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How Design Relates to Waste: A Categorization of Concrete Examples

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Rationale

To close the loop of material resources in society, waste management (WM) needs to be linked with production, according to what is proposed in Cradle-to-cradle initiatives. Much research has been done on how to achieve this closed-loop zero-waste system and it all revolves around regarding waste as material input for production.

Aim and Method

In order to explore the existing relation between WM and Design, an interview study was carried out in 2011, targeting designers who have worked with waste (11) and WM professionals (14). The interviewees originated from Sweden (13), Germany (five), Egypt (one), India (one) and Chile (five) to provide cultural diversity to the study.

The interviews were semi-structured in character following an interview guide. The interviewees were introduced to the objectives of the study and the definitions used in the guide. They were asked if they considered design to have any relation to WM. As a trigger, the interviewees were later shown two visual cards with examples of products that relate design and waste. They where asked to comment on these and name projects which according to their knowledge were good examples of how WM and design relate.

Results and Conclusion

The examples given by the interviewees can be grouped as:

Material Recycling: Industrial re-manufacturing of material into similar products, maintaining approximately the same qualities.

New Materials from Waste: Development of raw materials (usually composites), that can be used for products that serve a different function. Aims to be sold in the material market.

Redistribute: Non-disposal systems, providing alternative routes for specific waste streams (i.e. textiles, WEEE, vehicles, furniture and packaging) mainly through repair and relocation.

New Products from Waste: Re-manufacturing waste by means of product design. Converts resources obtained from waste into a ready to use product.

Design for End-of-life: Products that have been developed considering their end-of life stage, as well as the normal product requirements. Besides serving as a reference list of good examples of resource usage, this categorization clarifies the main strategies used in the different examples collected in the study, while identifying areas of collaboration between design and WM. Even though the first two categories are of great importance, they only take advantage of waste as means for raw materials, eliminating their component or product properties. The third category does make use of these properties, but it doesn't make any change or improvement on the product, it just changes the user. The final two categories do take full advantage of the product and by use of design-thinking achieve a high value result in closing the loop. Either by developing products with discarded materials or by designing to avoid waste generation, designers greatly defines future waste. That is why it is so important to get them to collaborate with WM companies: Designers gain knowledge about waste and WM gains access back into production: a promising approach for future resource management.