Paper or Plastic?

Searching for Solutions to an Overpackaged World

Timber and Forests

Petroleum and Corn

Renewable and Reusable

- Packaging is a $500 billion global industry
- Nearly 60 percent of all packaging is for food and beverages
- Europe, North America and Japan consume nearly 2/3 of all packaging

- Over half of packaging is wood-based
- In the U.S. alone, 315 million disposable drink cups are used *every* day
- Global packaging grew at about 3.95% between 1993-2003
- More than 800 pounds of packaging per person per year in U.S.

The Packaging Stream

Upstream vs. Downstream

90%

UPSTREAM
Raw materials
Processing
Design
Manufacture
Transportation

10%

DOWNSTREAM
Recovery
Reuse
Recycling
Landfilling
Incineration
Litter

What it Does ...

Product protection

Convenience and pleasure

Safety and hygiene

Nutrition

Spoilage prevention

Information and Branding

Transportation and trade

What it Takes to Do ...

Energy

Water

Raw materials

Design

Labor

Transportation

Infrastructure

What Doing it Takes

Airborne emissions

Waterborne emissions

Solid Waste

Habitat impacts

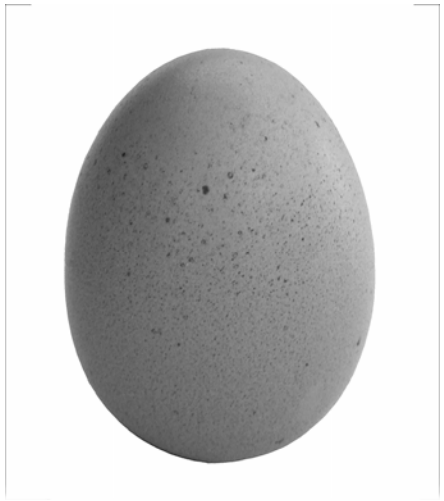
Climate impacts

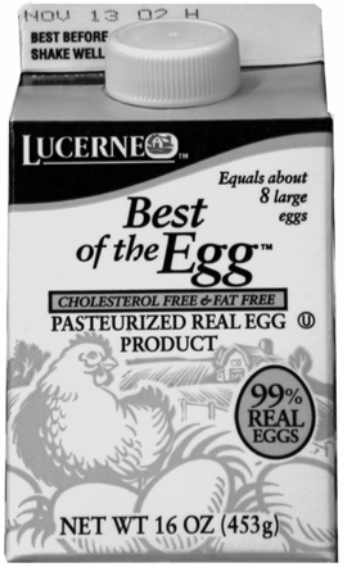
Human community impacts

Cultural, economic, ecological concerns

- Packaging eliminates traditional producer/customer relationships
- Packaging increases distances between producers and consumers
- Many food and beverage packages have shelf-lives thousands of times longer than the actual product

The de-evolving food chain



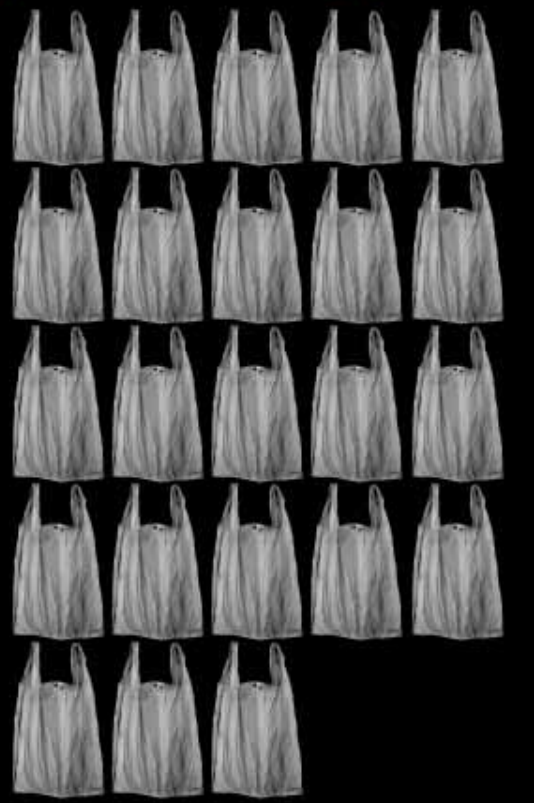


A plastic bag takes 1,000 years to decompose

CBC News, Monday April 2, 2007

FEBRUARY 2008

This whale washed up on a British beach. In its stomach...the remains of 23 plastic bags



Faith in the packaged versus the natural and unprocessed

In an environment that is screwed up visually, physically, and chemically, the best and simplest thing that architects, industrial designers, planners and others could do would be to stop working entirely.

But it seems to me that we can go beyond not working at all and work postively.

Victor Papanek
Design for the Real World

Extended Producer Responsibility

DER GRÜNE PUNKT

Essential Requirements

- Materials must be separable and recoverable
- Degradable packages must be organically recoverable
- Packages must be as small as possible
- Packages must be free of noxious substances
- Preference for reusable materials

Some existing actions on plastic bags

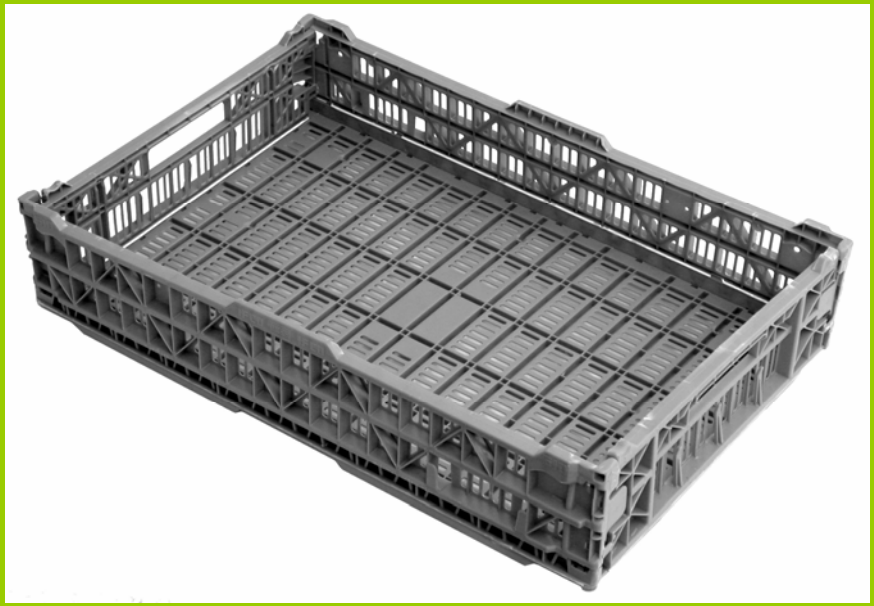
Ireland	2002	Plastax of 15 cents had immediate impact; raised to 22 cents in 2007 to renew impact after 30 bag per capita report
Leaf Rapids, Manitoba	April 2007	Total ban; $1,000 per day fine for ignoring ban
San Francisco Oakland	March 2007 June 2007	Compostable bags only Retailers with more than $2m in sales or 10,000 Sq. Feet
Los Angeles	June 2007	Under study
Ikea	2007	5¢ per bag; 59¢ reusable cloth bags

Source Reduction

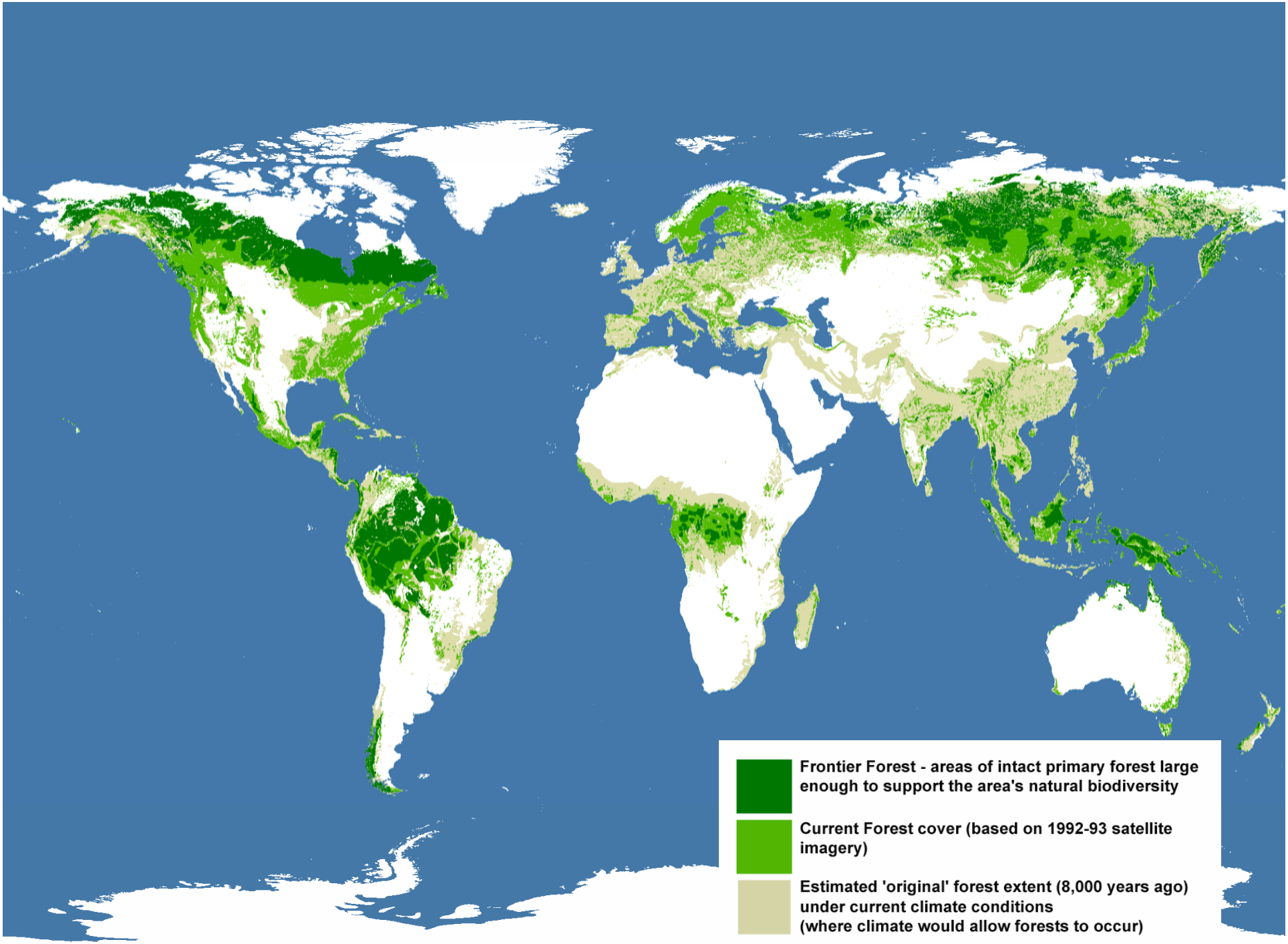
Source Reduction

- Reduce package weight and volume
- Minimize the number of materials
- Reduce energy consumption
- Maximize post-consumer content
- Strengthen or reformulate the product
- Eliminate a material or element

Wood Reduction



- Source reduction
- Source avoidance
- Source substitution
- Source protection
- Source certification
- Natural Capital Accounting


Frontier Forest - areas of intact primary forest large enough to support the area's natural biodiversity
Current Forest cover (based on 1992-93 satellite imagery)
Estimated 'original' forest extent (8,000 years ago) under current climate conditions (where climate would allow forests to occur)

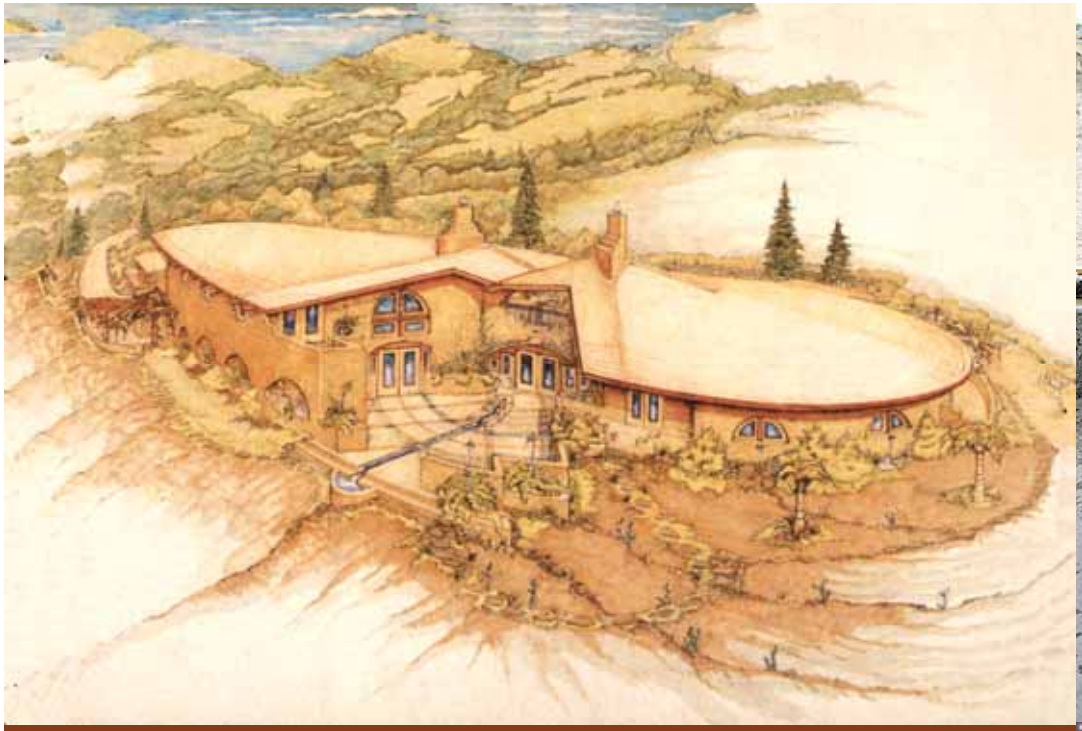
The Benefits of Switching to 35 percent postconsumer recycled content for medicine or cosmetics paperboard

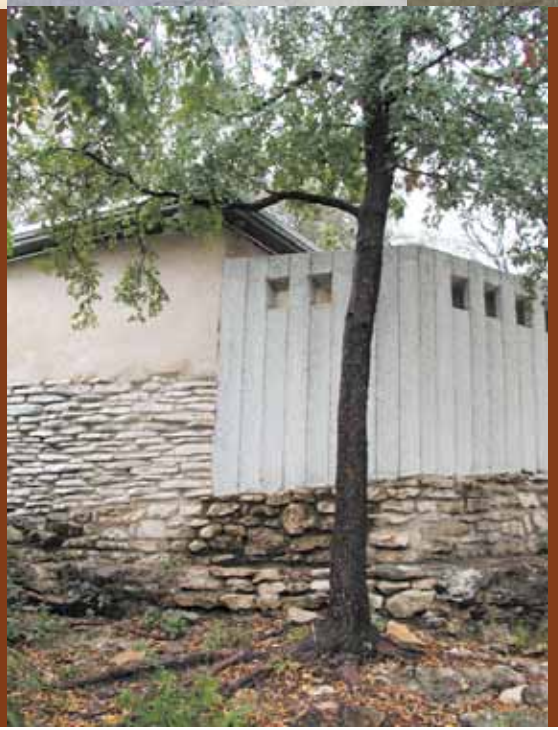
Annual Benefit	Annual Equivalent
•156,000 tons of greenhouse gases	•CO2 from 27,00 cars driven 200 miles per week
• 2.6 billion gallons of wastewater	•Wastewater from 27,000 households
• 510,000 trees	• Copy paper for 11m people
• 106,000 tons of solid waste	•Trash generated by 49,000 households

Natural Systems Design

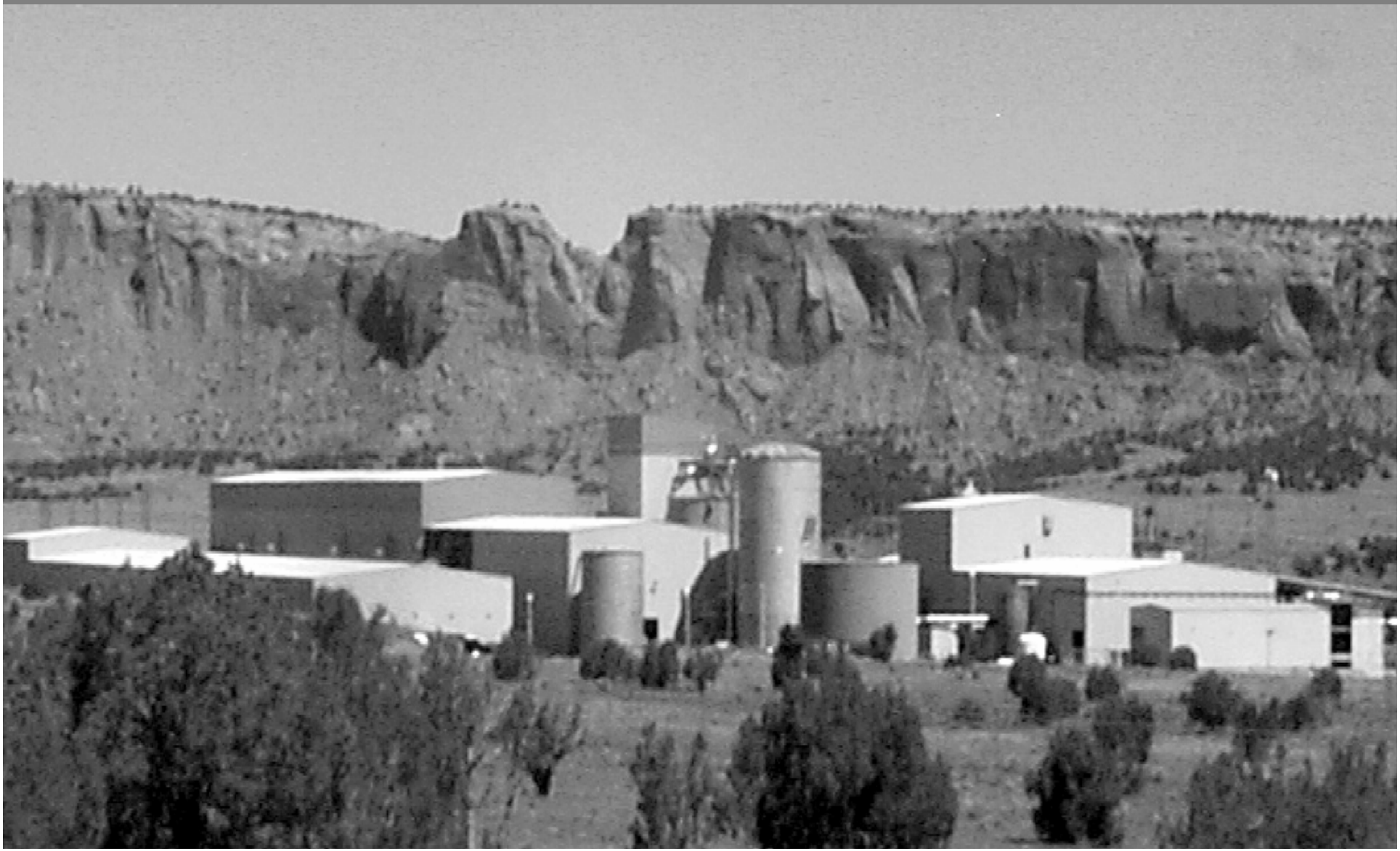
Natural System Design Elements

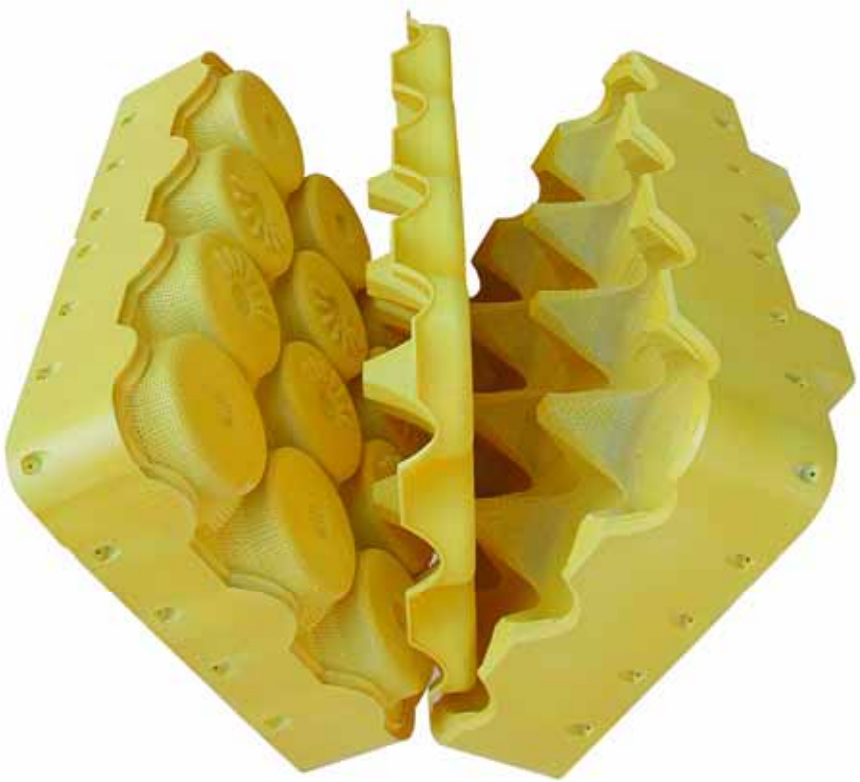
- Sound
- Solar
- Efficient
- Cyclic
- Humane
- Safe
- Conservation-based
- Nature Inspired Designs





Mini-mill Technologies





Third-Party Certified Materials

Forest Stewardship Council Certification

- Conserve forests' economic resources
- Recognize and respect rights of indigenous peoples
- Protect biological diversity
- Regular monitoring and assessment

Bioplastics — The *"Cornification"* of Packaging

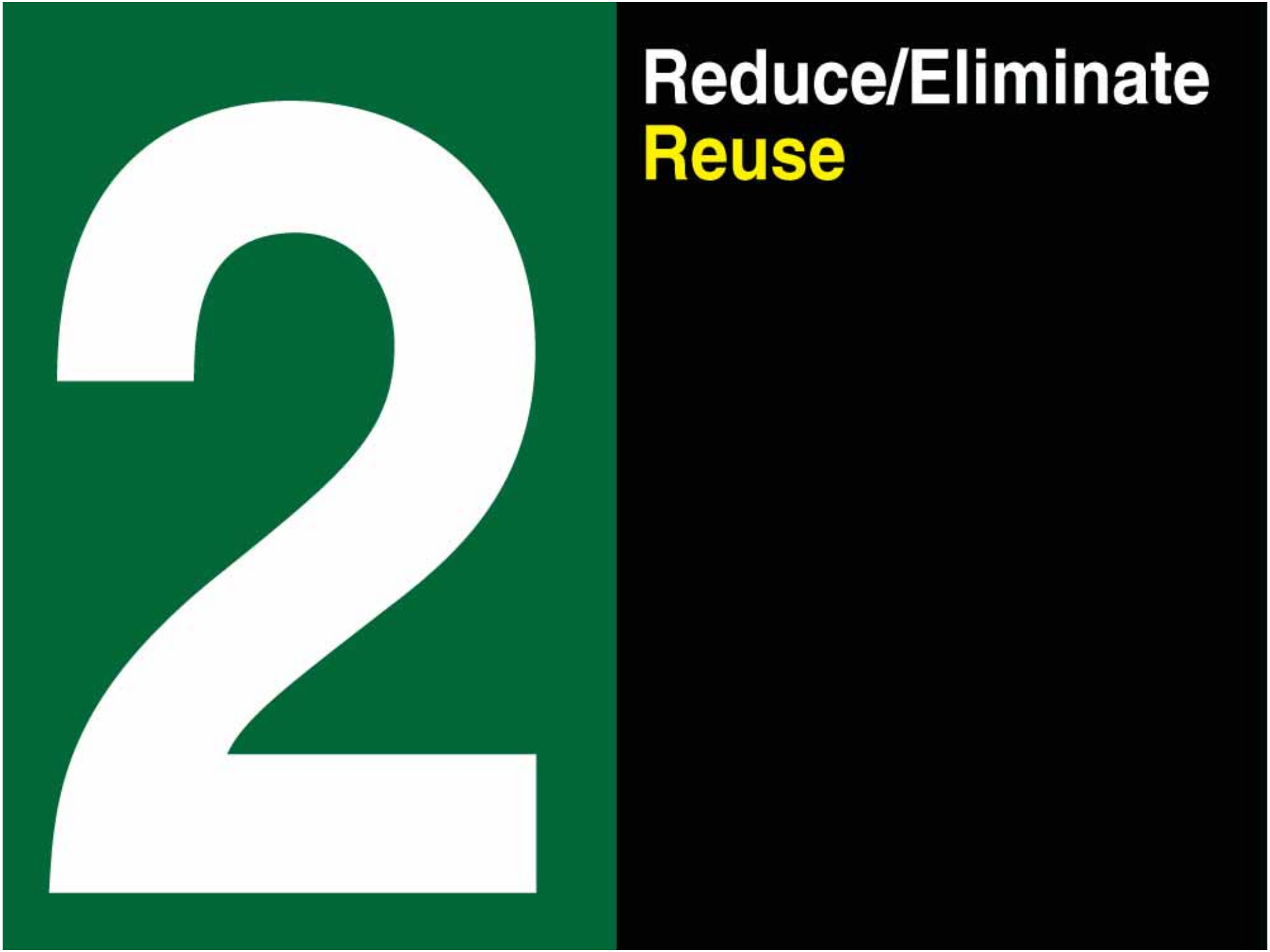
- Corn dominates the United States landscape and creates a "Dead Zone"
- Corn requires more synthetic fertilizers and pesticides than nearly any other crop
- Genetically modified corn varieties now contaminate seed banks in U.S. and Mexico

The Global Revival of Local Economies


Refill Station
Open Door - Insert empty 64 oz. bottle
Close door to start refill
Take product and coupon to register
TEAR-OFF
$1.00 COUPON

1

Reduce/Eliminate


2
Reduce/Eliminate
Reuse


3
Reduce/Eliminate
Reuse
Recycle/Compost

Aluminum
Steel
Glass
Paper
Rigid Plastic:
1, 2, 4, 5
Film Plastic:
2, 4

Reduce/Eliminate
Reuse
Recycle/Compost


4
Reduce/Eliminate
Reuse
Recycle/Compost
Incineration for
energy


5
Reduce/Eliminate
Reuse
Recycle/Compost
Incineration for
energy
Landfill


6
Reduce/Eliminate
Reuse
Recycle/Compost
Incineration for
energy
Landfill
Litter

Myth

A recycling symbol means that a product will be recycled

Reality

Some materials (paper, aluminum, steel) are recycled; many materials even if collected are not recycled

Myth

Wood is preferable to plastic

Reality

Not in all cases

Myth

We have plenty of land to dispose of our packaging wastes

Reality

We're running out of land and waste is an internationally traded commodity

Myth

Recycling is a waste of energy

Reality

Recycling can be extremely energy-efficient

Myth

Life Cycle Analysis is scientifically-based and trustworthy

Reality

A Life Cycle Analysis is important, but not definitive

Some General Rules

Packaging is on the rise and recycling is in decline, particularly for most plastics

Some General Rules

Post-consumer materials generally reduce manufacturing impacts compared to virgin materials

Recycled Aluminum
10 BTUs per gram

Virgin Aluminum
182 BTUs per gram

Some General Rules

Reusable containers in localized areas are generally more efficient than single-use disposable solutions

Reusable Glass

Theoretically Recyclable

Some General Rules

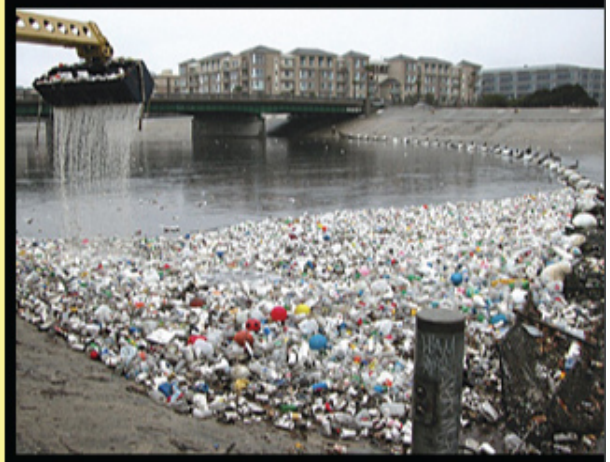
Larger volume containers are more efficient than single-serving containers per weight of contents

If all Stoneyfield Farm Yogurt was sold in 32 oz. containers . . .

Instead of 8-oz containers, it would save 11,250 barrels of oil

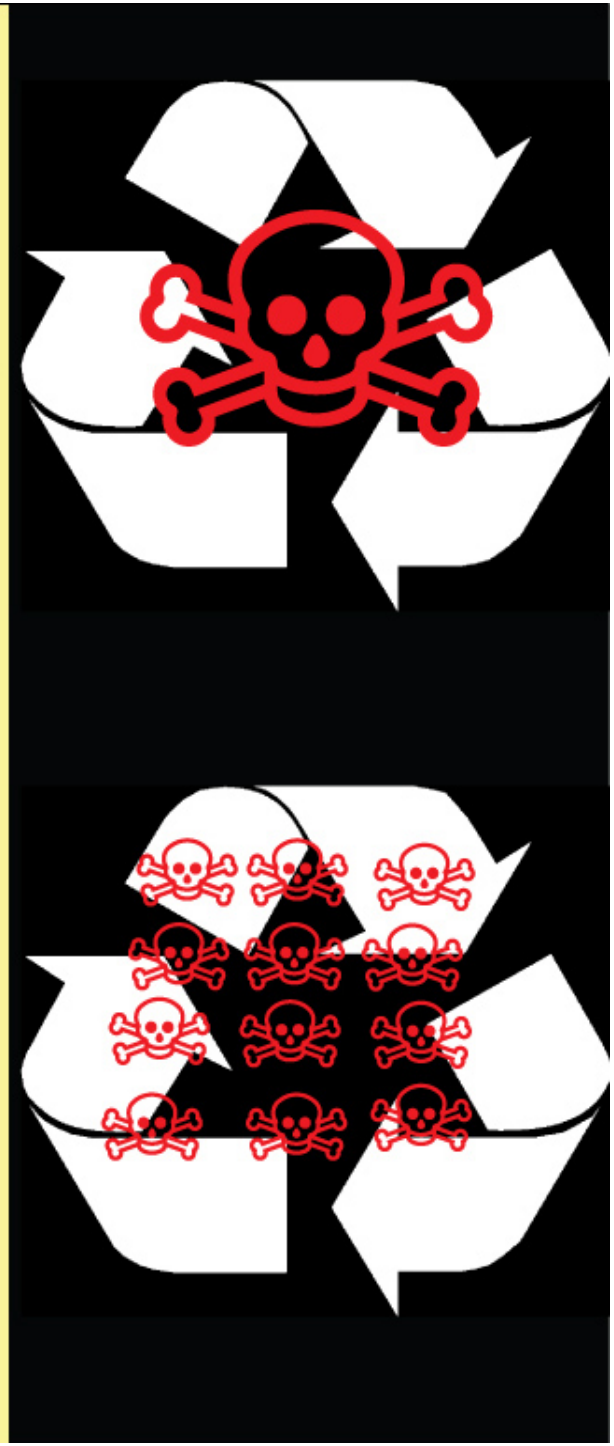
Some General Rules

Manufacturing impacts are far greater than collection/reuse/ recycling/disposal impacts



Some General Rules

Recycling toxic materials ultimately creates more toxic materials



Packaging Guidelines

- Designed from a whole systems perspectives
- Contains no ancient forest fibers; virgin fibers come from a verified third-party source
- Avoids hazardous chlorine compounds, heavy metals, and other toxins
- Can be reprocessed within local and regional resource loops whenever possible

More Thoughts …

- Uses as few materials as possible and breaks down easily into reusable or separable elements
- Considers how a redesigned or reformulated product can affect packaging
- Is only as large as it needs to be
- Is safe for all species and habitats
- Has been optimized through some form of life cycle study

More Thoughts …

- Is information-intensive as opposed to material- and energy intensive
- Contains as much post-consumer recycled or agricultural waste materials as possible
- Attempts to close the gap between the life span of its materials and the shelf-life of the product it packages

- *Paper or Plastic: Searching for Solutions to an Overpackaged World*
- *Building with Vision: Optimizing and Finding Alternatives to Wood*
- *Farming with the Wild: Enhancing Biodiversity on Farms and Ranches*

www.watershedmedia.org

DON'T LET YOUR CUP GO TO WASTE

Re-used 1,000 times

Used only 1 time


Fresh-O

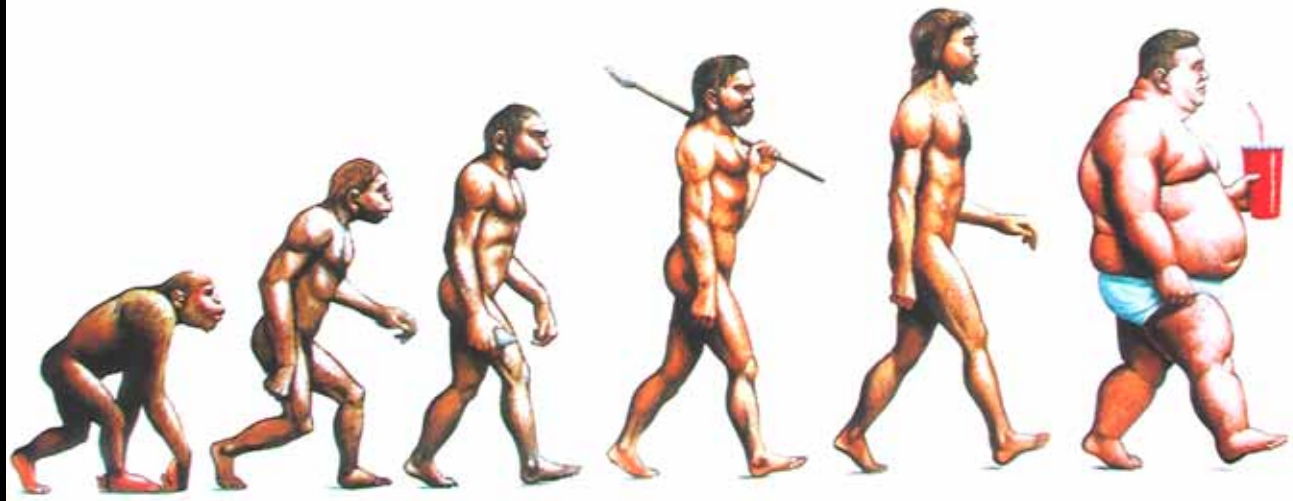
The Package *is* the Product

Predatory Packaging

The Economist

DECEMBER 13TH–19TH 2003 www.economist.com

The shape of things to come



It is possible to believe both that some packaging is essential, and that the trend is still toward increasing waste in packaging. Waste could result from a competitive “arms race” in which one company adopts larger, more elaborate packaging solely to compete with another company’s larger more elaborate packaging, in the struggle to win the attention of consumers.—*Frank Ackerman, Tufts University*

Extended Producer Responsibility, 2004

Retailer Responsibility