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The fourth "R" - The reversion of objects as a way of reducing waste

Gonçalves, S.[a,b]*

[a]*Superior School of Arts and Design – Polytechnic Institute of Leiria, Caldas da Rainha, Portugal*
[b]*CDRSP – Centre for rapid and sustainable production, Marinha-Grande, Portugal*

Abstract

Given the evident inefficiency of the policies and mechanisms established to deal with environmental degradation, it is essential to understand the reasons for their failures and to try alternative ways to mitigate the environmental problems associated with the replacement of objects. The ideas behind the so-called "3 R's" policy, born of a sequence of two defining moments in the definition of environmental policies in Europe, - Agenda XXI in 1992 [1] and the 5th European Environment and Development Program of 1993 - have produced encouraging results since their creation, but failed to halt the increasing degradation of the environment on a planetary level. One of the problems derives from the fact that any of r's is strongly dependent on the environmental conscience, or even ethics, of the citizens responsible for the decisions regarding the products in their different moments of existence - from their design and production to their use and subsequent destination. This dependence leads to a high fallibility of environmental policies, insofar as western society suggests, in the way it behaves, a direction opposite to that which they advocate. It is thus important to reflect on ways of designing and producing things whose environmental performance is less dependent on the environmental consciousness of the end user, so that this awareness is not so decisive in the impact resulting from the disposal of objects. The present work tries to analyse the response of a group of students of design to the introduction of a "4thR", that we call Reversion, and that is to think products of daily use whose form is conditioned by the necessity of its components can be, when dismantled of the system, seen as raw material directly usable for another purpose, easily determined by the user, and not as a technical component of an obsolete system. Functional prototypes will be realized in order to evaluate and validate the products regarding their effective performance in terms of production and use, as well as the possibility of reuse of their components in contexts other than those for which the objects were designed.

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* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .
E-mail address: author@institute.xxx

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1. Introduction

Global waste production has created a serious problem in terms of its management, with very serious environmental consequences.

The evolution of societies, and especially Western societies, has led to a growing consumption of durable and non-durable goods, causing enormous environmental pressure, not only because of the increase of the extraction and transformation of raw materials and the consequent increase in energy consumption and pollutants emissions, but also by the inability of societies to accommodate the increased waste production.

The consequences of this overproduction have obvious consequences in some parts of the world, which are responsible for collecting a large part of hazardous waste produced in the West. The site known as Agbogbloshien in Accra, Ghana, currently receives 215,000 tonnes of e-waste a year, according to the site Worstpolluted.org, and is expected to double by 2020 if the linearity of economic growth remains. This deposition has serious consequences on the health and life of 40,000 people, only in this place. [2]

According to Annie Leonard, "In 1960, we made 88 million tons of MSW in the United States— that's 2.68 pounds per person, per day. In 1980, it had risen to 3.66 pounds each. By 1999, at which time recycling was a household word, we were at 4.55 pounds, just below our current rates. According to the EPA, Americans made 254 million tons of municipal solid waste in 2007. That comes out to 4.6 pounds per person per day!" [3]

This growth of garbage production can be analysed in terms of its typology, which has been radically transformed over the last decades. If at the beginning of the XXth century the urban waste produced was essentially coal ash, used for heating and cooking, and food waste [4], the present reality is quite different. The report "Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2012" shows that the actual prevailing categories of waste focus on durable and non-durable goods, as well as packaging, accounting for about 75 % of municipal waste collected in the United States in 2012. [5]

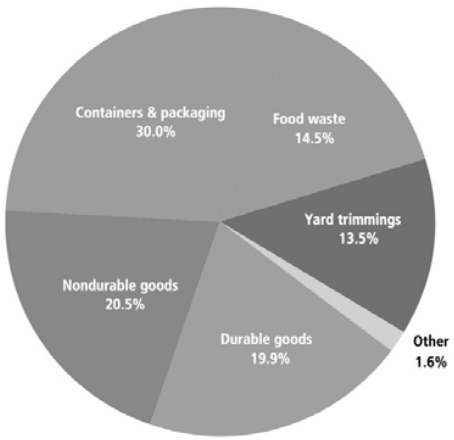

Fig. 1. Total MSW generation by product category, 2012

It can be seen that the highest percentage of urban waste is actually made up of products that were designed, manufactured, used and disposed of.

This finding leads us to the need to evaluate the policies associated with the recycling or reuse of these wastes.

An analysis of the evolution of the percentage of selective waste collection compared to the total waste collected in Portugal shows that the current waste treatment policies, while contributing to a greater awareness of the problem by the population, did not prevent an increase in the amount of garbage that is not recycled. [6]