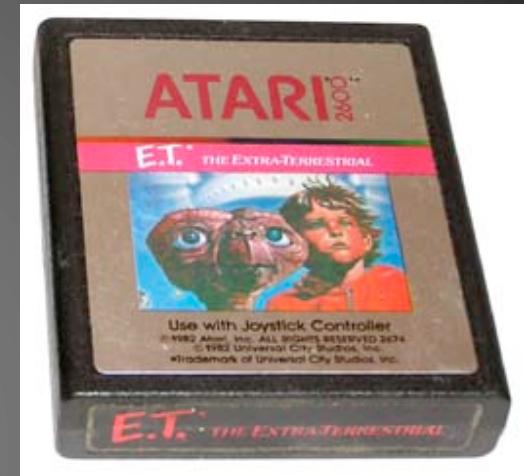


# Class Business

- Group Project
  - 8-9 groups, different ethical dilemmas
  - Form groups in class today/ Wednesday 10/24
  - Scenarios, group lists will be on GS next week
  - Set up blogs by Monday 10/29 - update as you go
  - Most meetings outside of class
  - Final week are group presentations (12/3-12/5)

# Our Disposable Technological Culture

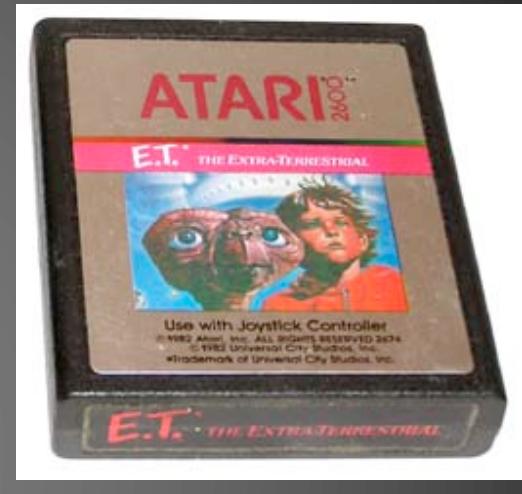


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November 1982

# Our Disposable Technological Culture



April 2014

# Technology in the Developing World: The Good, Bad, and Ugly

## - E-Waste & One Laptop Per Child (OLPC)

**Issues:** technology & innovation vs. globalization, pollution, poverty...

1. How should industrialized nations (**MNCs**) interact w/ **developing world**?
2. Who should safeguard **health , economic, environmental** concerns?
3. What should **guiding ethics** be?
4. What **rights/duties** are in conflict?
5. Is tech what poor nations **really need**?



# E-waste, NIMBYism, & Engineering Ethics

Boom in sales of PCs, cell phones, games, etc. = good & bad

- strong electronics industry (CS#1)
- fastest growing waste problem
- In U.S. alone:
  - 142K PCs & 416K phones/day
  - 11.7 mil tons e-waste / year
  - 33% jump by 2021 predicted
  - Only 29% recycled (2012)
  - 65 mil. tons worldwide by 2018...
    - (200-300 tons by 2030)
  - 75% of all PCs are now trash
  - Most “recycling” is just exporting trash



# Regulating E-Waste

Basel Convention (1989) &  
Basel Agreement (1992)



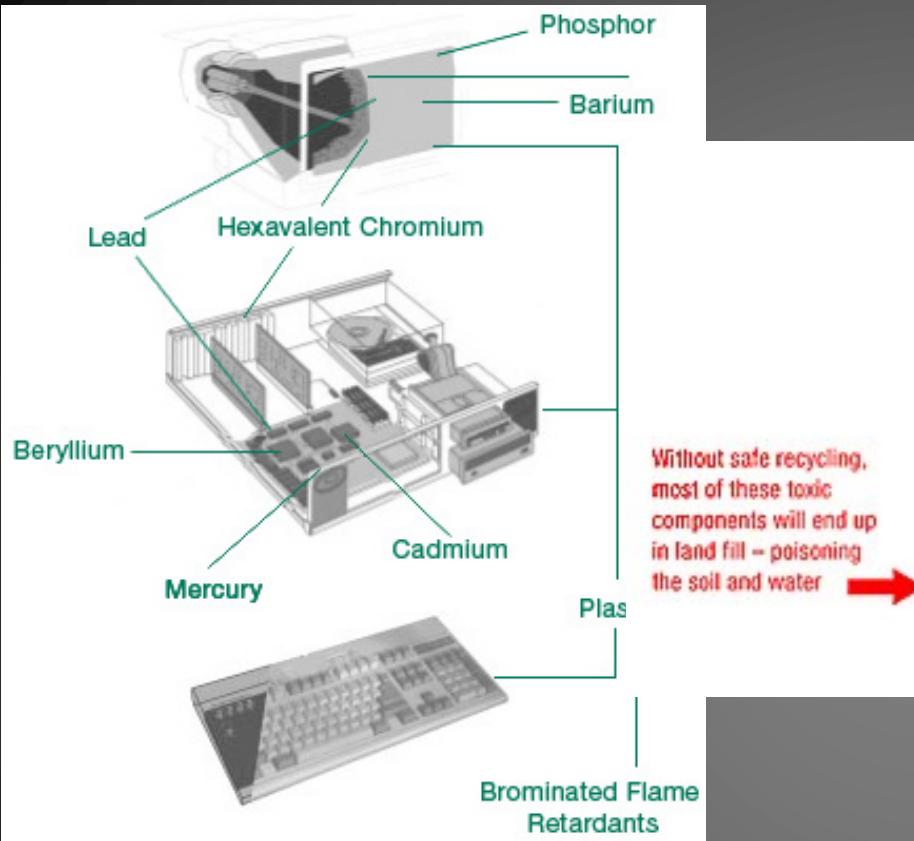
- 166 signatories; 3 unratified
- 1. Reduced transportation to poorer nations
- 2. Ensure environmental guidelines
- 3. Notification of shipments

Basel Ban Amendment (1995)

- 63 signatories
- Dumping continues...



# E-waste Health issues



E-Waste Toxic Components and their Damage to Human Health

Toxic Materials	Birth Defects	Brain Damage	Heart, Liver, Lung & Spleen Damage	Kidney Damage	Nervous/Reproductive System Damage	Skeletal System Damage
Barium		X	X			
Cadmium	X		X	X	X	X
Lead	X	X		X	X	
Lithium	X	X	X	X	X	
Mercury	X	X	X	X		
Nickel	X		X	X	X	
Palladium	X	X	X	X		
Rhodium			X			
Silver	X	X	X	X	X	

34 distinct toxic substances: lead, cadmium, mercury, hexavalent chromium, plastics, brominated flame retardants



# Where Do Old Computers Go To Die?

## Known and Suspected Routes of e-waste Dumping



There is currently no system for tracking legal or illegal (under international law) shipments of electronic waste, and therefore, there is no quantitative data on volumes or even all of the true destinations. Some electronic waste is shipped as "working equipment" only to end-up as waste upon arrival. This map indicates information collected through investigations by organizations such as the Basel Action Network, Silicon Valley Toxics Coalition, Toxics Link India, SCOPE (in Pakistan), Greenpeace and others.

# Where Do Old Computers Go To Die?

Guiyu, China

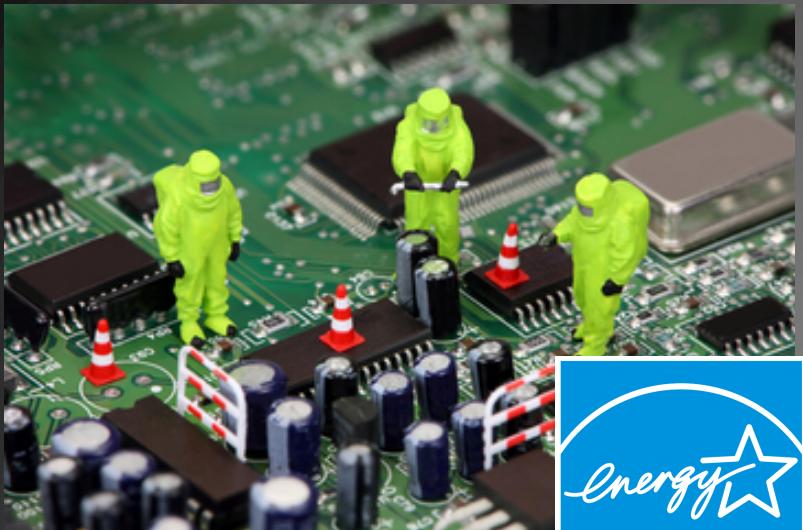


# Where Do Old Computers Go To Die?

Lagos, Nigeria



# What Can Be Done about E-Waste?



- Ethics seem clear:
  - Stop dumping
  - Recycle safely
  - Legislation (WEEE/EWRA)
- But very difficult to monitor/ lots of loopholes, corruption
- Whose responsibility?  
Corporations? Gov't? Watch Groups? Consumers?
- *Greenpeace Guide to Greener Electronics*
- Under 30 the worst recyclers?

# Globalization's Worst/ Best Case Scenarios



- Neo-colonialism
- National security
- “Green” technology
- Corporate power
- Fighting disparity through better engineering

