OFFICIAL ERRORS AND OFFICIAL LIABILITY*

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INTRODUCTION

James Buchanan has argued persuasively that social scientists who draw conclusions outside of their theories' behavioral domains must exercise care to maintain theoretical consistency.[1] In a 1972 essay Buchanan contended that the traditional economic model could predict the reactions of the private sector to public-policy decisions but, when properly applied, treated public policy as truly external to its domain, that is, as a variable whose values it could posit but not predict. Before the model can have implications for the public sector, he reasoned, economists have to close this open end by drawing the public sector into the model's predictive domain. By making statements about public-sector behavior before encompassing it in their theory, economists create theoretical inconsistencies, such as the expectation that selfless, omniscient (if not angelic) government planners can correct the market failures attending the self-interested behavior of private economic agents. In their failure to close their behavioral system, post-Pigouvian economists have, in Buchanan's view, committed the blunder of implying that when individuals shift nominal roles (from private man to G-man) they also shift behavioral gears. Any theoretical enterprise seeking to determine the operating characteristics of alternative decisionmaking arrangements must thus work with a closed theory—a theory that encompasses all of the decisionmakers involved.

A concern with closed behavioral systems is appropriate to the discussion of alternative legal arrangements and, in particular, alternative liability systems, for it focuses attention on comparative questions—on the opportunity costs of switching from one structure of incentives to another, on anticipated behavioral changes, and on macro- and micro-consequences of these anticipated changes. I am impressed by Mashaw's attempt to examine the operating characteristics of alternative liability arrangements for government officers.[2]

1. Buchanan, *Toward Analysis of Closed Behavioral Systems*, THEORY OF PUBLIC CHOICE: POLITICAL APPLICATIONS OF ECONOMICS 11-23 (J. Buchanan & R. Tollison eds. 1972).

2. Mashaw, *Civil Liability of Government Officers: Property Rights and Official Accountability*, LAW & CONTEMP. PROB., Winter 1978, at 8.

His realistic inquiry into the anticipated behavioral responses of public and private actors to some form of civil liability and his less than sanguine appraisal of liability systems for government officers are generally sensible. He correctly asserts that "a discussion of the various elements of the existing controls on official conduct suggests that the weakness of these controls is perhaps the strongest argument for the use of civil damages."[3] He cannot, however, unqualifiedly endorse any change in the system of civil liability[4] for at least three reasons:

> 1. For some classes of harm—especially harms inflicted by police or affecting constitutional rights—immunity defenses by government officers or their agents are no longer compelling in the eyes of the courts; in these areas, at least, some form of liability system is already in operation.
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> 2. In many areas of government the proposed cure of civil liability for tortious acts by government officers may be worse than the disease; an argument for "appropriate incentives for efficient care,"[5] or even for a level of care more efficient than that under official immunity, is hard to sustain.
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> 3. Related to (1) and (2) above, and especially compelling to me, is the observation that civil-liability incentives may operate in different ways, varying in their effects with the class of act to which they are applied; any general and uniform conclusion about civil liability, then, is bound to be crude and often wide of the mark.

In this brief commentary I assume that other commentators will address some of the challenging legal and economic questions raised by a system of civil liability for government officers. I differentiate my product by donning my statistician/decision-theorist cap in order to explore the idea of bureaucratic error. I argue that in the political environments of most government bureaus error is inevitable, in the sense that the technology of bureaucratic decisionmaking is so primitive that someone's interests are bound to be erroneously injured. In these circumstances perhaps the only salutary effect of civil liability is compensation for injured parties; the more important effect of providing appropriate incentives for efficient care may only be slight.

WHAT ARE BUREAUCRATIC ERRORS, AND SHOULD BUREAUCRATS BE LIABLE FOR THEM?

Bureaucratic decisionmaking errors, like judgmental errors from any other source, are errors of specification and inference. Consider a set $D = [d_1, d_2,$

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3. *Id.* at 23.
4. *See id.* at 10.
5. *See id.* at 23.

. . . , d_n] of possible decisions by a bureau, one element d_i of which will be chosen depending on which of s states of nature $\theta = [\theta_1, \theta_2, \ldots, \theta_s]$ is judged to prevail. To keep matters simple, suppose that once θ_j is known, a unique decision in D—call it $f(\theta_j)$—is determined; that is, $f: \theta \rightarrow D$.

A.   Potential Sources of Error

Conceptualizing the bureau decision problem in this fashion highlights three potential sources of error at the outset:

1.   Has D Been Correctly Specified?

D is the set of decisions available to the bureau, as subjectively perceived by the bureau. This set is constrained by the law; but it is not uniquely determined by the law. Two kinds of specification errors are thus conceivable. First, the bureau may erroneously include an element—say d^*—in D in contravention of the legal constraints. Legal constraints, after all, are neither self-activating nor self-defining. The bureau's interpretation and judgment of them may be in error (that is, at odds with what an authoritative interpreter of legal constraints might ultimately rule). Second, the bureau may erroneously fail to include an element—say d^{**}—in D, perhaps because of lack of imagination or lack of incentive, even though d^{**} is within the legal restrictions on the bureau's discretion and, for some particular state of nature (say θ^{**}), may be the correct choice; i.e., $d^{**} = f(\theta^{**})$.

2.   Has θ Been Correctly Characterized?

θ is the set of states of nature or contingencies that a bureau might face. There are three kinds of error—the two specification errors mentioned above and a parameterization error. First, a state θ^* might be included in the set θ even though it is impossible. Since no decision will be made on the basis of observing an impossible state, this is an inconsequential error, unless the bureau's decision procedures are arranged in light of the mistaken belief that θ^* could occur. If ultimate decisions are prejudiced by this mistaken belief, then an error would have been committed.

Second, a possible state θ^{**} may have been excluded from θ (i.e., believed to be impossible). It is hard to imagine what action a bureau might take upon observing θ^{**}, since its decision procedure, f, is not prepared to map θ^{**} onto an element in D. It is conceivable, however, that because the bureau is ill prepared to arrive at a decision in the contingency θ^{**}, it is also ill prepared to observe θ^{**} at all. That is, like the economist who is not prepared to acknowledge an upward-sloping demand curve for normal economic goods, the bureau may refuse to acknowledge θ^{**} and misperceive it as something else; or it may delay making any decision (which is itself a decision) and proceed to "do more research." Both delay and misperception are decisionmak-

ing responses (if not errors) that are laden with economic consequences.

Third, the set θ may be improperly parameterized. A parameterization of the states of nature is a partition of contingencies into categories. The function f then attaches a decision $d \in D$ to each category. The goal of the partition is to categorize contingencies into homogeneous groups. Inappropriate partitions are those that are too crude or too fine. The former is the more serious, since it lumps relevantly dissimilar contingencies into the same category, thus erroneously requiring (via f) the same decision for different circumstances. The latter separates similar circumstances into different categories. If f dictates that the decision is the same for each of the categories into which these similar circumstances have been separated—e.g., $f(\theta_i) = f(\theta_j)$—then no damage has been done, though some informational inefficiency in decisionmaking is indicated. If, however, f requires different decisions, then an error has been committed in at least one instance. Parameterization problems, in sum, are violations of equal protection.

3. Is the Decision Rule f Appropriate?

The decision rule f specifies the relationship between contingencies and decisions. It represents the intellectual commitments, information collection processes, and internal decisionmaking procedures that convert an observation into a decision. Erroneous judgment can occur in any of these areas. New discoveries occasionally require the reexamination of previous intellectual commitments. Indeed, many sociologists of knowledge have substantiated the notion that intellectual commitments often survive long after they are out-of-date. Information collection processes may provide peculiar or perverse incentives which bias the information collected; for example, the difficulty of eliciting accurate revelations of preference for various public goods is well known. Finally, even if a bureau's models of cause and effect are valid and its information accurate, its decisionmaking procedures may neutralize either of them. Consider, for example, a hierarchical bureau that is decentralized according to the tasks that are prerequisite to a decision. Because of the information loss that accompanies the transmission of information and judgments from lower levels of the hierarchy to higher levels, the penultimate basis for a decision may be misleading at best and erroneous at worst.

What this discussion suggests is that errors in decisionmaking—errors that inflict harm on some and confer benefits on others—are a constant prospect. The issues that must be examined in weighing official immunity from liability against some form of civil liability for government officers involve the impact (if any) that each system of incentives has on the reduction of the various kinds of error described above and on the resources expended to reach decisions. We are ultimately interested in discovering the incentive scheme that minimizes the sum of the cost of errors plus the cost of operating the decision system. (Consequently, the optimum scheme is one that normally permits a

nonzero error rate.) Given the great uncertainties that attend the quantitative assessment required, Professor Mashaw's ambivalence on the question of liability versus immunity strikes me as sensible.

B.   The Effects of Official Liability

I would now like to take the argument a step further by ignoring all of the errors that a bureau is likely to make in specifying D, θ, and f. Suppose, more specifically, either that these characterizations are free of error or that, within very broad bounds, no court will hold a bureau liable for specification errors that do occur.

Now let us consider the kind of problem that I worked on many years ago as an employee of the Biometrical Services Staff, Farm Research Center, U.S. Department of Agriculture. We were asked to construct a scheme to test various features of veterinary biologics. The obligation of the USDA for safety in veterinary biologics differs from that of the Food and Drug Administration for human biologics in two respects that are relevant here. First, the USDA is not required to test every lot of a drug but may sample various lots of a production run. Second, though not required to be as comprehensive as the FDA, the USDA has high testing costs. In particular, the USDA is often required to use dogs, cattle, or horses as test animals, and the per unit cost of each test is therefore high.

To simplify, suppose that D and θ are defined as follows:

D = [approve production run for marketing, ban production run from market]

$\theta = [\mu/0 \leq \mu \leq 1, \mu$ is potency level]

The decision rule f is

$$f(\mu) = \begin{cases} \text{approve} & \text{if } \mu \geq .8 \\ \text{ban} & \text{if } \mu < .8 \end{cases}$$

The technical problem was to design a sampling scheme by which to estimate μ for a given product and production process.

Consider the family of sampling schemes identified by three parameters $[\alpha, \beta, n]$. The parameter n is the number of tests performed. If the per-unit cost of a test is C, and the maximum budget allowed to test any given product is B, then $n < B/C$. The parameters α and β are the probabilities of making either of two errors of inference in testing the hypothesis

$$H_0: \mu < .8$$

α is the probability of rejecting H_0 when it is true; β is the probability of accepting H_0 when it is false. Both α and β are dependent upon n, since the probability of error falls with an increase in the number of tests. If $\alpha(n)$ and

$\beta(n)$ represent the probabilities of error in a decision based on n tests, then $\alpha(n) \geq \alpha(n + 1)$ and $\beta(n) \geq \beta(n + 1)$. The a priori probability that a decision $f(\mu)$ is in error, $E(n) = \alpha(n)+\beta(n)$, thus falls as n increases. But because of a fairly low fixed budget B and a fairly high per-unit cost C, the constraint on n is binding at α and β levels neither of which is trivial. Moreover, for a fixed n one can decrease the probability of either error only so far before causing an increase in the probability of the other. This limitation is illustrated by the figure below, in which the shaded area represents combined probabilities lower than n tests can achieve. The area above this represents probability pairs that can be achieved with n tests; and its edge, line ab, represents the lowest possible value of either probability for a given value of the other. Probability pairs on the ab boundary dominate those above it, since at least one boundary pair will be lower in both types of error than any pair above the boundary. But since any pair on the boundary will be lower than any other in its probability of one type of error, the optimal decision scheme is not determined by this graph alone. One's choice of decision scheme will depend on one's preference between the two possible errors. If one finds them equally undesirable and wishes to reduce only the total probability of error, then the point whose coordinates' sum is lowest will correspond to the optimal scheme. But if one has a preference—say because one is a producer of biologics, a consumer of biologics, or a USDA official whose liability for the two errors is in practice unequal—then a different scheme may be optimal. For example, since β represents the probability of erroneously banning a product, a consumer might favor a decision scheme whose error probabilities fall closer to point b, even though those probabilities yield a higher total probability of error than those at point a. Of course, this is only one of numerous interests that would affect one's choice; and in the end the government officers' preferences will probably prevail.

This particular illustration may not be very useful for an assessment of civil liability for government officers, since, as Mashaw indicates, there may be some doubt about legal causation in this case. I chose it, however, because it involves a government decision that has a scientific basis, is statistical in nature, and for which it seems reasonable to assume that D, θ, and f are relatively well specified. It therefore permits me to assert in the strongest form the following proposition: In the most propitious decisionmaking environment the probability of bureaucratic error is high. Even for those bureaus that make only infrequent decisions the probability of erroneous decisions is high, and as the frequency of decisionmaking increases, the probability that errors will be made approaches unity.

The question remains whether behavioral adjustments in bureau decisionmaking under the threat of civil liability would change this conclusion. I shall first suggest that the threat is quite credible; which in turn permits me to

ERROR CHARACTERISTICS OF VARIOUS DECISION SCHEMES
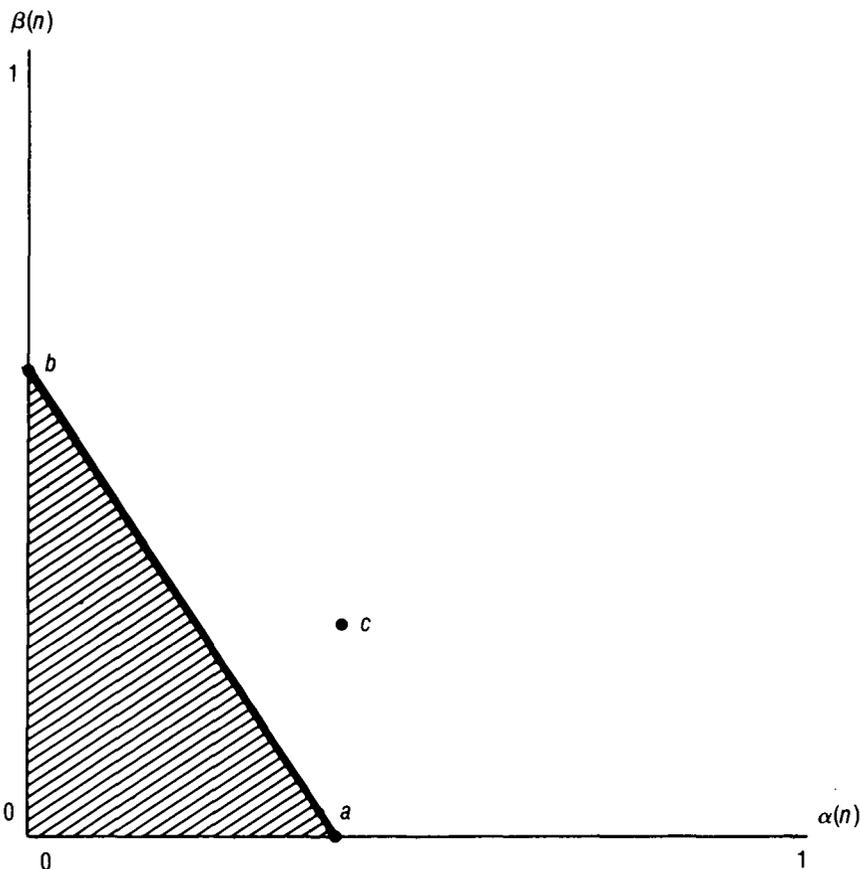
Discussion: This graph represents the paired probabilities of erroneously accepting and erroneously rejecting the hypothesis H_0 on the basis of n tests. In a fixed number of tests these probabilities are interdependent: they can be simultaneously reduced as far as the line ab but no farther; thereafter either one can be reduced only if the other is raised. The shaded area thus represents reductions in both probabilities that cannot be achieved in n tests. The unshaded area above the line represents probability pairs that can be bettered in both terms, at least by one pair on the boundary ab. But no pair on ab can better any other pair on ab in both terms. The optimal decision scheme thus corresponds to one of the pairs of error probabilities on ab; but which pair it corresponds to depends on one's preference in the tradeoff between erroneous acceptance and erroneous rejection of H_0.

argue that even very credible threats will not have major behavioral effects.[6]

It is important to note first that the effect, if not the intent, of bureaucratic decisionmaking is not to discover the public interest but to resolve conflicts among competing interests. With every decision there are winners and losers. In light of the relatively high probability of error a loser (or potential loser)—especially one interested in numerous decisions—may rationally invest resources in a capability to contest allegedly erroneous decisions.[7] Even in the absence of civil liability this may be rational: a reversal or a rehearing produces expected economic benefits to the plaintiff, notwithstanding the lack of compensation for damages or foregone opportunities. With the prospect of compensation as well, the incentive to contest would be even stronger.

The question still remains what behavioral adjustments civil liability would cause on the part of a government bureau. If a bureau's decision scheme is already on its *ab* frontier, its response to the added threat of liability will take one of four forms;

1. Do nothing: If a bureau's decision scheme is on its *ab* frontier, there may be no compelling reasons to change its decisionmaking procedures, especially if changes require substantial additional resources.

2. Move to another point on the *ab* frontier: As suggested above, a bureau may respond by moving along its *ab* frontier. By doing so, the bureau purchases protection against errors harming one set of interests at the cost of an increased likelihood of harming some other set of interests. Movement along the frontier, I suspect, will be responsive to those interests that are most likely to seek compensation for erroneous decisions, *e.g.*, producer interests.[8] To the extent that class actions are permitted or that public-interest groups have standing, this response will be somewhat blunted.

3. Shift the *ab* frontier: A parallel shift in the *ab* frontier represents an improvement in decisionmaking, *i.e.*, a decline in the probability of error.

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6. And the chief effect, at that, will be a response to aggrieved parties who are in the best position to engage in civil actions, *viz.*, concentrated, organized interests, which need not be distinguished by any economic criteria.

7. For example, producers of veterinary biologics engage in extensive testing of their own. Their tests, as characterized by $\alpha(n)$, $\beta(n)$, and n, may differ from the government's. It is often in their interest to spend more on testing than the government; hence their n is often larger. It may also be in their interest to choose a testing scheme—and a corresponding point on the *ab* frontier—more advantageous to their cause than the government's testing scheme, though not actually invalid. The results of these tests will provide the grounds (if there are any) for a claim of erroneous decision. In addition, one should expect to see producers purchasing the services of government scientists and science administrators (as opposed to, or in addition to, higher-level policymakers), not so much for their scientific expertise as for their detailed knowledge of government decisionmaking procedures and the possible sources of error therein.

8. *See* M. OLSON, THE LOGIC OF COLLECTIVE ACTION (1965) (argues that such interests are effective in organizing themselves to produce public goods); Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MANAGEMENT SCI. 3 (1971) (argues that such interests are effective in organizing themselves to "capture" regulatory agencies).

There are (at least) three possibilities to consider: (i) a decrease in the per-unit decision cost C under a fixed decisionmaking technology and fixed budget, (ii) an increase in the decision budget B, and (iii) an improvement in the technology of decisionmaking.

To the extent that civil liability encourages parallel shifts in the ab frontier via (i), its salutary effect is clear. Since $n \leqslant B/C$, and since $a(n) \geqslant \alpha(n + 1)$ and $\beta(n) \geqslant \beta(n + 1)$, a decrease in C causes an increase in n, which in turn causes a decrease in both α and β. A decline in per-unit decision costs, that is, permits decision resources to be used more productively; both types of error will decline accordingly. Precisely the same conclusion follows from (ii), an increase in the decision budget B. Again, to the extent that civil liability encourages an increase in B, it will also reduce both types of error. The desirability of this effect, however, is more controversial, since additional resources, in the form of a larger bureau budget, are required. While there will be more care, it may not be more efficient in the sense of either productive efficiency or allocative efficiency. Holding the budget fixed, as in (i), encourages a bureau to stretch its budget in response to liability; expanding the budget does not encourage productive efficiencies. Moreover, it is entirely possible for the budget expansion to exceed the economic value of a reduction in erroneous decisions; that is, a larger budget need not be allocatively efficient. Finally, via (iii), an improvement in the technology of decisionmaking will shift the ab frontier in a southwesterly direction. Actually, (i) may be regarded as a special case of (iii). I treat (iii) separately because research and development costs may loom especially large here. Thus, as in (ii), the economic gain from more error-free decisionmaking may not justify the necessary costs.

4. Purchase liability insurance: If this option is open to a bureau, then the only effect of civil liability will be to compensate victims, unless the sellers of insurance base their rates on the probability of error in the insured decisionmaking scheme. If insurance rates are tied to $\alpha(n)$ and $\beta(n)$, then there may be some incentive for bureaus to adopt some form of (2) or (3) above.

The four possible responses listed above are based on the assumption that a bureau's decisionmaking scheme is already on the ab frontier. If the bureau's decision scheme is not on the ab frontier, prior to the imposition of liability (say, at point c in the figure),[9] then the new standard of accountability would push it toward that frontier.

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9. This could occur for a variety of reasons. As W. A. NISKANEN, BUREAUCRACY AND REPRESENTATIVE GOVERNMENT (1971) and others have noted, bureaus only weakly monitored by a sponsoring agency (e.g., a legislature) need not accomplish their appointed tasks efficiently. For example, point c in the figure might represent a decision scheme largely determined by the interests of the legislative district of a powerful committee chairman. This example is not purely hypothetical: Some years ago the Congress restricted the Department of Agriculture in its placement of new testing laboratories to locations at least fifty miles from Washington. Had it not been so restricted, USDA probably would have continued to place those laboratories in its research

CONCLUSION

Although this commentary has been somewhat labored, and the illustration quite artificial, several conclusions are justified:

1. Errors of specification and inference are nontrivial in the best of circumstances. They are especially problematical when decisionmaking technology is crude.

2. In order to assess the utility of a liability system, it is necessary to comprehend the various ways decision errors may occur and to consider the behavioral responses a particular system of incentives can be expected to encourage.

3. A system of civil liability for government officers may have no effect, perverse effects, or desirable effects. The First Law of Social Science applies: Sometimes it's this way, sometimes it's that way. A liability system that encourages a southwesterly shift in the *ab* frontier[10] through production economies is socially beneficial. A liability system that encourages a shift in the *ab* frontier through the expenditure of additional resources, or that encourages movement along a fixed frontier, may be socially wasteful or otherwise undesirable on distributional grounds. It would appear, then, that the main (and perhaps only) desirable effect of civil liability is the incentive for productive efficiency.

4. Mashaw suggests that civil liability is likely to vary in its effects by governmental function.[11] He expects that functions not easily monitored by traditional mechanisms of control and oversight, *e.g.*, decentralized functions, "would . . . be particularly strong candidates for the introduction of civil liability."[12] On the basis of the argument developed above I would modify Mashaw's suggestion slightly. It is not so much by the characteristics of government functions that the desirability of civil liability varies; rather it is according to the kinds of errors that a decision process produces. Whether the kind and rate of errors are highly correlated with functional characteristics is hard to determine.

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complex in Beltsville, Maryland, some twenty miles from Washington, where various economies of scale prevailed. The restriction on USDA discretion was the product of a successful political maneuver by southern and midwestern Congressmen on the Senate and House Agriculture Committees who "seen their opportunities for pork and took 'em!"

10. or its analogue in more complicated decisions.

11. Mashaw, *supra* note 2, at 33.

12. *Id.* at 33.