- Other Local Rail Yards
- Regional Landfill

In-County Transfer Facilities

Waste-by-Rail Landfills
The Waste of the World

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II. Time Bombs

Catastrophic effects of mass wastage

A. The Oily Bird Gets It
B. You Are What You Eat
C. Out of Sight, Out of Mind
D. We’re Just Warming Up
Accidents Waiting to Happen

- OOPS!
Blowout!

- Deepwater Horizon only the latest
  - E.g., Itox 1979, Niger Delta
II. Time Bombs

A. The Oily Bird Gets It
B. *You Are What You Eat*
C. Out of Sight, Out of Mind
D. We’re Just Warming Up
Hazardous wastes

- Discovery of toxic dumping
- RCRA & Superfund (1980)
- Special toxic dumps
Ubiquity of toxic wastes

- Wastes don’t always end up at the dump
- The dump is YOU!

“Current 'normal' body burdens of dioxin and several other well-studied organochlorines in humans are at or near the range at which toxic effects occur in laboratory animals.”
- Michael McCally, M.D., Ph.D., Mount Sinai School of Medicine

“The head of the EPA said that fish in virtually all of the nation's lakes and rivers were contaminated with mercury.”

II. Time Bombs

A. The Oily Bird Gets It
B. You Are What You Eat
C. Out of Sight, Out of Mind
D. We’re Just Warming Up
Offshoring Waste

Are some places ‘under-polluted’?

Asks Larry Summers of World Bank, Harvard & US Treasury

ASSOCIATED PRESS, SEPTEMBER 26, 2006

Authorities in Ivory Coast asked Estonia to hold a tanker that left hundreds of tons of toxic waste in the West African nation's main city, as another death was attributed to the foul-smelling substance....
E-waste

- Fastest growing part of waste stream in US
- Ubiquity & obsolescence
- 130,000 PCs discarded every day
- 2 million tons per year
Where do computers go to die?

- Toxic materials
  - Lead, mercury, cadmium, chromium
  - Flame retardants
  - PCBs

- Lack of recycling
  - <15%
E-waste in China
Comes back to haunt

- Gases from burning plastics in China arrive in US in 6 days

- (Photo of dust from Gobi desert seen from Hawaii)
II. Time Bombs

A. The Oily Bird Gets It
B. You Are What You Eat
C. Out of Sight, Out of Mind
D. We’re Just Warming Up
Greenhouse Gases

- Carbon dioxide (CO$_2$)
- Methane (CH$_4$)
- Other traces
Growing Sources

- Fossil fuel burning
  - By far the greatest
- Cement
- Cattle
- Deforestation
Global Warming

Trends in Atmospheric CO₂ & Global Surface Temperature

The last 400,000 Years

Data Sources:
- Atmospheric CO₂, past 300 years ago and Antarctic Surface Temperature, past 100 years ago: J. Good, J. R. Geider, et al., PNAS volume 102, 2005, page 18,195-18,199.
- PAGES 2K and atmospheric history of the past 100,000 years from the Weddell Ice Shelf, Antarctica. Nature 399:794–796.
- Variations in Earth’s surface temperature - past 1,000 years: Variations in degrees C (relative to 1961-1990 average).

Source: IPCC
Effects – Global & Local

- Droughts & famine
- Storms & floods
- Coastal inundations
- Habitat change & extinctions

(map showing land that would be underwater if sea level rises 5 feet)
The Waste of the World

I. Wasting Away
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III. • The Six Rs
IV. Capitalist Imperatives
III. The Six R’s: Responses

A. • Restore
B. Re-engineer
C. Replace
D. Reduce
E. Recycle
F. Regulate
Land Restoration
III. The Six R’s: Responses

A. Restore

B. Re-engineer

C. Replace

D. Reduce

E. Recycle

F. Regulate
Reduction in Production

Production change is more important than consumption

- Closed process systems
  - Recycle materials, energy & water
- Process redesign
  - For less waste, energy & water use
- Products from by-products
  - Finding new uses, e.g. sausage, glue
- Electricity generation
  - Less fossil fuel, more solar/wind/wave
III. The Six R’s: Responses

A. Restore
B. Re-engineer
C. Replace
D. Reduce
E. Recycle
F. Regulate
Investing in New Technologies

- More efficient machinery
- More efficient buildings
- More alternative power sources
- More efficient vehicles

*It all has to be replaced every generation, so why not do it right?*
III. The Six R\textquotesingle s: Responses

A. Restore
B. Re-engineer
C. Replace
D. \textbullet Reduce
E. Recycle
F. Regulate
Reduce Excess Consumer Waste

- Less packaging
  - Most is for sales
- Product redesign
  - Save materials & energy
    - cars, electronics, lighting
- Urban redesign
  - More efficient homes
  - More efficient transport
  - Greater density
III. The Six R’s: Responses

A. Restore
B. Re-engineer
C. Replace
D. Reduce
E. •Recycle
F. Regulate
Recycling

- Recycling systems
  - Separation, collection, sorting, resale

- Incentives & forcing
  - Special containers & collections
  - Bottle bills
  - Dumping bans
    - California ban on dumping e-products (2006)

- Product regulation
  - Eliminate toxics, packaging, etc.
III. The Six R’s: Responses

A. Restore
B. Re-engineer
C. Replace
D. Reduce
E. Recycle
F. •Regulate
Strong Government Action

- Market solutions won’t work
  - E.g., Carbon trading
- Need clear limits
  - Enforcement & Penalties
- Use incentives
  - Subsidies
  - R&D
How Much Reform is Possible?

- Limits of land restoration
- Limited control of industry
- State not free to act
- Consumers not organized
Is Recycling the Answer?

- Quality poor
  - Mixed up
  - Contaminants
  - Materials suffer

- Markets limited
  - Plastic very hard to reuse
  - Need bottle deposits
  - Need more composting
  - Paper competes with woo
The Waste of the World

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IV. •Capitalist Imperatives
Why So Much Waste?

- Population?
  - Blame it on the poor
- Lifestyle?
  - Blame it on the middle class
- Industrialization?
  - Blame it on technology
- Capitalism – the driver
  - Downside of economic growth & industrialization
  - 5 faces of the capitalist imperative
IV. Capitalist Imperatives

A. • Earthly Riches
B. Externalize!
C. Throughput
D. Sales Pitch
E. Wheel of Fortune
Exploiting Nature

- The endless frontier
  - 500 years of slash & burn
  - Now it’s the oceans, the arctic, the climate...

- Why slash & burn?
  - Commodification – it’s just ‘natural resources’
  - Quick profit
  - Nature can’t fight back
  - (Sustainability? Ha!)
  - Goes against capitalist logic
IV. Capitalist Imperatives

A. Earthly Riches
B. •Externalize!
C. Throughput
D. Sales Pitch
E. Wheel of Fortune
Offloading Costs

- Profit by cost minimization
  - On my property
- External costs don’t count
  - Harm to property of others
  - Harm to the commons (public resources)

  **Tragedy of the commons?**
  - Only after capitalism kicks in
    - E.g., salmon

- When constrained, move offshore...
IV. Capitalist Imperatives

A. Earthly Riches
B. Externalize!
C. • Throughput
D. Sales Pitch
E. Wheel of Fortune
Forcing Production

- Greater output
  = Greater throughput
  = Rising mass of materials, energy & water
  = Greater waste
  • Despite greater efficiency

- Why ever-rising output?
  • More goods = more value = more profit
  • + Higher productivity = more surplus value = more profit
IV. Capitalist Imperatives

A. Earthly Riches
B. Externalize!
C. Throughput
D. Sales Pitch
E. Wheel of Fortune
Selling Stuff

- Rising consumption
  - Of all that output...but why?
- Rising standard of living
  - Higher incomes & falling prices
- How much is enough?
  - Capital knows no limits
- Capitalists must sell, sell, sell
  - Seduce, implore & convince
  - Yes, they are Madmen
Shop Until You Drop!

Why do we go along with it?
- Contentment – yes, life is better…
- Comparison – keeping up with Joneses
- Compensation – for what’s missing
- Compulsion – It’s our way of life

lust for shoes

More funny pictures at www.afunworld.com
IV. Capitalist Imperatives

A. Earthly Riches
B. Externalize!
C. Throughput
D. Sales Pitch
E. •Wheel of Fortune
The (Gerbil) Wheel of Capital

- “Accumulate, accumulate, that is Moses and the Prophets!”
  - K. Marx on the logic of capitalism

- Without ever-rising production & consumption…
  - Endless investment & profit
  - Capital accumulation slows down
    - And crisis sets in…

- “Growth for growth’s sake is the ideology of the cancer cell”
  - David Brower, Sierra Club, on the logic of US economy
LAST THOUGHTS

- "Philosophers have hitherto only interpreted the world in various ways; the point is to change it" - Karl Marx

- Three 3 most important R’s
Rethink Your Life

- What do we really want?
- What is a virtuous life?

- Does he who has the most toys win?
- Can you take it with you?
Reclaim the commons

- This isn’t just about YOU
- The Earth belongs to everyone
- It is more than private property, natural resources, or a dump
“Rage Against the Machine” – Mario Savio

- Nothing will change
  - Without an alternative vision
  - Without a sense of urgency
  - Without popular struggle
  - Without a mass movement

- Without less profit & slower accumulation
  - Without capitalism??
Have a good holiday!

But don’t get carried away…