POLLUTION AND THE DOCTRINE OF DOUBLE EFFECT: A REPLY TO HEINZERLING

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Cost-benefit analysis is widely used to set legal limits on pollution. Many environmental statutes direct regulatory agencies to weigh the costs of pollution control measures against their benefits to public health.[1] Even in those instances where a statute does not mandate this, where it simply requires a standard to be set at the level requisite to protect human health, regulators almost inevitably end up considering whether the costs of an extra increment of pollution control would be justified by the health benefits gained.[2] Not only is the use of cost-benefit analysis entrenched in regulatory practice, it might also be simple common sense. Notwithstanding the difficulties of quantifying health and environmental benefits, cost-benefit analysis appears to be the best, and perhaps the only, way to ensure that the social costs of pollution control—e.g., the burdens on industry and the economy—are imposed where we can expect some substantial return.

Nonetheless, the use of cost-benefit analysis in environmental regulation has its critics. Professor Heinzerling has regularly criticized it on both internal, economic grounds—arguing that there is no plausible method for assigning a dollar value to the benefits of pollution control—and on external, moral grounds—

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[1] *See, e.g.*, Clean Air Act § 111(a)(1), (b), (f), 42 U.S.C. § 7411(a)(1), (b), (f) (2000); Clean Air Act §§ 165(a)(4), 169(4), 42 U.S.C. §§ 7475(a)(4), 7491(a)(4) (2000).

[2] *See* George Eads, *The Confusion of Goals and Instruments: The Explicit Consideration of Cost in Setting National Ambient Air Quality Standards*, *in* TO BREATHE FREELY: RISK, CONSENT, AND AIR 222, 228–29 (Mary Gibson ed., 1985) (arguing that the EPA inevitably takes the cost of pollution control into account in setting regulations even when the law forces them to hide this fact).

arguing that the use of cost-benefit analysis is out of step with widely held moral views.[3] In *Knowing Killing and Environmental Law*, an article published recently by this journal, Professor Heinzerling seeks to sharpen the moral prong of her attack by provocatively arguing that the widely accepted practice of permitting life-threatening pollution on the basis of cost-benefit analysis conflicts with a moral prohibition on killing.[4]

The main argument of *Knowing Killing and Environmental Law* depends on two premises. First, Heinzerling points out that certain kinds of pollution have been conclusively shown to cause premature death for some members of the exposed population.[5] Thus, polluters and the regulators that license their pollution engage in conduct that they know will cause people to die. Second, Heinzerling claims that there is a broad *moral* prohibition against "knowing killing" or deliberately "engag[ing] in a course of conduct that [one] knows carries with it a practical certainty of death."[6] According to this supposed moral norm, dispassionate reasoning such as cost-benefit analysis does not justify decisions to engage in behavior that causes death. On the contrary, it tends to make the decision to cause death even more reprehensible.[7] I take issue only with this second premise.

In their strongest form, these premises together suggest that modern polluters are immoral killers, perhaps murderers, and that regulation shaped by cost-benefit analysis simply licenses this heinous behavior. Heinzerling tempers this conclusion, however, by claiming that her argument establishes only a presumption of immorality. If life-threatening pollution is acceptable, she claims, we need a moral argument to explain why.[8] Though I hesitate to defend life-threatening pollution, in this Note I will take Heinzerling's invitation and explain why emitting such pollution, in appropriately limited amounts, can be morally permissible. I will argue that there is no moral prohibition against the broad category of activities Heinzerling describes as knowing killing.

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[3] *See, e.g.*, FRANK ACKERMAN & LISA HEINZERLING, PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING (2004).

[4] Lisa Heinzerling, *Knowing Killing and Environmental Law*, 14 N.Y.U. ENVTL. L.J. 521, 521 (2006).

[5] *Id.* at 522.

[6] *Id.* at 521, 523.

[7] *Id.* at 523.

[8] *Id.* at 534.

Instead, our moral intuitions reflect a distinction between action intended to bring about a bad result and action that one knows will have a bad result as a side-effect. The moral principle referred to as "the doctrine of double effect" captures this distinction and, I will argue, supports a regulatory approach to pollution that involves balancing the costs and benefits of pollution control.

I. THE PROHIBITION ON KNOWING KILLING

Because my criticism focuses on Heinzerling's second premise, the prohibition on knowing killing, I begin this section by briefly considering the case she makes for it. Heinzerling's affirmative case finds support in three areas of the law: criminal prohibitions on murder, environmental statutes that directly prohibit the release of deadly pollution, and the law of negligence.[9] None of these sources adequately supports the broad norm against knowing killing urged by Heinzerling, and several counter-examples further undermine her argument.

Heinzerling's first two legal sources appear on their face to support a moral prohibition against knowing killing. First, though the conduct of the typical polluter is outside the scope of the criminal ban on murder, our condemnation of murder suggests that decisions to engage in behavior that causes a person's death are, in general, morally problematic. Second, Heinzerling cites regulatory statutes that criminalize the act of releasing hazardous substances with knowledge that doing so will place another person in "imminent danger of death or serious bodily injury."[10] Though the pollution about which Heinzerling and I argue—pollution subject to cost-benefit analysis based regulation—can be linked to disease and death, it does not pose the kind of "imminent danger" addressed by these laws.[11] So, as with laws against murder, these

[9] *Id.* at 523–25.

[10] *Id.* at 524 (citing 33 U.S.C. § 1319(3)(A) (2000); 42 U.S.C. § 6928(e) (2000); 42 U.S.C. § 7413(c)(5)(A) (2000); ARIZ. REV. STAT. ANN. § 49-464(A) (2005); ARK. CODE ANN. § 8-4-103(a)(2)(A) (2000); COLO. REV. STAT. § 25-7-122.1(3)(a) (2004); GA. CODE ANN. § 12-9-24(a) (2001)).

[11] Because the strict criminal provisions must be read alongside the provisions that allow for the use of cost-benefit analysis, they can only be read to apply to the fairly unusual situation where one knows that a particular release of pollution will directly and immediately endanger a particular person. They do not apply to the situation we are concerned with, in which a polluter imposes a much more diluted and dispersed risk on the population as a whole and in which, often, the effects of such pollution cannot be seen as operating in isolation from

environmental statutes cited by Heinzerling do not directly address the kind of pollution at issue in this Note. In both cases, however, Heinzerling suggests that these laws give voice to a more general moral worry about deliberate decisions to engage in life-threatening behavior.

While it may sometimes be appropriate to infer a broad moral norm from a more specific legal prohibition, a reason to do so here is not clearly evident. The very fact that these two kinds of laws do not reach the typical polluter suggests that there may be a morally significant distinction between the conduct they prohibit and the sort of pollution permitted by our regulatory laws. Moreover, if the laws cited by Heinzerling should count as evidence of a moral norm, then those regulatory statutes that allow other sorts of pollution on the basis of cost-benefit analysis should count equally as evidence about the limits of that norm. Because Heinzerling's first two legal sources are equivocal, they do not provide much support for the existence of a norm broad enough to prohibit pollution outright.

The third area in which Heinzerling claims to find support for her broad moral norm is the law of negligence. Heinzerling acknowledges that this is a rather surprising source of support, because the black letter law in this area quite clearly allows people to impose significant risks, even deadly risks, on each other. According to the well-known Hand formula, one has a duty to avoid imposing a risk only when the burden of avoiding it is less significant than the risk that would be imposed.[12] This formulation appears to encourage the use of cost-benefit analysis in making decisions about how much risk to impose. However, Heinzerling claims that this is not the way juries tend to apply the law:

> [W]hen private actors in court cases are shown to have actually used the Hand formula in the decision-making that preceded the injury or death that led to the tort case—when private actors use cost-benefit analysis to decide whether, for example, to adopt a safer product design—they are severely punished for it.[13]

Heinzerling takes these reactions to reveal a common sense moral repulsion to the idea of justifying life-threatening behavior on the basis of a cost-benefit analysis.

Though juries are sometimes outraged by a defendant's use of

other environmental hazards.

[12] United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947).

[13] Heinzerling, *supra* note 4, at 525.

cost-benefit analysis, to interpret this as support for the norm against knowing killing requires an assumption that juries are in fact punishing firms for attempting to use cost-benefit analysis at all, rather than for failing to use it correctly. This pits the reactions of juries directly against the logic of the Hand formula. It becomes pertinent then to ask whether jury reactions are reliable indicators of reasonable moral views.[14] Jury decisions often reflect the responses of decent people, guided, at least in part, by a sense of justice. However, it is also an unfortunate fact that juries can be prejudiced, vindictive, and unprincipled. Many procedural and evidentiary principles are designed precisely to curb the injustice that can be caused by the biases and emotions of jurors.[15] It would be naïve to suppose that these legal principles are perfectly effective. Juries remain likely to be swayed by characteristics of particular litigants (or their lawyers) that have very little to do with the just result. Because of this, we should hesitate to rely on the reactions of jurors as evidence of broad moral norms, particularly when we may evaluate the moral arguments and intuitions for ourselves.

This brief review of Heinzerling's affirmative case does not settle any questions. It simply shows that her evidence for the moral prohibition against knowing killing is unconvincing. Her examples reveal a strong concern about *some* decisions to engage in life-threatening behavior, but they do not require an inference that *all* such deliberate decisions are morally prohibited. Other relevant evidence undermines the broad prohibition against knowing killing that Heinzerling urges, suggesting instead that our

[14] Framed in this way, it also becomes pertinent to ask whether jury reactions are *more* likely to reflect reasonable moral views than the common law tort principles articulated by judges. I cannot possibly answer this question here, but it is worth keeping in mind that unlike jurors, judges developing common law principles must justify their decisions to their peers and their academic critics. Though critical reflection and justification have their limits, judges are not generally free to act on unexamined impulse. Instead, they must consider whether their principles will function as part of a coherent system of reasonable norms. I do not deny that the decisions of judges may reflect the biases of a particular class and profession. Nonetheless, their decisions bear important indicia of reasonableness, and it is appropriate at least to consider them seriously as candidate principles of justice and morality.

[15] To take just one example, a defendant in a criminal trial may be entitled to a mistrial if a prosecutor attempts to inflame the emotions of the jury and appeal to their sympathy for the alleged victim. Such a rule clearly reflects a fear that a jury may be moved to convict on the basis of these emotions rather than on the merits. *See, e.g.*, People v. Ashwal, 347 N.E.2d 564, 566–67 (N.Y. 1976).

moral views in this area are quite nuanced.

Consider two examples. First, very few of us believe that it is *always* immoral to use deadly, military force. Indeed, most feel that we can be morally obligated to do so in certain situations. Second, as a nation we are in the midst of a prolonged debate about the morality of euthanasia and related end-of-life medical issues. Powerful arguments can be made for the idea that doctors, in certain situations, may engage in behavior intended to end the life of their patients;[16] Oregon voters have put this view into law by direct referendum.[17] Even if one disagrees with euthanasia, the mere fact of controversy would make little sense if there were a clear moral rule against all forms of "knowing killing."

These two cases reveal the over-breadth of a norm focused on direct, intentional killing; Heinzerling's norm would apply even more broadly. To bring polluters under its net, the ban on "knowing killing" must apply to cases in which one knows that someone, somewhere will eventually die as the result of one's behavior, even though one is not trying to kill anyone. As Heinzerling puts it, the ban applies anytime one engages "in a course of conduct that [one] knows carries with it a practical certainty of death."[18] Consider what this would rule out. Anyone employing a large enough fleet of vehicles over a sufficient period of time can be practically certain—even if aggressive safety measures are followed—that they will eventually cause a fatal accident. Airlines, busing companies, taxi fleets, and the U.S. Postal Service, among others, are all potentially immoral killers by Heinzerling's standards. A theory that commits one to this view is badly out of step with mainstream, common sense morality.

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[16] *See, e.g.*, RONALD DWORKIN, LIFE'S DOMINION: AN ARGUMENT ABOUT ABORTION, EUTHANASIA, AND INDIVIDUAL FREEDOM 180–222 (1993).

[17] Oregon Death with Dignity Act, OR. REV. STAT. §§ 127.800–.995 (2001). It should also be noted that even in states that outlaw assisted suicide, doctors commonly feel that they should help their patients end their lives. *See* Sidney H. Wanzer et al., *The Physician's Responsibility Toward Hopelessly Ill Patients: A Second Look*, 320 NEW ENG. J. MED. 844, 848 (1989) ("Some physicians, believing it to be the last act in a continuum of care provided for the hopelessly ill patient, do assist patients who request it. . . . The frequency with which such actions are undertaken is unknown, but they are certainly not rare.").

[18] Heinzerling, *supra* note 4, at 523. Though the phrase "carries with it a practical certainty of" suggests a relationship less restrictive than causation, I think such a reading would be uncharitable. After all, giving birth carries with it a practical certainty of death. I assume that there is a causation requirement implicit in this language.

We should reject the idea of a broad prohibition on "knowing killing." If we do, then Heinzerling has not presented a convincing argument against the use of cost-benefit analysis. Despite this failure, however, the mere fact that pollution does cause death may be a reason for concern about our current regulatory practice. To quiet this concern, we still need a moral argument for licensing life-threatening pollution.

II. THE DOCTRINE OF DOUBLE EFFECT

The key to understanding the moral status of life-threatening pollution lies in a moral distinction between intentional killing and bringing about death as an unavoidable side-effect of an otherwise legitimate activity. This distinction is simply an instance of a widely recognized principle in moral philosophy often referred to as "the doctrine of double effect."[19] In a seminal paper in applied ethics, Thomas Nagel described the doctrine as follows:

> Not everything that happens to others as a result of what one does is something that one has *done* to them. Catholic moral theology seeks to make this distinction precise in a doctrine known as the law of double effect, which asserts that there is a morally relevant distinction between bringing about the death of an innocent person deliberately, either as an end in itself or as a means, and bringing it about as a side effect of something else one does deliberately. . . . Briefly, the principle states that one is sometimes permitted knowingly to bring about as a side effect of one's actions something which it would be absolutely impermissible to bring about deliberately as an end or as a means.[20]

While Nagel believes the principle contains certain difficulties—for example, it may be difficult to know whether to categorize something as a means or as a side-effect—he sees it as approximating a basic and intuitive moral truth.[21]

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[19] *See, e.g.*, TOM L. BEAUCHAMP & JAMES F. CHILDRESS, PRINCIPLES OF BIOMEDICAL ETHICS 206–11 (4th ed. 1994); James P. Sterba, *Introduction* to THE ETHICS OF WAR AND NUCLEAR DETERRENCE 1, 2–3 (James P. Sterba ed., 1985); G.E.M. Anscombe, *Medalist's Address: Action, Intention, and 'Double Effect'*, *in* THE DOCTRINE OF DOUBLE EFFECT: PHILOSOPHERS DEBATE A CONTROVERSIAL MORAL PRINCIPLE 50, 60–65 (P.A. Woodward ed., 2001) (1982); Elizabeth Anscombe, *War and Murder*, *in* WAR AND MORALITY 42, 46 (Richard A. Wasserstrom ed., 1970).

[20] Thomas Nagel, *War and Massacre*, 1 PHIL. & PUB. AFF. 123, 130 (1972).

[21] *Id.* at 130–31.

As Nagel points out, the doctrine of double effect has its roots in Catholic moral theology. However, it has no particular ties to scripture or the sacred elements of Christian faith. Instead, it appears to have its origins in St. Thomas Aquinas's attempt to reconcile the permissibility of deadly force in cases of self-defense with a prohibition against intentional killing.[22] In other words, the doctrine is simply a rational attempt to make absolutist moral prohibitions plausible by confining their scope to their intuitive boundaries. As such, the doctrine has been taken up by contemporary, secular philosophers seeking to make sense of the scope of strict moral prohibitions.[23] I shall explain the basic, non-theological reasons for supporting the doctrine and then deal with two potential reasons for resisting it.

The doctrine of double effect is supported in part by intuitions about particular cases. Consider again the example of a taxi fleet operator. In modern towns and cities, taxis provide a critical service, shuttling those who cannot afford their own car to and from the grocery, the pharmacy, and the doctor. They are also a critical element of the infrastructure that makes life tolerable in a large, dense city like New York City. Clearly it would be wrong for cab drivers to run pedestrians down intentionally, but it is not wrong for a corporation to put a fleet of taxis on the road, knowing that it is practically certain one will eventually hit a pedestrian. This is an example of the doctrine of double effect. It is wrong to try to hit pedestrians, but because cabs serve a sufficiently important purpose, it is not wrong to run a taxi business knowing that hitting pedestrians will be an occasional side-effect of the enterprise. We only require the taxi operator to take certain reasonable precautions to reduce the risk imposed on pedestrians.

It has also been noted that the distinction between permissible strategic bombing and impermissible terrorist tactics supports the doctrine of double effect.[24] It is permissible, in certain limited circumstances, to bomb a military target knowing that some innocent civilians may die as a result, but it is much harder to

[22] ST. THOMAS AQUINAS, SUMMA THEOLOGIAE q. 64, art. 7, at 39–43 (Thomas Gilby trans., Blackfriars 1975).

[23] *See, e.g.*, Thomas Nagel, *Agent-Relative Morality*, *in* PHILOSOPHERS DEBATE A CONTROVERSIAL MORAL PRINCIPLE, *supra* note 19, at 41, 44–47; MICHAEL WALZER, JUST AND UNJUST WARS 151–56 (1977).

[24] *See, e.g.*, WALZER, *supra* note 23, at 151–56; Alison McIntyre, *Doing Away with Double Effect*, 111 ETHICS 219, 219 (2001).

imagine a situation in which it would be morally permissible to target those civilians intentionally as a means of frightening one's enemy. If a military strategist takes steps to minimize the risk to civilians and if he avoids targets when their military importance is outweighed by the unavoidable risk to civilians, he shows that the risk to civilians is a foreseen, but unintended side-effect of his actions. In such a case, it is possible that his bombing campaign is morally permissible. If instead he not only aims at military targets, but also intends to kill large numbers of civilians as a way of scaring his enemy into submission, then the tactic clearly ought to be condemned. The difference between these cases is captured by the doctrine of double effect's distinction between what one intends and what one brings about as a side-effect.

The doctrine of double effect is not simply supported by intuitions about particular cases. It also has clear, theoretical support. Some actions are immoral not only because they have bad consequences, but also because a wicked or callous intention guides them. We condemn murder not simply because it results in a person's death, but also because it involves acting on a wicked and callous motive. When death is brought about as a side-effect, the wicked or callous intent may not be there. So, the two cases should be treated differently. The doctrine of double effect reflects the fact that when the very same result—death—is brought about as a side-effect rather than an intended or desired effect, one of the morally troubling elements of murder may be missing.[25]

This is not to say—and the doctrine of double effect does not say—that causing death as a side-effect thereby becomes morally unproblematic. There are, of course, good and bad reasons for doing something that causes death as a side-effect. Normally, unless one is acting on a sufficiently good reason, engaging in behavior that causes death as a side-effect will still reflect a callous or wicked will. Thus, causing death as a side-effect is only permissible under the doctrine of double effect if one's reasons for causing it are sufficient to show that one is not acting wickedly or with callous indifference. In keeping with these intuitions, discussions of the doctrine of double effect generally suggest that a proportionality condition must be satisfied in order for it to be

[25] For a similar rationale, see Nagel, *supra* note 23, at 46–47 (arguing that intentionally causing harm, as opposed to bringing it about as a side-effect, is strictly prohibited because only the former involves aiming at, or being guided by, evil).

permissible to bring about harm or death as a side-effect.[26] Roughly speaking, a proportionality condition requires that the good at which one aims outweighs the imposition of the harmful side-effect. I will clarify this point below, in the context of applying the principle to pollution. The point here is simply that according to the doctrine, when one brings about a harm as a side-effect rather than as an intended result, the permissibility of one's action will depend not on the application of a categorical moral prohibition, but instead on a balancing of the harmful side-effect against the intended good.

The doctrine of double effect is not uncontroversial. So it may be worth briefly considering why some might resist it. Because the doctrine tends to emphasize the role of prohibitions on certain kinds of intentional action, it must be resisted by anyone who believes the consequences of an action alone determine its permissibility. Direct utilitarianism, for example, determines the moral permissibility of an action by comparing its consequences for general happiness against other possible alternative actions. It treats known side-effects and directly intended effects alike; both are consequences with the same potential to affect happiness. But this sort of challenge need not concern us here. First, direct utilitarianism is not a plausible moral theory precisely because it fails to recognize and support the importance of moral rules. Second, even if it were plausible, it would provide no help to the critic of cost-benefit analysis-based regulation. After all, utilitarianism would have us do whatever, on balance, creates the most benefit for the lowest cost. Instead, we should focus on problems for the doctrine of double effect that do not involve abandoning the role of moral rules, such as the rule against intentional killing.

Some critics of the doctrine of double effect raise doubts about whether its central terms, such as the distinction between known side-effects and intended effects, can be made precise enough to accurately distinguish those acts that are permitted under the doctrine from those that are not.[27] Generally, this sort of

[26] *Id.* at 221–22.

[27] *See, e.g.*, Jonathan Bennett, *Foreseen Side Effects Versus Intended Benefits*, *in* PHILOSOPHERS DEBATE A CONTROVERSIAL MORAL PRINCIPLE, *supra* note 19, at 85–118; Nancy Davis, *The Doctrine of Double Effect: Problems of Interpretation*, *in* PHILOSOPHERS DEBATE A CONTROVERSIAL MORAL PRINCIPLE, *supra* note 19, at 119–42.

critic questions whether there is a straightforward and reliable way of distinguishing those known consequences that are the means to one's goal and those that are merely side-effects. Is killing a person in self-defense a means to protecting oneself or is it simply the unintended side-effect of one's attempt to incapacitate the attacker? This line of criticism doubts that there is a meaningful answer to this question, or at least one that could explain our moral intuitions about self-defense.

This sort of criticism turns on questions about the nature of intention. So, a thorough discussion of it would take us deep into the philosophy of action and well beyond the scope of this Note. Nevertheless, it may be possible to explain briefly why criticisms along these lines do not pose a general threat to the doctrine of double effect. I believe that the doctrine requires little more than common sense judgments about causation and intention and that philosophical puzzles about these concepts should not lead us to doubt our general, common sense grip on them. First, we can generally distinguish means from side-effects. Means are things that cause or help bring about ends; side-effects are things that happen as a result of actions but that do not themselves causally contribute to ends. Of course, this alone is not enough, for the doctrine of double effect does not depend simply on this objective distinction between means and side-effects. It depends on a subjective distinction between what one intends as a means and what one merely foresees as side-effect. Only this distinction has the sort of moral significance that explains the point of the doctrine. So, we must also be able to distinguish those things that one brings about *because* they causally contribute to the realization of one's goals from those things that one brings about as a side-effect regardless of their potential contribution to the realization of one's goals. This may be more difficult. A purported side-effect may independently further one's goals even though it is not the primary means by which one intends to bring about one's goals, and in such a case, it may be hard to know whether the purported side-effect is really unintended or has been secretly embraced by the actor. Normally though, this is only evidentiary problem, not a reason for doubting that there is a real and morally significant distinction between intended consequences and side-effects. Furthermore, as we shall see in the next section, distinguishing intended means from side-effects poses little problem in the context of pollution.

III. DOUBLE EFFECT AND ENVIRONMENTAL REGULATION

This section applies the doctrine of double effect in analyzing the moral status of pollution and a regime that permits it on the basis of cost-benefit analysis. Normal, law-abiding polluters do not intend to kill either as an end or as a means. Illness and death do not help to bring about a polluter's goals. Instead, a polluter's goals are furthered by the use of relatively inexpensive means of production, and pollution and illness tend to be side-effects of such means of production. We can reach this conclusion while being perfectly realistic about polluters' goals. Among a typical polluter's goals may be the provision of critically important goods, like electricity, heat, and building materials. But most polluters are generally just as interested in selling us products to serve our more trivial ends, because, we may safely assume, they are motivated by personal economic gain. All I am claiming at this point is that it is not plausible to see illness and death as the means to any of these goals. On the contrary, premature deaths are likely to frustrate the economic goals of polluters. In short, the harm caused by pollution should be treated as a known side-effect and not as an intended effect.

According to the doctrine of double effect, when a polluter causes death as a side-effect of normal industrial activity, his conduct falls outside the scope of the strict moral norm against intentional killing. Instead, it should be subjected to a proportionality principle, according to which harmful side-effects are permissible only if the intended effects of the polluting activity justify the harm. A more precise, generalized formulation of the proportionality principle would be too difficult and controversial to defend here. Case by case application of moral judgment, guided by appropriate sensitivity to the real harms and benefits of polluting activity, is both adequate for our purposes and the best we can do.

When we apply such judgment to polluters who, using the control techniques mandated by cost-benefit based regulation, foresee that their pollution will contribute to illness and death, it is quite unlikely that we should be led to a uniform verdict. Instead, it is more likely that the varying details of polluters' operations will reveal that some act immorally, without adequate regard for the significance of their side-effects, while others act morally, despite the significant side-effects of their pollution. Where along

the spectrum a particular polluting firm falls will depend on the real significance of the goods or services it provides compared to the significance of the harm it causes. Whether a polluting firm minimizes its side-effects above and beyond its legal obligations may also be relevant. And we may also want to consider factors more indirectly tied to their polluting activity. For example, if a firm is not spending everything it might on pollution control, it may matter whether it pockets the marginal profits or whether it passes on the savings, keeping its products accessible to the poor. Or, it may matter how many people are provided with good careers and health care as a result. Put briefly, we probably need to know a great deal about any particular polluting operation before we could say how it would fare against a moral proportionality requirement. If this is a plausible approach to determining the moral status of polluting activity, then it is no criticism of our law that it involves deliberate balancing of costs and benefits. On the contrary, careful consideration of whether the benefits outweigh the harmful side-effects is precisely what morality demands of polluters.

Though our law sets pollution controls by balancing costs and benefits, what our regulators do is in fact quite different than the sort of balancing required by the proportionality principle. When using cost-benefit analysis, regulators ask whether the financial cost of reducing pollution by a particular increment is more than the health benefits that would result. But they do not factor into the analysis the human or moral significance of a particular firm's primary products or how the firm spends the profits of its polluting activity. The sort of cost-benefit analysis done by regulators is blind to these morally relevant factors. Thus, cost-benefit based pollution limits allow firms to pollute at the same rate whether they produce something trivial, something meaningful, or a mixture of the two. Practically speaking, as long as the firm produces something profitable, it will be able to pollute. It might be argued then that our laws do not do enough to ensure that pollution is produced only where there will be a morally significant pay-off.

The problem with such an argument is that there are very good reasons not to require, by law, the full moral evaluation required by the proportionality principle. First, any such analysis would be difficult and controversial, raising a significant risk of arbitrary application. Second, by attempting to discriminate

between those polluting activities that have morally significant benefits and those that do not, we may in fact lose out on benefits that emerge at a more general level. Significant benefits may accrue not simply from having a particular firm making, say, concrete or paper, but from having a system that allows entrepreneurs to experiment relatively freely in industry. This freedom serves the liberty interests of both entrepreneurs and consumers, providing an opportunity to choose among jobs, consumer products, and, indeed, lifestyles. If this form of freedom contributes to a robust economy, then it contributes to our ability to fund, among other things, education, health care, and the arts. It may thereby bring about more morally significant benefits than the harm it licenses. These are quite plausible reasons for allowing industry to impose some degree of risk on society generally, regardless of whether particular firms or industries achieve significant benefits on their own.[28]

In light of these considerations, our cost-benefit based pollution regulation appears to strike a reasonable balance between competing moral considerations. Such a balance would be inappropriate if pollution involved direct intentional killing, but because it does not, we may reasonably tolerate some of its bad side-effects in order to receive its benefits. In this sense, our cost-benefit based pollution regulations are like our traffic safety laws. We must tolerate some unintended traffic deaths, even assuming compliance with the law, if we want the benefits of transportation. We might prevent some of these deaths by attempting to police the reasons why people drive, only letting them drive for the sake of a significant end. But this would likely cause more harm than good. So, in a calculating manner, we set limits on how people drive in order to strike a balance on the whole between the systemic benefits of liberty and rapid transportation on the one hand and death and injury on the other. This means that many people will drive and thereby endanger a great many people for reasons that might not justify the risks they impose. But if, on the whole, this

[28] This is not to say that particularized bans would be inappropriate where it is clear that the polluting means of production are not justified by the good produced. Most obviously, this is appropriate where the benefit provided by a polluting activity can also be achieved through inexpensive, non-polluting means. For example, if yard waste can be dealt with through municipal composting, then it may make perfect sense to ban the practice of burning raked leaves.

is the best way of securing benefits of greater (or equal) moral significance than the harm imposed, I see no clear objection.

For all I have said, it could turn out that our laws allow too much (or too little) harm. The general benefits of free industry, which I have briefly sketched, may be overvalued in the regulatory balance we have struck. Perhaps they do not adequately justify the harm we allow polluters to cause. An argument for this conclusion might be supported by a more thorough analysis, both moral and empirical, of the real world effects of raising or lowering our emissions standards. Such an analysis is beyond the scope of this reply. All I have sought to show is that an argument against our laws cannot be made out by reference to a strict moral norm against knowing killing. Instead, the doctrine of double effect provides the appropriate moral framework for evaluating these regulations, and within this framework, they are not clearly out of step with our moral values.