ETHICS AND STOCHASTIC PROCESSES

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INTRODUCTION

There is some irony, and perhaps a bit of gallows humor, in opening a paper in this volume with the claim that “applied ethics” is a misnomer. Yet that claim is true in the following sense. What we need for most of the issues that have sparked the contemporary resurgence of moral and political theory is not the application of ethics as we know it, but the revamping of ethics to make it relevant to the issues we face. It is in our concern with major policy programs that ethics and political philosophy are most commonly rejoined to become a unified inquiry after a nearly complete separation through most of this century. Yet, ethical theories may be shaken to their foundations by our effort to apply them to policy problems. I do not propose to revamp ethics here, but only to show that much ethical theory cannot readily be applied to major policy problems.

There are at least three important characteristics of major policy issues in general that may give traditional moral theories difficulties. First, such issues can generally be handled only by institutional intervention; they commonly cannot be resolved through uncoordinated individual action. Theories formulated at the individual level must therefore be recast to handle institutional actions and possibilities. Second, major policy issues typically have complicating strategic interactions between individuals at their bases. Third, they are inherently stochastic in the important sense that they affect large numbers with more or less determinable (or merely guessable) probabilities. C. H. Waddington calls such issues instances of “the problem of the ethics of stochastic processes.”

Elsewhere I have addressed implications of the first two of these problems for utilitarianism, and I will not consider them independently here. Instead, I will focus on the third issue, the stochastic nature of major policy problems. The three classes of problems are not entirely separable, however, because large-scale stochastic problems generally require institutional resolution and the institutional

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structure for dealing with such a problem may also depend on the nature of the individual strategic interactions at the base of the problem. For example, if we wish to overcome a disease, such as smallpox in the past or AIDS today, we may best be able to do that by affecting the interactions that contribute to its spread.

Virtually all stochastic problems that provoke major public policy action may involve external effects, both from the behavior being regulated and from the regulation itself. Hence, discussion of risk or probabilities pure and simple, as in individual gambling decisions, misses something at the core of stochastic policy issues. For large-scale stochastic problems it is often inescapably true that the policies will similarly be stochastic. There will be harms as well as benefits resulting from any policies that deal with them. Moreover, in some meaningful sense, those harmed may not be those benefited. These characteristics will fit many policies that moral theorists of all stripes are likely to find acceptable, even morally mandatory.

My purpose here is not to establish definitive claims for the rightness or wrongness of particular policy prescriptions, but only to establish the form that such assessments must take. Such assessments depend on a combination of scientific and ethical understandings of the nature of the problems we face and of the plausible resolutions of them. Throughout, I will discuss a problem — vaccination against a major disease — that should not be very controversial, either in the realm of morals or the social sciences. Just because it is not likely to be morally controversial, it will be very useful in exemplifying the nature of stochastic policy problems. Many policy issues are importantly similar to the vaccination example.

Even from this brief account of the nature of stochastic policy problems, it may already appear that the difficulties of dealing with them will be more acute for nonconsequentialist moral theories than for some consequentialist theories. This appearance does not deceive, as even a sketch of several nonconsequentialist classes of moral theory suggests. For example, virtue theories are largely inadequate to the task of handling major policy problems without the addition of a large element of consequentialist concern. Virtue theories often put ends and means in a functionalist relationship, so that, to specify what is a virtue, we must first say what is the end that we wish the virtuous to achieve. Consent and contract theories might in principle be able to handle stochastic problems, but they can do so only at a rationalist level of hypothetical consent — even at that level, moral theorists seem unable to reach consensus. Theories that are based on respect for persons or the rights of persons are arguably far more interesting for the evaluation of policies. But they are acutely afflicted with problems of stochastic processes, and it is to such theories that most of the discussion here will be addressed.

I. The Stochastic Nature of Policy Issues

To see the peculiarly stochastic characteristics of the complex policy problems we often face, consider a relatively simple problem: vaccination against some disease (say, smallpox before it was finally eradicated in 1977). Suppose the facts are roughly these. We vaccinate millions, almost the entire population. If we vaccinated no one, perhaps ten percent of these people would contract serious cases of smallpox. Many of these would die, many would be permanently, even hideously, scarred, perhaps most would be at worst slightly scarred but also beneficially inoculated against further attack from smallpox. When we vaccinate almost everyone, a very small number of those vaccinated suffer serious cases of smallpox from the vaccination itself, a few of these die, and a few are badly scarred. There is virtually no question that fewer are harmed by vaccinating than by not vaccinating the population. But it is eminently plausible to suppose that many of those who suffer from the vaccination would not have suffered from the disease if we had not vaccinated. Have we done them harm for which we should be held responsible when we vaccinate?

Perhaps it matters what the rest of the story is. It could be that, ex ante, everyone has voted for vaccination and that all have voluntarily presented themselves for it. But, ex post, many of these people must reckon that the vaccination was a mistake for them. If we all voluntarily gambled on the benefits of vaccination, no one might seem to be responsible for the losses of those few who lost the gamble. Alternatively, it could be that we have required vaccination in order to overcome the natural tendency of many people to want to free-ride on the effects of the vaccination of others. They can free-ride if enough people are vaccinated, because then even the unvaccinated may be relatively secure against infection. Now the losers on the vaccination gamble may seem to have a justified complaint that, in a sense, they were made to suffer in part in order that others might benefit. In the world of actual policies, this is commonly the problem we face: there is no prospect of universal consent, so that some will have their wishes overridden or will even be coerced.

Many vaccination programs have been coercive. The current vaccine of “choice” for polio in the United States since 1962 is the Sabin live vaccine. The alternative to it is the Salk killed vaccine. From the live vaccine, some of those vaccinated contract serious cases of paralytic polio (five to ten cases a year currently in the United States, or one case per 560,000 first doses of the vaccine). From the killed vaccine, no one contracts polio. There are disputes over the effectiveness of the two vaccines, so that one might finally conclude that running the risk of contracting polio from the live Sabin vaccine is offset by the reduced risk of the failure of the vaccine to protect one from naturally contracting polio in the wild, or one might conclude the converse. But there is an additional argument that is used in defense of the Sabin vaccine, which is that that vaccine, because it is live, may lead to the secondary protection — “herd immunity” — of the unvaccinated by giving them mild doses of the disease from contact with recently vaccinated children. Hence, if we do not directly reach everyone with our vaccination program, we may reach more people with the live than with the killed vaccine. This argument clearly relies on directly using some people to protect other people. It is not given as a public rationale to the parent whose child faces the risks of the Sabin vaccine. One suspects that many parents would, if given a choice, choose the killed Salk vaccine for their children.

5 ibid.
To make the stochastic quality of the issue clearer, consider some actual data on smallpox vaccination. In Massachusetts in 1721, Zabdiel Boylston used live pox to inoculate 247 people, his son and friends, against smallpox. Six died (one in 41). Boylston was reviled. In a subsequent epidemic, the remaining 241 of his vaccinees survived, while one in seven of the rest of the population died. Inoculation, even in Boylston’s crude form, seems to have posed the lesser *ex ante* risk. (Of course, he was performing an experiment in a state of such ignorance that he could not have known how good the odds were.) If nothing but chance controlled which of Boylston’s vaccinees died of smallpox and which would have died from the later epidemic, then most or all of those who died in the inoculation would have survived had they not been vaccinated, while thirty to forty others in the group would have died.

In recent times, the odds in favor of vaccination against smallpox had become radically better for those who were at much risk of getting smallpox. For populations in which vaccination was widely prevalent, such as the United States, the risks from vaccination may still finally have become greater than the risks from not being vaccinated because one was more likely to contract the disease from an initial vaccination than from exposure in the wild while not vaccinated. For diseases that have vectors other than human carriers, the odds may not finally tilt so strongly against vaccination for an individual in an otherwise well-inoculated population.

Other issues that are similarly stochastic are policies on the building of highways and various safety devices for them, policies on permitting various levels of air traffic, policies creating long holiday weekends, policies for testing new products (perhaps especially chemical products), policies on the generation of energy, and, of course, policies on testing nuclear weapons. Less obviously, another stochastic problem (in large part) is the policy of nuclear deterrence. Even the policy of raising the level of education might be associated with a rise in the suicide rate, as Philippa Foot supposed. For the smallpox vaccination, we might be quite confident of just what the odds are, as we may also be for variant policies on highway driving speed, variant levels of taxation on cigarettes or alcohol, and many other policies. For nuclear deterrence, we can do little more than guess what would be the likely casualty levels of maintaining or abandoning the deterrence policy. For many stochastic problems, we can perform tests; for others we cannot. For many, we can observe statistical regularities at some micro-level over a long period of time (as in our knowledge of various effects on highway traffic fatalities); for others, we can observe them only at a macro-level at which the learning comes too late to have a beneficial effect on policy (as in nuclear deterrence policy or policies on various contributions to the greenhouse effect, which itself might even turn out to be beneficial).

But all of these issues have in common their stochastic quality. One might say, “It’s wrong for people to die in traffic accidents.” But if asked to unpack such a claim, one must grant that its meaning at the policy level can only be that we should suffer certain costs to reduce the incidence of traffic accidents. It cannot imply an absolute injunction. Similarly, in the vaccination case we simply have no choice but to vaccinate or not to vaccinate, even though our vaccine may bring immediate harms. We cannot wait for a perfectly safe vaccine without seeing a high incidence of smallpox in the meantime. In every case, the policy decision is one between different evils, as in fewer versus more deaths. Waddington supposes that such stochastic problems are the common product of technological innovations. Since we often want the benefits of such innovations, we might have a public policy of indemnifying or especially caring for those who turn out to be the losers from our interventions, although in the United States we traditionally have not done this. The losers on the highways, in vaccination programs, in the airlines, and in many other contexts have often borne their own losses, sometimes through *ex ante* insurance or implicit self-insurance, even though it would seem to be meaningful to say that they have paid to some extent in order to relieve others of various burdens.

In all of these stochastic problems, arguments for and against various policies are often essentially utilitarian. Fewer people will suffer if we vaccinate than if we do not vaccinate. Arguments against deliberate interventions that directly require certain behaviors by people, however, often take the form of a defense of libertarian rights. The individual has a right to refuse to be vaccinated, to refuse to wear seatbelts or safety helmets. Such arguments virtually never arise in certain contexts, such as air safety, in which my refusal to follow some safety rule may have clear external effects on the safety of others.

The vaccine case has one uniquely interesting quality that distinguishes it from many of these cases. In it, *ex ante* costs and the *ex ante* benefits are the same for all. Moreover, the costs are borne almost entirely internally by the affected group. These characteristics are virtually in the nature of the problem. There are minor costs of time and money that may be borne unequally, but these are trivial in comparison to the other costs and benefits. Only free-riders on the vaccination of others benefit from significantly unequal costs. The costs of reducing highway traffic fatalities need not be borne entirely internally by the affected group, and the costs and the expected benefits may not be at all equally distributed *ex ante*. The costs and benefits may be approximately fitted – for example, through carefully designed user fees – to the affected group, but in principle they need not be. Many other major stochastic policy problems are more nearly like the highway traffic problem in this respect than like the vaccination problem. Resolutions of these problems do not naturally entail particular forms of cost-sharing.

Virtually all policies on large-scale stochastic problems require the imposition of risks on someone. Suppose that a large fraction of our population refused to seek vaccination against smallpox (or polio, or AIDS, or whatever) on the claim that they would rather take their chances with nature than with the vaccine, even if nature’s dice seem to be more heavily loaded against them. If eradication of the
disease depends on eliminating it from human carriers, as eradication of smallpox did and as eradication of AIDS might, leaving this fraction out of our net might mean the continuation of the disease through this generation rather than its final eradication. If we force vaccination on these objectors, as we commonly have done in the case of school children, we force a particular stochastic risk on them in the cause of reducing overall risks.

The form that risks might take can vary enormously for policies on various stochastic problems. For the vaccination policy, the stochastic form of the risk is that it would be distributed across a small fraction of the affected people with virtual certainty: that is, it would imply a high cost for a small number of unidentified people. In stark comparison, for the policy of nuclear deterrence, the risk is supposed by strong supporters of deterrence to be a small likelihood of an extraordinarily large cost. For the vaccination policy, we might be quite confident of and in agreement on the numbers who would be affected by alternative policies. For the deterrence policy, we might have only vague guesses about relative numbers affected ex ante and we might substantially disagree on these guesses. Indeed, guesses in print disagree wildly. Such differences in the form and confidence levels of the risks may be very important differences, but they do not have immediately evident moral significance.

Typical of both the vaccination and the nuclear deterrence policies is that they are inherently consequentialist in their rationales. It seems unlikely that we can give a compelling nonconsequentialist rationale for imposing vaccination on objectors. The consequentialist rationale is one of trading off risks to the well-being of some against risks to the well-being of others. For example, in the vaccination case, we accept immediate harm to a few in return for reducing harm in the long run to very many. In some nonconsequentialist theories, such as theories of rights or of respect for persons, the basic moral principles concern what harms we may inflict on persons. It would typically be wrong on such a theory to kill certain people in order to secure the survival of others, even very many others. But surely, even on such a theory, it cannot be wrong for me to undertake any action whatever that might entail the risk, however slight, of harm or death to another. Last night, I drove my car to a restaurant merely for the sake of a pleasant dinner for my family. In doing that trivial thing, I plausibly risked killing someone in an accident. Even though it would have been wrong for me to kill someone in order to give my family a pleasant dinner, it seems incredible to suppose that it was wrong to drive us to dinner at the very slight risk of killing someone. This is, in essence, an individual-level analog of large-scale stochastic policies.

One might have an immediate intuition that it would be wrong to risk doing what it would be wrong to do deliberately. But such an intuition cannot withstand scrutiny. Individual risks of doing harm to others in order to benefit oneself are inherent in living, and the harms to others that one risks are typically harms one could not do deliberately without the justification of offsetting benefits. Of course, this is true not only at the individual level but also at the level of social policy. For example, to have a criminal justice system imposes the risk of convicting innocents. We may attempt to reduce that risk, but we cannot eliminate it entirely if we have a

practical justice system. Despite that risk, we will want such a system, and will think it more just to have such a system with its particular injustices than not to have one at all.

"If these ideas are right," Judith Jarvis Thomson says of a similar account of individual actions for minor gain that put others at slight risk of great harm, "— and it really does seem that they are — then risk-imposition does generate an independent problem for moral theory. For there is a further question that then arises, beyond the question what harms we may or may not cause in what circumstances, namely, the question what risks of what harms we may or may not impose in what circumstances."  

Thomson's point here, that risk-imposition is a special problem for moral theory, is compelling for a moral theory that focuses on act-kinds, as it is for many theories that focus on the rightness of kinds of actions, such as lying, truth-telling, killing, or letting die. Her point is not compelling for a theory that focuses on consequences. In a consequentialist theory, the risk of a particular harm may simply carry less weight than the harm itself — it hardly poses an "independent problem." In a theory of the rightness of act-kinds, however, we must include the probabilities of various outcomes from the acts of various kinds in the definition of the act-kinds if relevant risks are to count. If we do that, the theory begins to smack of consequentialism. If it is characteristic of the theory not to be consequentialist but to value something about acts or persons other than their consequences, this move is apt to seem demoralizing. For such a theory, risk-imposition may be not only a special but also a pernicious problem.  

II. STOCHASTIC IMPLEMENTATION

It is characteristic of stochastic problems of large scale that policies to deal with them are implemented by large, complex organizations, indeed, typically by a complex array of such organizations, that, themselves, behave stochastically. Hence, in understanding how they are implemented, we must understand how relevant institutions can work and are likely to work. This means, inherently, that in deciding what the policies should be we must similarly understand what are the possibilities for implementation. This is merely an instance of the moral philosopher's dictum that 'ought' implies 'can'. If I cannot possibly do something, say, rescue you from a shark, then it is wrong to say that I ought to, and it would be wrong to hold me responsible for "failing" to. For example, when the World Health Organization (WHO) set about the task of eradicating smallpox from the world through its Intensified Smallpox Eradication Program in 1967, it was essentially enabled to think of that goal as a policy goal by the fact that many nations had already effectively blocked the entry of smallpox into their populations. Hence,
WHO could target the few populations in which smallpox was residual and in which it may still have resulted in two million deaths each year.\textsuperscript{12}

Even then, WHO could only do this as well as it was permitted by its organizational capacities for gaining relevant information on the whereabouts of smallpox, capacities that mainly turned on the capacities of certain impoverished nations to discover such information about their own populations. In the United States, a new smallpox case would most likely have become known to national health authorities almost instantly through well-organized channels for reporting. The reporting system is backed by strong sanctions and positive incentives, by communication systems that make such reporting easy and effective, and by a long and well-established tradition of reporting. Such systems were not available to WHO in Ethiopia, Somalia, West Africa, Brazil, and Bangladesh. Its task was simultaneously to vaccinate in all communities in which smallpox was known to be endemic, and to try to develop a reporting system that would alert it to additional communities it must vaccinate. To be confident it had succeeded in eradicating the disease (by isolating the last infected person in the world until that person was no longer contagious while also vaccinating everyone in that person’s near vicinity), it eventually had to develop a nearly complete reporting or discovery system to be sure that all communities everywhere were free of smallpox. Making a mistake of omission might have meant a devastating epidemic. An alternative to its policy might have been to try to vaccinate far more people than necessary in an effort simply to be complete. The policy of “case-finding and ring vaccination,” or isolation of any affected person and vaccination targeted to those who were especially likely to be exposed, was, if it could be made to work, the more beneficial and less harmful policy, because it would avoid needless exposure to the vaccine for those who were otherwise unlikely to be exposed to the disease.

Suppose we (at WHO) have decided how to go about eradicating smallpox. We are, to some degree, in the position of Zabdiel Boylston. We will cause harm to some who would have escaped it otherwise, but we will have reduced the overall incidence of harm from smallpox. When we now inoculate a particular person in the Sahel or in Bangladesh, it would be odd to suppose we were responsible only for what happens to that person as a result. We cannot divide the vaccination policy into a right and a wrong part, the part that benefits most people and the part that harms a few. These “parts” are one and inseparable. The good is produced at the cost of the harm. Our responsibility is for the overall policy, given that we understand how it is to be implemented, not merely for isolated results of the implementation of it. If we send fifty vaccinators into the field and one of these has a smallpox death result from her vaccinations, we would not wish to say she was responsible for that death and that the other vaccinators were responsible only for the protections that they successfully gave to their vaccinees. It would be utterly silly to say that our unfortunate vaccinator acted immorally in her one wayward case. We who adopted the policy are essentially responsible for its overall result, including the one death and the presumed thousands of those protected who would otherwise have died.

This is the essential structure of the form of implementation of policies on major stochastic problems, and of the form of moral responsibility for their results. I think it reasonable to say that there is no moral responsibility for the occasional harm from vaccination if the risk of that harm is justified by the great overall benefit from it. Indeed, I think it reasonable to say that we may legally coerce people to accept vaccination in some circumstances. For example, in the United States, children are required to get certain vaccinations before they are allowed to attend school — but they are also required to attend school. Alternatively, we might wish to suppose, as many parents of American children harmed by DPT vaccination have supposed,\textsuperscript{13} that we are responsible for the harm to the occasional unfortunate victim of our vaccination. (I think it more reasonable to suppose that we should make it part of our vaccination policy, whose purpose is to enhance the general welfare, to compensate the losers from that policy in some degree — just because this addition to our policy further enhances the general welfare both \textit{ex ante} and \textit{ex post}.)

A utilitarian naturally would argue that the harms are a tradeoff that we suffer in order to avoid even greater harms and that they, while still harms, are not subject to moral criticism if the overall tradeoff is justified. Proponents of many other moral theories strongly object to such tradeoffs \textit{between people} in many contexts and might similarly object to them in this context. They argue, for example, that individuals or individual rights are inviolable in that, in some sense, they cannot be sacrificed merely in order to make others better off. Sometimes, such theorists allow tradeoffs of harms to avoid greater harms. Without such a caveat, an in-principle objection to any tradeoffs between individuals is apt to strike almost everyone except arcane moral theorists as odd or even perverse, since it would inherently put us in a moral quandary in the face of many, perhaps all, stochastic policy problems. In the world of major policies, we must assume that, whatever moral principles we otherwise follow, such tradeoffs are permissible at least in principle in many cases when lesser likelihood of harm to some is traded for greater likelihood of harm for others. Such tradeoffs are the central rationale for many policies. To refuse such tradeoffs is to say that even a policy of vaccination with known vaccines, all of which occasionally cause harmful, even deadly side-effects, is impermissible — no matter how beneficial those vaccines might be on balance.

III. Tradeoffs in Stochastic Policy Problems

In the early effort by Zabdiel Boylston to inoculate his son and friends against smallpox, it is plausible that the losers from his actions were people who would have been losers from the smallpox epidemic shortly afterwards. But each individual, \textit{ex ante}, seems to have stood to gain from the risk of being vaccinated. Eventually times changed for smallpox vaccination. The strategic structure of benefits and risks, figured \textit{ex ante}, for an individual in a population facing the prospect of vaccination or disease can become approximately that of the Prisoner’s Dilemma once enough


\textsuperscript{13} Sun, p. 1013.
other people have become inoculated. If the vaccination program genuinely works to reduce the likelihood that smallpox can get established at all in the population, then, at some point, the risk to the additional person of being inoculated is greater than the risk to that person of not being inoculated. Yet it may still be true that the benefit (figured in ex ante likely cases of smallpox) to the whole population from the additional person’s inoculation is greater than the net risk to that person. Of course, if our program is intended to eradicate the disease altogether, the overall value of the additional persons inoculation may seem especially great. I am the additional person; I do not wish to have my welfare put at risk for the sake of enhancing the welfare of others. What can you say to me to justify forcing the vaccination upon me? A utilitarian need have no difficulty saying that what matters here is that the net benefits far outweigh the costs, even though the costs are borne by me and the benefits mostly by others.

It is commonly supposed that one very important class of moral theories, associated with the theory of Kant, rules out the kind of strategic, consequentialist rationale that the utilitarian uses here. Kant himself, for example, asserts that it is wrong to lie no matter what the supposed consequences of the lie. It is only the purity of the moral action of lying or telling the truth that matters. To make his view incontrovertibly clear, he asserts that one should not even lie to an intended murderer who wants to know if his intended victim is in one’s house. Even though it might mean the intended victim’s immediate death, Kant supposes that one should truthfully answer that the victim is in the house. Even for a Protestant Prussian of Kant’s time, that seems to be an unduly formalistic view. He was challenged in his view by Benjamin Constant, who argued that a moral injunction here clearly turned on how immoral the circumstances are that one faces. Kant replied at length in print, concluding with what may be one of the clearest deontological, anti-consequentialist arguments ever framed:

...we must not understand [the issue as one of] the danger of doing harm (accidentally), but of doing wrong and this would happen if the duty of veracity, which is quite unconditional, and constitutes the supreme condition of justice in utterances, were made conditional and subordinate to other considerations; and, although by a certain lie I in fact do no wrong to any person [such as the intending murderer], yet I infringe the principle of justice in regard to all indispensably necessary statements generally (I do wrong formally, though not materially); and this is much worse than to commit an injustice to any individual...14

There are two remarkable aspects of Kant’s view that should be mentioned. First, one may note that almost no one other than Kant thinks his radical principle about lying follows from his larger moral theory. Indeed, W.L. Matson, a sympathetic critic who defends Kant’s larger moral theory against Kant’s odd judgment in this instance, thinks the “repellent fanaticism” of this passage merely shows that Kant lived too long as a philosopher.15 Second, one should note that the issue here is far more general in its import than the realm of lying, and in this respect the lesson to be drawn is relevant to Kant’s larger theory. The more general issue is the relation between actions that are relatively narrowly-defined and the consequences that result from them. It is characteristic of strategic actions that their character and definition is typically supposed to follow from their likely results or, more commonly, their likely range of potential results. I do x in order to achieve c. It is almost impossible to formulate many policy statements without formulating them in terms of their intended consequences. To formulate them exclusively in terms of the actions permissible under them would ordinarily be quite cumbersome, or even irrelevant.

Of course, a deontological moral theory that focused exclusively on kinds of actions, rather than on the results of actions, need not moralize everything, so that many actions, as such, might be neither required nor prohibited by a particular theory, while many others, such as lying, might be rigidly governed by the theory. One cannot make much sense of a moral injunction to vaccinate or not to vaccinate someone without tying it to the actual ex ante assessment of the effects it is supposed to have.16 Hence, one cannot have a sensible principle on vaccination in the way one might have a general principle on lying as somehow right or wrong independently of its likely consequences. Of course, this conclusion is quite general in its import: it applies not only to vaccination but also to a vast class of large-scale stochastic policy problems.

Moral theories that persuasively proscribe such act-kinds as murder, lying, and so forth cannot transparently be applied to such act-kinds as those that put some at risk of great harm for the sake of slight or even great benefit for others. Hence, they cannot transparently apply to many policy issues. Indeed, they cannot even transparently apply to the act-kinds that fill quotidian life. Such stochastic choice issues are at the core of public policy and applied ethics as well as practical personal life. If they pose an independent problem for a moral theory, then that theory must master this problem before it can speak confidently to us on such issues.

It may be that any sensible policy on vaccination is ultimately utilitarian. One whose moral theory is based on act-kinds need not disagree with utilitarian prescriptions in such a policy issue. Such a theorist could concede vaccination prescriptions to utilitarian considerations and, with utilitarians, conclude that the act-kind of vaccinating someone is made right or wrong by its general fit with the


16 One might try to bring the problem of vaccination under Kant’s principle of benevolence. That principle is not conceived to address stochastic problems such as those in which the ostensibly benevolent action may benefit some but harm others, but rather to address essentially determinate problems such as those in which one’s benevolent action has a clear and de facto sure benefit for a particular person or persons.
policy. But then the distinctive character of that person's theory may have no role in the moral evaluation of policies on vaccination and many other stochastic problems. This would be a hard lesson. But perhaps it is such lessons that we should expect from the resurgence in moral and political theory that has been stimulated in large part in recent decades by concern with major policy issues. If the young movement of "applied ethics" is successful, it will bring new understandings of ethics and not merely moral prescriptions for policy.

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