Up-cycling & Questions it Brings Up.

7th Annual Sustainable Business and Design Conference

“People, Planet, and Prosperity”

April 9, 2013
Sustainable development involves
“...meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainable Development

The Triple Bottom Line: Ecology, Economy, Society
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The Triple Bottom Line:
Ecology – saves natural resources
Economy – can be fiscally responsible
Society - ?

What is “Up-cycling”?
Recycling – Downcycling – Upcycling

- **Recycling** is processing used materials (waste) into new products to prevent waste of potentially useful materials, reduce the consumption of fresh raw materials, reduce energy usage, reduce air pollution (...) and water pollution (...) by reducing the need for "conventional" waste disposal, and lower greenhouse gas emissions as compared to virgin production…” “Recycling.” *Green Wiki.* Web. 4 Mar. 2012.

- **Downcycling** is the process of converting waste materials or useless products into new materials or products of lesser quality and reduced functionality.” “Downcycling.” *Green Wiki.* Web. 4 Mar. 2012.

- **Upcycling** is the process of converting waste materials or useless products into new materials or products of better quality or a higher environmental value.” “Upcycling.” *Green Wiki.* Web. 4 Mar. 2012.

I know: **Upcycling** is the opposite of downcycling!!! But what does this mean?
Recycling – Downcycling – Upcycling

- Reduce the consumption of new raw materials.
Only sun has unlimited supply
Recycling – Downcycling – Upcycling

- Prevent wasting potentially useful materials.
Recycling – Downcycling – Upcycling

- Limit waste stream.
Solid waste = Land & Soil Degradation & Pollution

- No space for landfills
- Leachate
- Methane
Recycling – Downcycling – Upcycling

- Can reduce air, water, and soil pollution.
Recycling – Downcycling – Upcycling

- Can reduce energy use and limit greenhouse gases emissions.
Greenhouse Gases Emissions = Climate Change
Times Square, New York, 2100?
Greenhouse Gases Emissions = Climate Change
Little Ferry, New Jersey, 2012
Greenhouse Gases Emissions = Climate Change

Downtown, New York City, 2012
Recycling – Downcycling – Upcycling

Unquestionable benefits:

- Reduces the consumption of new raw materials.
- Prevents wasting potentially useful materials.
- Limits waste stream.
- Can reduce energy use and limit greenhouse gases emissions.
- Can reduce air, water, and soil pollution.
Up-cycling on a Big Scale: Adaptive Re-use

- Whole structures: High-line, New York

Diller Scofidio + Renfro, 2009, previously railroad tracks.
Up-cycling on a Big Scale: Adaptive Re-use

- Whole structures: Tate Modern, London

Herzog and De Meuron, 2000, previously power plant.
Up-cycling on a Big Scale: Adaptive Re-use

- Interior spaces – Chelsea Market, New York

Vandeberg Architects, 1998, previously NABISCO factory, office and railroad complex.
Up-cycling on a Big Scale: Adaptive Re-use

- Interior spaces – Phoenix Career Academy, Brooklyn, New York.

Phoenix House, 1999, former paint factory.
Up-cycling: Reclaiming objects

- One of a kind furniture - art pieces
- Reclaimed – re-purposed – up-cycled
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Up-cycling: Reclaiming materials

- One of a kind furniture - art pieces
- Reclaimed – re-purposed – up-cycled
  - Wood from pallets,
  - Siding from barns,
  - Old floors,
Up-cycling: Reclaiming materials

- One of a kind furniture/furnishings - art pieces
- Reclaimed – re-purposed – up-cycled
  - Used tires
  - Rubber boots
  - Cork left out from production of wine corks
  - Seats of chairs woven from left out automobile seat belts orders.
Questions/Concerns

- Is it just a fashion or fad that is appealing to particular section of society?
- Why is it appealing?
What is biophilia?

“What is biophilia?

“The connections that human beings subconsciously seek with the rest of life”

Edward O. Wilson
What is biophilic design?

Design determined by “recognition that the human mind and body evolved in sensorially rich world, one that continues to be critical to peoples’ health, productivity, emotional, intellectual, and even spiritual well-being.” S. R. Kellert & J.H. Heerwagen
Upcycling and Biophilic Design

Two basic dimensions of biophilic design:

- Organic or naturalistic dimension (shapes, forms, processes)
- Place-based or vernacular dimension (connection)

Railing detail, Basilica of San Marco, Venice & Eden Project in Cornwall, England
Upcycling and Biophilic Design

The two basic dimensions of biophilic design can be related to six design elements (“tools” for designer) that reconnect building occupants with nature and place:

- Environmental features
- Natural shapes and forms
- Natural patterns and processes
- Light and space
- Place-based relationships
- Evolved human relations to nature
Upcycling and Biophilic Design

- Natural Patterns and Processes – incorporation of properties found in nature into the built environment, rather than the representation or simulation of environmental shapes and forms.

Chelsea Markets, Vandeberg Architects, 1998
Upcycling and Biophilic Design

- Place-based relationships:
  - Historical connection to place
  - Cultural connection to place
  - Geographical connection to place
  - Ecological connection to place
  - Use of indigenous materials
  - Compatible orientation to landscape
  - Landscape ecology (connections, corridors, biodiversity)
  - Integrating culture and ecology
  - Sense or spirit of place

Upcycling and Biophilic Design

- Place-Based Relationships – an inherent human need to establish territorial control over resources, attaining safety, and achieving security.

Questions/Concerns

- Is it just a fashion or fad that is appealing to particular section of society?
- “Antique” or “second hand”?
Concerns

- Can up-cycling have negative connotation?
- Does it depend on context and perception?
- Can up-cycling have impact on human health?

“The federal government says those shredded tires that make playgrounds across the country nice and cushy for the little ones may not be safe after all.”
Concerns

- Is it safe? Impact on indoor air: fly ash in concrete, carpet backing, grout, acoustic ceiling tiles, rubber tires in flooring, arsenic treated wood, lead in old paint, etc.

People spend more then 90% of their life indoors

Design that makes us sick is not beautiful
Questions/Concerns

- Can this be re-cycled again?
- What happens after the second time around?
Questions/Concerns

Is upcycling just a part of the accepted 3R’s model:
- Reduce
- Reuse
- Recycle
Or, in other words:
- “Doing more with less”

McDonough & Braungart (2002)
Up-cycling

Unquestionable benefits:

- Reduces the consumption, prevents or limits waste, limits greenhouse gases emissions, reduces pollution.
- At its best it is a wonderful, playful form that enriches our environment and brings elements of history and culture

Limitations:

- It has a limited impact on waste stream unless done on a big scale of whole structure or building.
- It has a limited appeal that responds only to part of the society.
- Has to be implemented thoughtfully and with knowledge and sensitivity
It is not **THE** answer for our unsustainable consumption, but it is **one of the answers**

“The world will not evolve past its current state of crisis by using the same thinking that created the situation”

- Albert Einstein
Future: Re-Tooling Industry

- We are choosing from the library of existing materials. We need to design new materials that are designed for particular purpose and have recycling built-in.

- We need to design products for disassembly following “assembly for disassembly” principles:
  - Separate layers
  - Possibilities for disassembly within each layer
  - Use of standardized monomaterial components

Source: Berge (2000)

Mirra chair by Herman Miller.
Future: Learning from Nature

BIOMIMICRY:

- **Nature as model** – studying nature’s models to imitate or take inspiration.
- **Nature as measure** – nature as an ecological standard to judge our innovations.
- **Nature as mentor** – not on what we can *extract* from the natural world, but what we can *learn* from it.

Future: Learning from Nature

“Cradle to grave” model.

“Cradle to cradle” model.

Applying model from nature: there is no waste in nature.
Why THIS is important for Designers and Interior Designers in particular?

- We can not separate ourselves from the impact of our actions - none of our actions are benign.
- We can initiate change.
- Environmental responsibility became essential expertise recognized and sought for by clients.
Each of Us Impact on Environment

- Personal Decisions
- Professional Ethics
“There are no environmental problems, only problems of human behavior”

Arthur Kopelman
Sustainability @ FIT, SUNY

- 2009 FIT joined Clinton Global Initiative
- New courses and curriculum changes that include sustainable thinking
- Sustainable Interior Environments MA Program
- Sustainability Council
  - Annual Sustainable Business and Design Conferences
  - Sustainability Grants of up to $5K
- Faculty Senate Sustainability Committee
- Sustainability Students’ Club
- Freecycle Art Supplies in The Students’ Center, A739
- Buildings & Grounds:
  - 30% reduction of energy use
  - Green roofs, etc.

www.fitnyc.edu/sustainability