

Research Article

Global Challenges of Atomic Waste and Methods

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Abstract

waste is currently most commonly treated as an economic good and thus commodified as a result of approaching the ownership of goods from a Blackstonian absolute dominion perspective. Three issues were addressed current property rights in waste, alternative approaches to waste; and impacts of applying Locke's theory. This paper presented classic form of property ownership as it aids linear cradle to grave approaches to waste. Industrial symbiosis is a structure where waste is exchanged between industries within given network forming micro-circular economies and waste can be used as the virgin material in production processes.

Keywords: waste; industrial symbiosis; Global challenges

Introduction

Production of waste grows despite all attempts to manage the problem and its impact on the environment breaches all elements of the sustainable development principle. Adopting a Lockean conception of property firstly resolves a number of difficulties associated with the way in which waste is envisaged by positive law and, secondly, may provide more appropriately adapted means of dealing with the concept of waste in circular systems. To support this investigation, we consider the application of industrial symbiosis as a structure which enables waste to be utilised by other industries within a given network or grouping.

Literary Context to Waste

In 2014, 2598 million tonnes of waste were generated by all economic activity and households in the 28 European Union (EU) Member States, equating to more than 5118 kg per EU inhabitant. All operation (landfill,

recycling, backfilling and incineration) highlight the extent to which waste is a sustainable development issue, as a result of its economic, environmental and social effects. Landfill and incineration can have direct and indirect impacts on health including as a result of: methane from landfill contributing to climate change; air pollution caused by incineration emissions; risk of contamination of soil or freshwater, which can then be taken up in crops which affects crop yield and, in turn, food availability. When waste is not used as a resource and has negative effects, there is still arguably the beneficial impact for the waste industry. This industry has grown in part because of the regulatory environment to deal with matters of disposal. It involves transport, disposal and recycling operations as well as complex legal and administrative decision-making around licensing and management. Waste is an economic good and the industry which has established itself around this good is high value.¹⁴ This waste industry has societal benefits in that it creates jobs and generates

profits. Waste thus has duality in that it is both an economic good and a bad. The commodification of waste is a complex matter with benefits and demerits across society. Regardless of the conception of waste, one of the key issues about the production of waste is that the pollution effects of the waste management and disposal operations operate as externalities where a consequence (cost or benefit) of an (economic) activity affects other parties without this being reflected in market prices.

Hardin's tragedy of the unmanaged commons is a Coasian cost problem where Hardin uses waste specifically as an example of pollution to demonstrate why privatisation or state intervention are required to internalise externalities. The tragedy stipulates that every individual, acting independently and rationally, will not recover or prevent production of waste if it is more expensive than discarding the waste.

Dealing with Environmental Impacts

Waste generated during production leaves the factory gate in a different fashion to the product which was the purpose of the manufacturing activity. The problem with waste is its potential to damage the environment and if nobody wants the waste then this potential is exacerbated. We are focussing on waste in the manufacturing process because we are examining industrial symbiosis networks which exchange waste forming micro-circular economies. Waste is defined as 'any substance or object which the holder discards or intends or is required to discard'. The primary objective of the WFD supported by this definition is the protection of the environment and human health through the prevention or reduction of the adverse impacts of the generation and management of waste, and by reducing overall impacts of resource use and improving the efficiency of such use. Additionally, the changes the WFD introduced have arguably not substantially altered the definition. The current definition of waste and the relevant case law have three effects: (1) what can and cannot be controlled is unclear; (2) when a material or substance becomes

regarded as waste lacks clarity; and (3) it is questionable whether the current approach actually protects the environment, which is one of the objectives of the WFD. First, what counts as waste has to be determined on a case-by-case basis as there are no set characteristics of waste. The outcomes of the cases on the definition of waste have indicated that waste should be interpreted widely rather than restrictively. For example, the actual subjective intention of the holder of waste is excluded,³⁴ the possible financial advantage of reusing the substance is irrelevant³⁵ (even if a substance is a reusable residue, it can still be considered waste and leftover stone of the same composition as the rock from which it was quarried, that was stored awaiting subsequent use, can be classed as waste.³⁷ As a result of this wide interpretation, in reality the extent to which there is uncertainty is debatable; if there is any uncertainty whether a substance or material is waste, it should be treated as waste as the definition is so broadly cast. Secondly, it is unclear at which point material first becomes regarded as waste. Under the definition, a material becomes waste when it is discarded.

Non-Linear Approaches

There is, however, 'considerable dispute' over when this is the case. ³⁸ Krämer acknowledges that often a case-by-case examination will result in deciding beyond reasonable doubt when a material has been discarded. He provides the examples of placing furniture outside the home before the official collection of bulky waste takes place, and placing bottles in a bottle bank, as examples of when a material becomes waste. The point at which a material becomes waste is significant, as this affects when waste law and policy begin to apply. Nonetheless Krämer and Pocklington argue against changing the definition as there would be a number of unwanted knock-on effects as thousands of national, regional and local laws are aligned to this concept of waste.

This paper limits its discussion to different types of properties as described by Clarke and Kohler, and relies on Hohfeld's conception of rights. If the waste is removed by municipal

authorities then ownership is likely to pass on collection. Discarded in the WFD waste definition can be a way of stating that 'its owner ceded ownership'. Cessation of ownership may be equated with the abandonment of ownership. Waste as communal property would apply to waste in the sky or the river. This is distinguished from no-property. As communal property every member of the community has the privilege to use the thing AND a right not to be excluded from it, and consequently everyone else in the world has a correlative duty not to interfere with their access to it. The social dimension of waste is critical because in moving towards away from linear approaches to waste, the shift will need to be partly cultural.

Locke's starting point is that the earth and everything on it has been given 'to mankind in common'. In that "no body has originally a private dominion, exclusive of the rest of mankind, in any of them, as they are thus in their natural state" there must "of necessity be a means to appropriate them". The means identified by Locke is a person's labour. Park and Louka however argue that waste is not a CPR because waste is generally perceived to be of low value, an externality to society, and 'one could hesitate to call waste a resource'. Park and Louka have misinterpreted Ostrom; non-excludability and subtractability are the determining characteristics, rather than value, and whether an externality or a resource. Value may influence subtractability and excludability. For example, Ostrom has recognised the effect of value in relation to CPRs as the incentive to appropriate high value resources from an unregulated, open-access CPR system may be higher than lowvalue goods. 68 This however does not affect the material's subtractability. It may affect excludability in that if the incentive is higher to appropriate, then excludability may be more costly or difficult, but this affects the extent of the problem of excludability rather than whether excludable or not. In relation to the third argument, waste is often considered as a resource as discussed earlier.

Definition of waste

The number of cases on the definition of waste indicates the complexity of waste regulations. Most of those cases were decided before the most recent 2008 WFD implementation, but the European Commission guidance on interpretation of key WFD provisions considers case law decided under repealed directives relevant, albeit not legally binding. The current definition of waste and the relevant case law have three effects: (1) what can and cannot be controlled is unclear; (2) when a material or substance becomes regarded as waste lacks clarity; and (3) it is questionable whether the current approach actually protects the environment, which is one of the objectives of the WFD.

Conclusion

In other contexts, the notion of waste as a burden is the dominant perception and the encouragement of new approaches to resolve the problem of waste need to be addressed. Using communal property approaches where the community takes control of waste and forces the usage of waste through CPR mechanisms where management protocols are adopted seems to be a way forward. But In relation to Kalundborg, the Blackstonian absolute private dominion principles are in operation.

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