

Ax murdering and wash your hands after using the toilet: a contrite/confused economist

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"Wash your hands after using the toilet" lyrics from the song
Wear Clean Drawers by the rap group The Coup.¹

Some of my students have enjoyed, some have not, ax murdering as one of my "examples" of a pastime that generates a negative externality.² My sordid tale begins with the assumption of a lawless society. I purchase at McGuckins, the local hardware store, an ax, duct tape and other necessary items. Then I cruise around late at night searching for a suitable victim. This takes time and gas, which we all know has an opportunity cost. Then there is the time and effort involved in wielding the ax and cleaning up the mess - I am neat.

My rationale for ax murdering involving a negative externality was that in a lawless society I would not take all of society's costs into account when deciding how often to strike. That is, I would whack additional victims as long as the marginal private benefits to me (the joy of, or relief from, the act) was greater

¹This document contains a number of links to internet sites. These links are only accessible and active if the document is viewed on screen. Comments, admonishments, enlightenment, and statements of outrage are more than welcome. I encourage you to send me your comments via email and I will post them on my web page next to the paper. Of course I will not post them if that is your wish. Thanks.

²Potential victims can take solace from *Google*. A Google search indicates that ax murders are rare and most took place a long time ago (there were more axes laying around back then). For those who want to explore further, the following are some sites of historical interest: enter Villisa, Radio station contest and Villisa, the Vacelet Murders, Lizzie Borden (including a virtual tour of the house), Lizzie unlocked, Dartmouth's Last Murder, Remains of murder house found and Anatomy of an Ax Murder. For more current events, check out Rita Gluzman, Alleged ax murder arrested, Accused Ax Murder at Dix, Karla Faye, Ax murderer gets 99 and Laredo Ax Murder trial. For some bad ax murder poetry click here, it includes music. For the movie buffs there is Frailty (Ax murdering for God) and The weight of water. There is also a musical.

than the marginal cost to me (depreciation on the ax, dry-cleaning expenses, washing the car, and my time and effort), ignoring the cost I was imposing on the victim and his or her family and friends. This additional social cost being the negative effect absent from my optimization calculus; I might be crazy but I am not irrational, and I do know calculus

My argument continued that this negative externality resulted in an inefficient number of ax murders on my part from society's perspective, too many. One might correct my market failure by creating a policy, tax, sanction, etc. that would cause me to fully account for the effect that I was having on my victims. With such a correction in place, my marginal cost of whacking would equal the marginal social cost, and society would have the efficient number of ax murders committed by me. Of course, the number might not be zero, meaning that my actions still produce negative consequences, just the efficient amount, making the remaining victims, victims of the ax of efficiency.³ With the correct incentives, one could only object to my actions on equity grounds.

After years of using this example, I was complacent: few of my students objected - what cowards. The example seemed consistent with how I defined the term *externality*.⁴

Definition 1 *Externality* (Morey -1): *There is an externality if an economic agent(s) does something that directly influences (not indirectly through market prices) some other economic agent(s), but the agent that produced the effect does not have the correct incentive to take the effect into account because there is no requirement, incentive, or penalty in place that causes that agent to fully account for the effect.*⁵

Then I read the definition of externalities in *The Theory of Environmental Policy* by William Baumol and Wallace Oates [Baumol & Oates, 1988]

Definition 2 *Externality* (Baumol and Oates): *An externality is present whenever some individual's (say A's) utility or production relationships include real (that is nonmonetary) variables, whose values are chosen by (persons, corporations, governments) without particular attention to the effect on A's welfare.*

³A reader of an earlier draft, who wishes to remain anonymous, commented, "Maybe positive externalities are created by heinous crimes. Change your axe into a chainsaw. A number of teenagers died in the Texas Chainsaw Massacre, but think of how many movie tickets the movie (and its remake, and the book, and the video game) sold.

Consider Charles Manson. His "family" only killed a few people. But it was so infamous, and so artistically done in such a perverse way, that it led to books, songs, movies all about "Helter Skelter". People are fascinated by this stuff. It's like 'curiosity slowing' (or 'rubbernecking') on the highway when there has been a serious accident. There may really be a socially optimal amount of these crimes, but maybe not for the reasons you've considered."

⁴Note that I am defining an externality as a type of market failure (more on this below). It is of course true that one can define anything anyway one wants. However, some definitions are more useful than others.

⁵I recollect that I stole this definition from someone else but can not now find the source. Everyone I have asked has refused to take credit for it.

After their definition, they go on to say (page 17) that⁶

"Note that the definition rules out cases in which someone *deliberately* does something to affect *A*'s welfare, a requirement Mishan has emphasized. If I purposefully maneuver my car to splatter mud on a pedestrian whom I happen to dislike, he is given no choice in the amount of mud he "consumes", but one would not normally regard this as an externality."

Quoting Jim Kahn [Kahn, 1998], who adopts the Baumol and Oates definition

"Baumol and Oates have chosen the words in this definition very deliberately. The key points are production and utility, real variables, and an **unintended** (emphasis added by me) effect. The first point to examine is that Baumol and Oates are talking about unintended effects. If you were to intentionally blow cigar smoke in someone's face, that is not an externality, as you are doing it with the purpose of lowering that person's welfare. However, if your cigar smoke drifts from your restaurant table to another, then this would be an externality, as you are disregarding the utility of the affected people rather than making your decision based on your effects on their utility."

The source of this requirement of unintentionality seems to be [Mishan, 1969]. Quoting Mishan,

"If I deliberately, and with malice aforethought, pour hydrochloric acid into the pure waters of a stream used by a whiskey distillery, or if I gradually poison my mother-in-law, I certainly affect the production function of the former and the consumption function of the latter. But neither activity accords with the popular notion of an external or a spillover effect. Nor will the deliberate sabotage of a works by a gang of neo-Ludites do so, notwithstanding that their activities are outside the control of the firm."

Mishan seems to be saying it is just a matter of convention. If one adopts this convention, it seems important to ask how one should categorize poisoning mother-in-laws in terms of efficiency and equity.

This requirement of unintentionality first seemed goofy to me, then correct and important, and now again incorrect. If correct, it also made my ax murdering example a non-example, because the intent of my ax murdering is to hurt people.

⁶Has the mud splashing of the 1980's been replaced by drive-by shootings?

To minimize confusion, before continuing I should point the distinction between what I will define as *external effects* and *externalities*. Jim and I, along with others, make this distinction. Many authors who define externalities do not make this distinction.

Definition 3 *External effects* (Morey): *External effect exists if the actions of one or more economic agents enter as arguments in the utility or production functions of other economic agents.*

For Jim and I, external effects are a necessary but not sufficient condition for the existence of an externality. Jim and I are defining an externality as a type of market failure. Many others define an externality as what I am calling an external effect, in which case it might or might not be inefficient.⁷

Thinking it through, if the market is failing in that the allocation of resources is inefficient there is the potential for a Pareto Improvement. So, if unregulated ax murdering is an externality, in my sense of the term, there must be a reallocation of resources (time, axes, labor, etc.) that would make at least one member of society better off without making any other member worse off.

Consider first a very simple case, a society of two: me and a potential victim with no money, other possessions, or abilities that I might value. If my ax murdering him is inefficient, there must be a way to make at least one or both of us better off without making either of us worse off. In this example, there is not. The potential victim would obviously prefer not to be murdered in such a brutal way; I obviously enjoy the carnage (why else would a rational soul do it), so I would be made worse off if I couldn't do it. To cut to the finis, if I do it because I enjoy the suffering of the poor victim, there is no externality. I am fully accounting for the impact of my actions on the other party, and the only way to make him better off requires that I be made worse off. In this simple case, Jim and his intellectual ancestors, Baumol and Oates, are correct given the preferences and budget constraints of the two parties.

However, if the potential victim does did have some spare change or services to offer, Coase might step in and suggest efficiency could be increased if the potential victim bribes me to cease and desist.⁸ Remember that in an unregulated society, the ax murder has the implicit property rights. If willingness to

⁷They then have to make the distinction between levels of external effect that do and do not cause inefficiency. Charlie Kolstad [Kolstad, 2000] notes the semantics of externality theory can be confusing, then goes on to say that if one defines externalities as an external effect, then one needs to distinguish between Pareto-relevant and Pareto-irrelevant externalities. The latter indicating the presence of inefficiency/market failure and the former being the efficient level of the external affect. That is, if the external effect is at its efficient level the externality has been "internalized". The terminology of Pareto-relevant and Pareto irrelevant was introduced by [Buchanan & Stubblebine, 1962]. I prefer the term *externality* to mean an inefficient level of an external effect. The points of my paper are the the same no matter which terminology you adopt.

⁸If short on money, the potential victim might agree to become my slave and do my yardwork. However, I would worry that he or she might not live up to their end of the bargain.

accept on my part is greater than willingness to pay, the murder remains efficient. However, if my joy from inflicting pain is less than my joy from drinking fine Barolo wines, a Pareto Improving bribe might be possible. If it is, and the bribe is not paid, there is an externality. This ability to bribe complicates things: intent is still important but even if my actions are intentional, ax murdering, in this case creates an externality. So, Jim and his intellectual ancestors are incorrect, the existence of an externality does not require that the effect on the other party be unintentional, as my example demonstrates. Pleasure from imposing a cost makes it more likely imposing it is efficient but does not imply that it is efficient.

As with most things, the dynamics of the school yard explains everything. The school-yard bully chases, hits, and upsets the younger children; his intent is to make them suffer. An externality exists if the youngins could bribe him with goodies from their lunch or quarters from their pockets and make everyone better off, **but do not**. Many children pay such efficiency increasing bribes.

Things remain confusing in terms of the words. Consider the phrase, *does not have the correct incentive to take the effect into account because there is no requirement, incentive, or penalty in place that causes that agent to fully account for the effect*. If I brutally murder you to see you suffer and die, it would seem that I am fully accounting for the effect I am having on you. I guess, I must stipulate that I have the correct incentive if you have insufficient funds to successfully bribe me, but the incorrect incentive if you should have offered a successful bribe but did not, your mistake. One might argue that in this latter case, the inefficiency was caused by your failure to offer the bribe and make yourself better off, not by my swinging the ax.⁹

Summarizing to here, if my motivation for imposing an external cost on another is solely the joy of imposing that cost and I cannot be bribed (many ax murders probably have lexicographic preferences) my actions are efficient, assuming the victim and I are both members of society. Crimes thus motivated can not be condemned on efficiency grounds, the allocation is efficient both before and after the crime.

Of course, having lexicographic preferences for imposing pain on others would be grounds in the minds of many for booting me from society's rolls.¹⁰ Obviously, if the pain-motivated ax murder is not a member of society, society's allocation of resources can be made more efficient either by committing

⁹Consider a more mundane crime, smoking. Typically we assume smokers do not intend/desire to make those around them worse off, in which case the damage is only "collateral", using the nomenclature of the Department of Defense. In this case, if there are no sanctions against smoking and the victims have no ability to bribe the smoker to smoke less, whatever amount the smoker smokes is efficient. However, if the potential victims have resources, the level of smoking is not efficient if the potential victims could make both themselves and the smoker better off with a bribe, but don't. Without the efficiency increasing bribe being paid, there is an externality. Nothing fundamental changes in this example if I get pleasure from blowing smoke in your face, my marginal benefit curve for smoking is just shifted upward by this "additional benefit" from smoking.

¹⁰Whether an allocation is, or is not, efficient, is always a question of whose preferences count.

the poor soul to Dante's wilderness, or by capital punishment. Of course, if the lexicographic ax murderer is a member of society and the potential victims are not, whacking is efficiency increasing, compared to no whacking or bribing, but, even then, the ax murderer might prefer being bribed over whacking.

Of course, excluding either the ax wielders or the potential victims from society's rolls makes the whole thought process much less interesting, so let us not assume this and instead return to the question of motivation and perception. For fun, also continue to assume the victim has few resources. Unencumbered ax murdering can be an externality even in these circumstances if I motivate the example with the right motivation. Assume I murder not to experience the pain the act inflicts but the enjoyment of the chase with all of its running, screaming, and pleading. In that case, there is an externality when I swing the ax, but not before: I would have just as much fun if I did not, in the end, swing the ax, and the victim would much prefer that the chase end without the swing. If all I do is chase and threaten, there is no externality; the externality commences when I swing the ax. In this case efficiency, could be achieved by giving me a rubber ax that looks real.

Or, if it were possible to convince me that I ax murdered you and you suffered greatly without any of this happening -I unwittingly use a fake ax, you carry around fake blood and scream a lot - real ax murdering would be a negative externality no matter how much money you have. Compared to an actual ax murder, tricking me would not hurt me and it would make you a lot better off.

All of this makes me think I need to find some different externality examples, ones where the intent is not to hurt another party. Muggings for money are a good example, but not as interesting as ax murdering.¹¹

I have decided to go with *not washing one's hands after using the toilet*. December 7-13, 2003 was National Hand Washing Awareness Week. To play the handwashing game click on the link and then on the bug.

There are lots of good reasons to wash one's hands after using the toilet, even if one does not consider the welfare of others: for one, it is more likely the unwashed will get sick.¹² Unfortunately for others, your not washing makes it more likely they will get sick or grossed out.¹³

¹¹The intent is not to make the victim suffer, only to get their money.

¹²No Fred, you are not better off not washing your hands when in public bathrooms. Public bathrooms are not that gross.

¹³There is a web page created by the State of Alaska on the ethics of washing one's hands, and a crude blog exchanges on the topic.

There are hundreds of websites on the benefits of washing one's hands. What types of disease can good hand washing prevent? According to the Wisconsin Department of Health and Family Services: (1) Diseases spread through fecal-oral transmission. Infections which may be transmitted through this route include salmonellosis, shigellosis, hepatitis A, giardiasis, enterovirus, amebiasis, and campylobacteriosis. Because these diseases are spread through the ingestion of even the tiniest particles of fecal material, hand washing after using the toilet can not be over-emphasized. (2) Diseases spread through indirect contact with respiratory secretions. Microorganisms which may be transmitted through this route include influenza, streptococcus, respiratory syncytial virus (RSV) and the common cold. Because these diseases may be spread indirectly by hands freshly soiled by respiratory discharges of infected people, illness may be avoided by washing hands after coughing or sneezing and after shaking hands

According to the Center for Disease Control and Prevention, CDC, the most important thing we can do to prevent the spread of infectious diseases is wash our hands. In a review of contributing factors to food-borne disease outbreaks over a 5-year period, the CDC reports that poor personal hygiene was a contributing factor in over a third of the outbreaks.

A recent national survey found that only 68% of consumers washed their hands after using the toilet (74% of females and 61% of males); 94% said they washed. So, hand washing is not a trivial example ¹⁴ It is definitely more common than ax murdering given that the average person uses the toilet 6 times a day; doing the numbers, the implication is

292 million (population of the U.S.) * 6 * .32 (% not washing) * 2 (hands) = 1.1213 × 10⁹ dirty toilet hands per day in the U.S. alone.

While good hygiene is encouraged by most parents, no one checks after we reach a certain age, and many men, and women, are apparently lying slobs. At home, I help to internalize the externality by bribing my daughter to wash up - "if you want to have dessert, get back in there and wash your hands". This works, I think. However, so far my admonishments to her to not sneeze on me have been to no avail.

with an individual who has been coughing and sneezing. (3) Diseases may also be spread when hands are contaminated with urine, saliva or other moist body substances. Microorganisms which may be transmitted by one or more of these body substances include cytomegalovirus, typhoid, staphylococcal organisms, and Epstein-barr virus. These germs may be transmitted from person to person or indirectly by contamination of food or inanimate objects such as toys.

¹⁴Three other studies are worth noting. A recent survey in the U.K. found that: 26% of men and 17% of women say they do not always wash their hands before preparing food. And, 31% of men and 17% of women say they do not regularly wash their hands after using the toilet.

Researchers in Cardiff, Wales monitored soap dispensers in a Primary Care surgical center for a year to determine the amount of soap used. The nurses appeared to show greater attention to personal hygiene than the doctors, with the best performing nurses washing twice as often as their physician counterparts. The report was done by a general practitioner at Canna Surgery in Cardiff Wales; the findings are published in the British Medical Journal.

In another study, ?? . In August 2003, the authors monitored 7,541 people for their hand-washing practices. They found the dirtiest hands were in New York City, where 29 per cent of restroom users left without washing. Dallas airport fared the best among American cities in the survey, with an 81 per cent hand-washing compliance rate. In Toronto, the only city surveyed that experienced an outbreak of severe acute respiratory syndrome, an astonishing 96 per cent of those being watched washed their hands.

AIRPORT	male handwashers	female handwashers
NY, JFK	63%	78%
O'Hare, Chicago	62%	85%
San Francisco	2%	41%
Dallas/Fort Worth	69%	92%
Miami	70%	79%
Toronto	95%	97%
Total	74%	83%

source: American Society of Microbiology

As an aside, I have now changed my classroom definition of an externality. My tentative definition

Definition 4 *Externality* (Morey-2) *There is an externality if an economic agent(s) does something that directly influences (not indirectly through market prices) some other economic agent(s) and there is the potential to make one of the parties better off without making the other party worse off.¹⁵ Or, equivalently, there is an externality if an external effect is produced at an inefficient level.*

Some of the classic literature on externality theory can be found on my web page at [Externality Literature](#).

Comments, admonishments, enlightenment, and statements of outrage are more than welcome. If anyone wants to publish this, let me know. Thanks.

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¹⁵Of course, the absence of an externality does not imply the absence of an external effect.