

C01 A R Z



Understanding the Circular Economy

12th June 2019 Arts Council England webinar

Chiara Badiali, Julie's Bicycle

Guest: Melissa Lewis, Specialist in Modern and Contemporary Art from Modern British Conservation





Housekeeping

- Raising hands
- Asking questions
- Recording content



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WELCOME

12

Very wide range of participants Different sizes and locations Differing stages of the sustainability journey

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AGENDA

Introduction to Julie's Bicycle & Arts Council Environment Programme The Circular Economy Stories and Examples Guest: Melissa Lewis, **Specialist in Modern and Contemporary Art from Modern British Conservation** Q&A







- Energy efficiency & carbon reductions
- Resilience
- Benefits beyond carbon savings

 creativity, team morale,
 strategy, collaboration,
 reputation

Sustaining Great Art and Culture

Environmental Report 2017/18







WHAT IS THE CIRCULAR ECONOMY?

The circular economy is a regenerative model designed to keep products, materials, and resources at their highest value and functionality for as long as possible through continuous cycles of reclamation, remanufacture, and regeneration.





WHAT IS IT NOT?



= Overexploitation of resources, waste, pollution





SO.... IT'S RECYCLING?

Not quite.







CRITICISMS

- Justification for unsustainable consumption?
- Can we really optimise all reclamation processes?
- Accumulated resources and transport inputs





Everything is a resource for something else. In nature, the "waste" of one system becomes food for another.

- William McDonough and Michael Braungart, Cradle to Cradle (2002)



Four Design Models for a Circular Economy

RSA: The Great Recovery Project 2012-2016





DESIGN / MANUFACTURE / DISTRIBUTION

- Reduce material usage
- Use 'best' materials: biological, recycled and fully recyclable, lower carbon emissions, non-toxic
- 'Industrial symbiosis' can you use by-products from others?

LONGEVITY MAINTENANCE/REPAIR REFURBISH/REMANUFACTURE REUSE / REDISTRIBUTION / RESELLING PRODUCTS AS A SERVICE





STORIES FROM THE SECTOR







- REDUCE what you use or need
- Understand what is coming into and out of your organisation
- Consider hiring/borrowing/sharing before buying new
- Choose products or look into alternative materials for products that are long lasting and that can be reused, repaired, recycled or biodegraded i.e. rechargeable batteries
- Design and build production and exhibition items for disassembly and re-use
- Switch to 100% renewable electricity
- Look for partnership opportunities research, sharing, expertise







FESTIVAL, NL

- Redefine festival around circular processes. Festival as a testing ground for urban circularity.
- Resource Street: "Resource" not "Waste". Materials separation, public engagement, demonstration of pyrolisis turning bottle caps into oil
- Circular Foodcourt: using 'imperfect' food diverted from waste, composting on-site, partnerships with urban farms in Amsterdam, meat-free catering
- Design for disassembly: set construction and design, e.g. installations made from recycled wood, turned into pallets after the event
- Innovation partnerships e.g. renewable energy, composting toilets, Sanilla Sanitation Hub



DGTL Festival

+

Metabolic

Material Flow Analysis







ROSKILDE FESTIVAL, DK







EDIBLE UTOPIA – SOMERSET HOUSE



www.edibleutopia.org Supported by City Bridge Trust





THE LIVING STAGE



TANJA BEER









YOUNG VIC – CLASSICS FOR A NEW CLIMATE



Emily Barclay and Sam Troughton in La Musica at the Young Vic. Photo by David Sandison.





VILLAGE UNDERGROUND



Images courtesy of Village Underground





FESTIVAL REPUBLIC, COMP-A-TENT, JB AND USEFUL PROJECTS



Leeds Festival, George Coppock

Latitude Festival





GUEST: Melissa Lewis, Specialist in Modern and Contemporary Art from Modern British Conservation









The circular economy, museums and the art world



Rethinking Collection Care – Life Cycle Thinking

- Life cycle assessment (LCA)
- Environmental
- Social
- Life cycle cost analysis or total cost of ownership
- The typical life cycle stages companies consider when evaluating the impacts of a product or service are listed below. The number of stages to include in your life cycle thinking depends on the product or process. Transportation between all stages should be included as well:
- 1. Material processing
- 2. Manufacturing
- 3. Use
- 4. End-of-Life
- 5. Resources



Relative greenhouse gas emissions (carbon footprint) of a standard packaging system.

LIFE CYCLE ASSESSMENTS OF LOANS AND EXHIBITIONS: THREE CASE STUDIES AT THE MUSEUM FINE ARTS, BOSTON SARAH NUNBERG, MATTHEW J. ECKELMAN, AND PAMELA HATCHFIELD Journal of the American Institute for Conservation 2016, Vol. 55 No. 1, 2–11



T.360-1984 – Man's Shirt (1775-1800) – made from linen





100% rag unbleached paper

Cradle to Cradle

- Changing ways products are developed:
- Looking at all materials of an object. Design objects that are easy to disassemble
- EXAMPLE:
- Look for high quality materials made from a single recyclable substance for example the mount board we use is 100% cotton fibre, but uses a EVA adhesive to laminate layers together. This means the of cuts cannot be dissolved and added back to the pulp.
- However, maybe an enzyme or a catalyst could be added to break down just the EVA, allowing the unused mount board to be added straight back to the pulp Vat.

https://www.c2ccertified.org



Design for disassembly or deconstruction

The fewer parts you use, the fewer parts there are to take apart.

As with parts, the fewer fasteners (e.g. glue, screws, etc.) used, the better.

Common and similar fasteners that require only a few standard tools will help to simplify and speed disassembly.

Screws are faster to unfasten than nuts and bolts.

Glues should be avoided.

Building disassembly instructions into the product will help users understand how to take it apart.



Eliminate waste in construction by standardization

- Standardize sizing at the V&A we try to fit most of the paper object in four different sizes – this means that we can re-use most frames – buy standard size pieces of mount board, crates and Solander boxes.
- It is safer to store object of similar sizes next to each other – it creates less dust around the object and damage is minimized.

Bio-based materials

Much of the material used to store and move objects is packing material – plastazote, foams, cardboards, wood etc. Used to wrap around an object to create a buffer to prevent damaging movement. Once used at a specific size it is often difficult to re-use them. Some of these materials are not recyclable.

A company called *Ecovative* makes a material from mycelium (mushroom) and either cellulose or lignin fibres. The mushroom grows, expanding around a mould over a period of time (ten days). To create a solid structure. Making a solid and light block around any shape (*Mycocomposite*^m).

The clever thing about mushroom packaging is it will completely decompose once you have used it. Creating nutritional soil for the ground.



Bio-mimicry

- Nature is a perfect example of a circular system.
- The biological world provides a radical increase in resource efficiency
- In nature -the waste for one organism in the system becomes the nutrient for another organism in that system.
- Plants, insects and animals have developed systems to store, reflect and refract light/ heat and water over billions of years, using only natural resources. We can mimic techniques to build more efficient and effective spaces for storage and display.

Examples: -

A Jewel beetle can detect a forest fire at 80 km away, 10,000 times the range of man made fire detectors – just imagine if we could use him to tell us about changes in ambient temperature in storage.

Michael Pawlyn – Ted Talk – Using Nature's Genius in Architecture (2010)

Paper can be recycled up to seven times, but there is a waste that accumulates known as *screen*. A dutch designer called Tim Teven creates furniture out of this waste product. It could also be adapted to make display cases and set structures.

http://www.timteven.com/projects/recycling_reject/recycling_reject.html

Leasing Products

- Leasing equipment (computers, machinery and vehicles).
- Leasing differs from the pay-per-service unit model in that the customer pays for continuous access to a service over a defined period instead of the number of uses.
- Leasing allows a company to own all its raw materials and reuse them again when manufacturing the new product. The most efficient way for a company to run a circular economy.





Secondary material marketplaces

At the V&A , there is a high turnover of materials used for exhibition and displays that can not always be reused within the museum.

By creating a list of people and institutions to give materials to when they have cases, sets, crates and more; that can be recycled and if wanted exchange for money.

Material marketplaces can be set up easily with modern technology, like blockchain. There are also companies that will help with logistics, tracking, tracing and valuation to help create a sustainable platform.

http://excessmaterialsexchange.com

Green Chemistry

• Looking to waste products of the farming industry to make new non-toxic solvents and catalyst— made from a variety of natural products, for example corn and nut shells. (examples: Isopropyl Myristate and Isopropyl Palmitate)

 These are powerful solvents not only to make materials such as modern tapes and adhesive, but also to dissolve them when they are not needed. (examples: 2-MeTHF, CPME, di-methyl-carbonate)

• There are also solvents that can be recycled (example: Rhodiasolv Iris – Estakleen make a recycling system)

https://www.estakleensystems.co.uk

Technology for monitoring



- Microsensors are smaller in size, improved performance, better reliability and lower production cost than alternative forms of sensor.
- Can monitor the object's usage patterns and condition.
- Current devices measure temperature, pressure, force, acceleration, rotational, velocity, humidity, sound, magnetic fields, radiation, optical, biological, biomedical and chemical parameters
- Sensors can trigger alerts about problems as they appear, allowing for an easy and quick fix.



The museum as an educator of care





Speaking Green

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