Global Industrial Metabolism and E-Waste Dumping in the Agbobloshie suburb of Accra, Ghana

A Marxian Ecological Economics Approach

Background and issues

E-waste is the waste material left from various electronic devices such as computers, televisions and cellphones, which contains toxic and hazardous materials. Metals used in the production of electronic goods, such as copper and gold, can be extracted from e-waste. However, the combination of prohibitive recycling costs and various environmental protection policies tends to make such practices uneconomic in developed nations, creating instead an incentive to export e-waste to developing countries such as Ghana (Tsydenova & Bengtsson, 2011:56)(Robinson, 2009:184).

Technically, the Basel Ban Amendment of the Basel Convention forbids the export of hazardous waste, which includes e-waste, from OECD countries to non-members (Cobbing, 2008:11). Yet legal loopholes and the refusal of some countries, such as the U.S.A., to ratify the convention means that e-waste export still occurs in practice, often arriving through illegal shipping (Tsydenova & Bengtssson, 2011:56)(Man et.al, 2012:1). Additionally, old but still working electronic equipment is also legally sold or donated to Ghana, purportedly as a means of aiding development. Such practices, even if well-intentioned, nonetheless lead to increased accumulation of e-waste, as the second-hand goods rarely have a live-span longer than two years, after which they wind up at Agbobloshie. There is also a lack of laws regulating recycling practices in Ghana (Amoyaw-Osei et. al., 2011:2)(Oteng-Ababio, 2012a:56).

Simply banning e-waste recycling would however be problematic since it has become an industry in its own right in Accra, and plays a major part in the city's economy. Approximately 3000 workers are registered with the scrap dealers association of Greater Accra, and about 30 000 are estimated to be involved in the broader chain (Grant &Oteng-Aabio, 2012) (Oteng-Ababio, 2012b).

Theory and Method

The theoretical component of my project will build on the work of Martinez-Alier, Foster and Burkett in combining the insights of ecological economics with those of political ecology. The crucial element of ecological economics is that it recognizes the economy as a sub-system of the ecology, while the core idea of political ecology is it's emphasis of the politico-economic aspect of mankind's relationship with Nature. Put in another way, [“e]cological economics [...] studies social metabolism, i.e. the flows of energy and materials in the economy... Political ecology focuses on ecological distribution conflicts” (Healy et. al., 2013). Through a combination of the two the economy is placed in both a natural and a political-institutional context, and we are able to analyse both the metabolism of resources in society and the conflicts and issues over the metabolism being what it is.

Work on the importance and theoretical advantages of such a synthesis has been done before (for example M’Gonigle, 1999), and examples of practical applications of it can be found it the work of Joan Martinez-Alier, embodied for instance in his *Environmentalism of the Poor* (2003). However, despite the body of work on e-waste being extensive, no significant work has been done on it that uses this synthesised approach. Nor has much been done on applying any form of Marxian approach to the case of e-waste in Ghana.

The theoretical framework of the project will also make use of Marx's concept a 'metabolic rift', as developed by Foster et. al. (2010). This will enable an analysis of the rift in global industrial metabolism that occurs when the recycling of waste materials is geographically displaced from

developed (“core”) to developing (“periphery”) nations. Along, of course, with all the associated social and environmental impacts and costs. Due to this rift, the link between production, consumption, and waste management is concealed.

The related concept of 'unequal ecological exchange' (see for instance Hornborg, 1998) also has a significant role in exploring e-waste export. Through the use of ecological economics, the concept can be further developed by giving it a biophysical dimension. It can be described as useful low-entropy resources leaving Agbobloshie through export, and useless high-entropy waste being imported/dumped, in order to be re-transformed into low-entropy resources through the application of local labour. One can also speak of the import/export of Ghana's waste-sinks (Eriksson et. Al, 2010:129).

Finally, following Martinez-Alier, e-waste export will be conceptualised as a 'costshifting success' rather than a market failure (for instance Martinez-Alier et. al., 2010 or Gerber et. al., 2009)[1].

The investigation will also seek to map the material flows involved, focusing chiefly on metals such as copper and gold, using the 'Material Flow Analysis' [MFA] method of ecological economics.

Due to the systems nature of MFA, work on systems theory as it applied to human ecology and on the link between systems theory and Marx's dialectical method (such as Levins, 1998), will be especially important as a theoretical foundation for this particular project. The resource flows will be placed in the context of the metabolism of global industry. This includes investigating the dependence of global capitalism on the resources and services provided by Agbobloshie. The parallel growing dependency of Agbobloshie on the e-waste recycling industry will also be explored. I.e. the ways in which the people, institutions and infrastructures of Accra become adapted to the needs of global capitalism for its recycling services. A full understanding requires an analysis that recognises this phenomenon as case of both disposal of waste and extraction of resources. This can be analysed in part through a re-working and adaptation of the work by Bunker on resource exploitation in third-world countries (Bunker, 1984; 1985). An adaptation which would conceptualise the Ghana case as extraction of *un*natural resources.

Throughout the project, a Marxian framework and focus on class relations will be used in order to highlight the ecosystem as a site of class struggle. The environmental and social problems of Agbobloshie will be framed as inherent problems of capitalism as a historically specific mode of production. As Foster and Burkett have successfully argued, living beings are dependant on Nature in ways that are different from (and antagonistic to) the ways that capital is dependant on it, i.e. as a provider of life vs. a material basis of capital accumulation (Foster et. al. 2010; Burkett 2006).

Though it is contested within academia to what extent Marx was concerned with Nature[2], it is conceptually possible to place his work in the context of Nature in the same manner that ecological economics does (Burkett, 2006). Such a 're-purposed' Marxism is useful in making it compatible with my general approach, allowing me to make use of Marxian categories without neglecting the insights of ecological economics and non-Marxian political ecology.

A materialist dialectic approach is suitable for several reasons, not the least of which is the complexity of the issue at hand, and the lack of distinct boundaries and clear cause-and-effect relations. Concepts such as the 'interpenetration of opposites' and 'development through contradictions' can also more easily high-light the dual and contradictory nature of e-waste. It is both waste and resource; a poison that destroys Nature and health but also a basis for the local economy and livelihoods of many people – a case of *quod me nutrit me destruit*, as Marlowe might say.

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1 I.e. the social and ecological costs of goods consumed in developed nations are shifted to developing nations such as Ghana.

2 Compare for instance Burkett, 2006 with Martinez-Alier, 1987 p.218-225

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