

## Law, Markets and Waste

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#### Introduction

People often claim that 'the market' is wasteful and that government intervention is necessary in order to reduce waste and increase efficiency. In this paper I argue that such claims are based on a false conception of how a true market system functions and a misunderstanding of the nature of 'waste'. The best way to minimise waste is to allow the conventional institutions of the market system - private contracts and civil liability - to define the boundaries of human action. Furthermore, the current socialised system of residuals management is excessively wasteful. If we wish to move towards a more sustainable, less wasteful society, we must reconsider the objectives of policies that are currently directed towards dealing with residuals.

#### Law

In a pure market system, the production and consumption of goods occur within a legal framework which protects the rights of individuals to own, use and exchange property, enables individuals to enforce contracts, and limits the amount of harm that can be inflicted on persons and property. This legal framework structures what can and what cannot occur in the market system.

The ability to own property enables people to make investments in the future secure in the knowledge that they will reap the benefits of those investments. A farmer who owns his land has a greater incentive to make improvements to that land, than a farmer whose land belongs to the state.

The ability to transfer property contractually enables people to engage in mutually beneficial exchanges. If contracts of sale were not enforceable, people would be reluctant to make such exchanges because the counter-party to any exchange could simply claim back 'their' property

The ability to protect property from outside interference through civil liability further enhances the incentives to invest in the improvement of that property. If anyone can use agricultural land for whatever purpose they choose regardless of who owns that land and without paying any compensation, then the owner will have little incentive to make any improvements to that land for fear that those improvements might encourage people to destroy his improvements.

The ability to sell the rights to be free from such interference ensures that some activities that are beneficial to society but impose costs on individuals may proceed without in fact harming anyone. So, for example, the right to allow people to come onto one's land in return for a fee ensures that people have access to areas of specific interest without harming the owner or creating a disincentive for him to invest in improvements.

So important is such a legal framework for the existence of markets that it is difficult to imagine what production and consumption would be like without them.

#### Markets

In pre-market societies, production is essentially limited to those goods that can be manufactured locally. The simplest form of such production is that of the family farm, which is self-sufficient in food. Such methods of production are precarious because, *inter alia*, variations in weather patterns can lead to poor harvests. At least three strategies are available to avoid such tragedies. First, families can split their land into various sub-plots, each in different parts of the village and each affected differently by the weather. Second, farmers can pool their resources and share out the proceeds at the end. Third, farmers can plant more than is necessary for survival.

Of these strategies, the first two are typically adopted in the early stages of production, when markets are little developed and the failure of a crop could mean death. However, over time markets

for surplus produce develop and the risk of adopting the third strategy declines. As a result, people specialise, adapting their productive systems to the environment and developing technologies that increase efficiency, such as ploughs, tractors, fertilisers, pesticides, and new varieties of crops.

### **Waste**

The production of goods in this kind of extensive market system is clearly beneficial for the participants: it is often less risky than share-cropping or strip-farming, and it also typically results in greater wealth creation. However, it also causes a change in the way that the residuals of production and consumption are managed. In primitive societies, residuals, such as manure from horses and oxen, and chaff from wheat, are used as fertiliser or fuel within the village itself, while unwanted residuals are dumped nearby; this type of residuals-management might be called 'closed-loop'. In the extended market order, residuals that are produced in one place are often transformed [\[1\]](#)

or disposed of in another; this type of residuals-management might be called 'open-loop'.

Some people seem to think that closed-loop residuals management is preferable to open-loop residuals-management. I suspect it is because they ask themselves the wrong questions. The question should not be, 'how can I minimise the transportation of residuals?' or even, 'how can I ensure that the maximum amount of a particular type of residual is recycled?' rather, it should be, 'how can I ensure that the residuals-management system results in the least waste of resources?'

### **Minimizing Waste**

The fundamental objective of any business enterprise is to create added value - to sell products at a price greater than the costs of manufacture. So the entrepreneur is always vigilant for ways of improving product performance and reducing costs. Cost reductions can be made in numerous ways, including by reducing the use of raw materials and from using by-products more efficiently.

If it is possible to save money by utilising the by-products of manufacture rather than paying to have them disposed, then entrepreneurs will generally discover those uses and, over time, adjust their manufacturing processes to enable such utilisation.

So important is it that these efficiency gains be realised that in the 1970s management consultants such as Arthur D Little developed procedures for carrying out internal 'life cycle analyses' (LCAs), in which all the most important inputs to and outputs from any production process are assessed in order to discover potential efficiency gains. Of course, carrying out an LCA and transforming manufacturing processes in light of the findings are costly – they consume resources – and so some apparent improvements will not take place (at least in the short term). But that in itself is not a criticism of the current system; it is merely a consequence of a world of imperfect knowledge.

The notion that this system can be improved upon by government intervention – as many argue – is implausible. The government's (or regulator's) knowledge of what use of resources is most efficient is likely in most cases to be less complete than that of the individual manufacturers, who must day after day assess the costs of inputs and prices of outputs.

With regard to material use per unit of manufacture, the situation is equally clear. Consider the example of packaging, which serves both to improve the quality of products and to reduce costs. Packaging enhances the shelf life of food products and means that less food will be wasted on the journey from the producer to the consumer. This means that the products can be sold at a lower price, satisfying more consumers and increasing the profits of the manufacturer and retailer. In addition, consumers benefit from being able to store their products at home for longer – saving them trips to the supermarket, which might have involved the use of some fossil fuel-based transport system.

Nevertheless, packaging itself uses resources, so over time entrepreneurs have developed packaging systems that use less material. Compare the heavy glass bottles that were the predominant means of packaging milk and other soft drinks twenty years ago with the lightweight plastic bottles and laminated cartons used today. These modern alternatives are not only cheaper to produce, but their lighter weight and more rectangular shape also reduce transport costs. Moreover, in the case of fruit juices, the use of aseptic laminated containers (the brick-like packs made of layers of plastic, paper and aluminium) has dramatically reduced the quantity of resources consumed during storage, since it is no longer necessary to refrigerate them.

Similar advances have been made in other areas. Cables carrying information long distances are now typically made of glass-fibre rather than copper: a cable made from 60 pounds of silica can [\[2\]](#)

carry 1000 times as much information as a cable made from a tonne of copper.

Computers offer perhaps the most startling example of this 'dematerialization'. In the 1950s computers were the size of a two-bedroom flat and could process only about 1000 instructions per second. Today, computers the size and weight of a book can process over a trillion instructions per second. These advances in computer technology have also led to more efficient use of resources in other areas. For example, all the world's telephone numbers can now be stored on a few easily searchable DVDs, rather than in hundreds of cumbersome and poorly cross-referenced books. Letters and manuscripts can now be sent electronically from England to New Zealand in a few seconds, whereas before they went by fossil fuel-guzzling aeroplane or boat and took days or weeks.

It is clear, then, that entrepreneurs have strong incentives to reduce their consumption of resources over time. However, these incentives are often distorted by interventions in the market. For example, where municipalities operate a monopolistic solid waste management system, companies and individuals are unable to decide which type of residuals-management system would be most appropriate. This situation is made worse if the municipality charges a flat fee, since this erodes even the marginal incentives to limit the generation of solid waste that is created by unit pricing and distorts the companies residuals-management system towards the over-production of solid waste.

Similar distortions are created by the existence of statutory licenses to emit substances into the atmosphere or watercourse. These licenses typically over-ride civil liability, so that companies need no longer pay affected parties for the costs that they impose on them. As a result, the residuals-management system might be distorted in favour of excessive use of emissions to air or water. On the other hand, the cost of licenses and fines for exceeding emissions limits may be greater than the price that private individuals would charge for the right to pollute the air, in which case there would be a distortion in favour of excessive recycling and the over-production of solid waste.

The problem with such a socialised system of residuals management is that we do not know how individuals value their environment and so we cannot know whether the implicit prices charged for use of that environment are correct. This problem applies equally, of course, to pollution taxes and to tradable emissions permits, although such instruments may have certain efficiency advantages over a simple command and control system.

### Privatising Pollution

A true market solution to these distortions would entail moving back to a system of civil liability for protection of private property and to private contracting for waste services. I shall briefly adumbrate how such a system would function.

Consider first the problem of pollution. If A, intentionally or unintentionally, emits a substance which damages the property of B, then A should pay compensation to B. For example, in the case of *St* [\[3\]](#)

*Helen's Smelting Co v Tipping*, the owners of a smelter were forced to pay compensation for causing physical damage to Mr Tipping's shrubs and trees. This seems a fine rule where the [\[4\]](#)

damages may reasonably be estimated by a third party. However, where the infringement is one affecting the reasonable enjoyment

of land, compensation may be more difficult for a third party to calculate, so it may be desirable, in addition to awarding compensation, to enjoin activities which cause such infringements. For [\[5\]](#)

example, in *Aldred's case*, from 1611, Aldred owned a property abutting a pig farm, which caused an unbearable stench. Aldred sued the owner of the pig farm and was granted an injunction. [\[6\]](#)

Note that if this were the rule, then the person harmed could decide to sell his right not to be polluted if he so desires.

General application of such private rights to be free from pollution, including removal of the defence

of statutory authority, would, I believe, enable individual's subjective valuations of the environment to be better expressed. Of course, such a system is unlikely to be perfect. In particular, where there are many parties affected by pollution, the costs of bargaining with the polluter would be high, in which case there might be an inefficiently low level of pollution. Moreover, where there are many parties causing the pollution, it may be difficult to identify the specific impacts of any particular polluter, so the level of compensation may be too low and the level of pollution inefficiently high. In this latter case, private landowners might make agreement amongst themselves setting general rules governing permissible levels of pollution. However, these rules are unlikely to satisfy everyone, so the system remains imperfect. Nevertheless, the question remains whether public regulation is a solution to these problems, or whether it would be better to allow the level of harm that results from private ordering.

With regard to management of solid waste, the solution I would advocate is to devolve management entirely to private contractual arrangements. If all individuals and companies were responsible for disposing of their own solid waste, within the context of the above-mentioned system of civil liability for damage to property, then they would discover the most cost effective – that is to say the least wasteful – ways of disposing of their residuals.

### Policy Proposals

How do we get from the current system to a private system of residuals management? I would suggest that governments do the following:

First, remove all instances of statutory protection from civil liability for damage to property.

Second, remove all mandatory duties on municipalities to provide waste collection and disposal services and remove all mandatory restrictions on private contracting for waste management services.

Third, remove all mandatory controls on end-of-life management of specific products.

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[1]

Pierre Desrochers (2000) 'Market Processes and the Closing of "Industrial Loops" A Historical Reappraisal,' *Journal of Industrial Ecology* 4(1), 29 - 43

[2]

Scarlett, L., 'Packaging, Solid Waste and Environmental Trade-Offs,' *Illahee*, vol. 10 (1), 1994, pp. 15-33.

[3]

3 (1865) 11 All ER 1483

[4]

However, a rule of compensation for physical damage might encourage inappropriate land-uses; for example the possibility of claiming damages might encourage farmers to grow more valuable crops in order to claim greater damages. Coase, R. (1960) 'The Problem of Social Cost', *Journal of Law and Economics*, 4, 1- 40.

[5]

(1611) 9 Co. Rep. 57

[6]

Individuals might, in exceptional circumstances, be able to prevent an activity even before it is begun if they can show that the activity would cause a nuisance. So, for example, in Ireland a judge was asked to rule on whether a company should be prevented from constructing a landfill, on the grounds that the landfill might cause a nuisance to local residents. The judge in that case decided that there was insufficient evidence that the landfill would indeed cause a nuisance, however he noted that if the landfill ever did cause a nuisance then it should be enjoined. (*McGrane v Louth County Council*, Unreported, 9 December 1983).