Courage, regulatory responsibility, and the challenge of higher-order reflexivity

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Abstract

Contemporary regulators must respond to ever-increasing societal demands in various domains. Regulators must cope with these demands under conditions of extreme epistemic scarcity and ideological divide. This leaves regulators perplexed about what action they should take. Regulatory praxis offers two primary responses to this moral and epistemic dilemma: technical canonization and reflexive regulation. While these two approaches represent contrary regulatory philosophies, they suffer from two common blind spots: (a) disregard of the critical role of discretionary judgment in regulatory action; and (b) disregard of the dilemma of higher-order reflexivity. The article explores the idea of higher-order reflexivity in the regulatory context. This exploration renders visible the abysses that are faced by regulators as they attempt to resolve regulatory dilemmas through a cognizant and introspective process. The article argues that the Socratic concept of courage and the idea of forward-looking responsibility provide a plausible framework for thinking about the challenge of regulatory judgment. It concludes with a discussion of the legal and institutional mechanisms that could both facilitate and put to scrutiny the realization of this ideal (but noting also several features of the contemporary regulatory system which constitute potential barriers).

Keywords: courage, forward-looking responsibility, higher-order reflexivity, regulatory judgment, Socrates.

> So I would be watching what the police department was doing, what the school system was doing, you know, looking outward. But if you looked inward you'd see that the same game is played everywhere, that nobody's actually in the business of doing what the institution's supposed to do. (Moyers 2011)

1. Introduction

Through its depiction of crime and politics in Baltimore, *The Wire*, the masterful TV series from HBO, provided an incisive portrait of life in US inner cities.[1] One of the series' episodes focused on the attempt of Major Howard "Bunny" Colvin to find a solution to the drug problem that haunted the city. Colvin is particularly frustrated with the way in which the war against drugs is being shaped by crime statistics, which are largely disconnected from life on the ground. The increasing reliance of police command and city politicians on this "statistical flummery" leads the police to focus their efforts on inconsequential arrests of corner drug dealers, which have little effect on people's lives (Moyers 2011; Simon 2011).[2]

Colvin's frustration with the situation increases after he attends a town hall meeting in his district, where he is confronted with residents' complaints about the drug situation, and is forced to admit that the police had so far failed to find a solution to the situation. The meeting with the residents and his recognition of the recurrent failure of the police prompts Colvin to develop a novel and bold response to the city's drug problem. Without informing his superiors Colvin establishes three drug-tolerance "free zones" in derelict areas of Baltimore. Colvin allows the dealers to operate with impunity, provided they refrain from violence and stop dealing on populated street corners. The dealers nickname these free zones "Hamsterdam." Using the free zones, Colvin tries to generate a clear separation between the drug trafficking (which he recognizes he cannot prevent) and the rest of Baltimore – insulating the rest of the city from the adverse effects of the drug trade. This daring strategy succeeds in clearing drug dealing off residential street corners, reducing the level of violence that had blighted these areas for years. The strategy also has some negative repercussions as the free zones quickly degenerate into centers of criminal activity. Ultimately, however, once news of Colvin's experiment leaks to the media, Colvin is forced to resign, and the drug trade (and the attendant violence) returns to its previous form.

The war against drug trafficking constitutes one of the key challenges of the modern society. Major Colvin's "free zone" strategy represents a courageous attempt to cope with this dilemma, and challenges conventional police wisdom. However, this strategy, despite its seeming efficacy, raises difficult moral and epistemic questions. First, is the application of a policy of laissez-faire to the drug problem morally acceptable? This policy seems to be based on the assumption that the people involved in the drug trade (dealers, addicts, prostitutes) have freedom of choice. But if this assumption is rejected (and there are good reasons to doubt it) one has to deal with the question of what kind of moral duties are owned by the government and society at large to the people who are caught in the cycle of drugs (Moore 2011). A second question focuses on the instrumental logic of the strategy of decriminalizing drugs and its capacity to improve the situation in the long run. This remains a highly controversial issue.[3]

The drug trafficking problem is not unique. Similar challenges are facing regulators in other, though not less important, fields. Regulators must respond to ever-increasing societal demands – for safety, social equality, financial stability, and environmental justice. They must cope with these challenges under conditions of extreme epistemic scarcity[4] and deep ideological divide.[5] Regulatory decisions involve, therefore, controversies about both ends and means. This leaves regulators perplexed about what action they should take, looking constantly for normative guidance.

Regulatory praxis offers two primary responses to this moral and epistemic conundrum: technical canonization and reflexive regulation. The idea of technical canonization represents the process through which regulatory techniques,[6] from cost–benefit analysis (CBA) to risk-assessment and environmental management are turned into indubitable sociological artifacts that operate in a highly autonomous way (Shapiro & Scroeder 2008, p. 446; Wagner *et al.* 2010, pp. 297–306; Boiral 2011). The technique provides regulatory agents with an institutional mechanism for sharing, delegating, or reassigning their decisionmaking responsibility. The logic of technique promises to free the regulatory agent from her decisionmaking burden; in that sense it constitutes an institutionalized form of "passing the buck" (Moynihan 2012, p. 569). There are good reasons, however, to doubt the cogency of such complete deference to technique. Regulators, I will argue, cannot shy away from the need to employ substantive discretion as they apply their regulatory authority – even in the presence of sophisticated techniques.

To a large extent the idea of reflexive regulation, which was advanced by various scholars over the last two decades, can be viewed as an attempt to build an alternative to technique-based regulation. Reflexive regulation is skeptical of any attempt to resolve regulatory dilemmas through unreflexive reliance on regulatory techniques. Instead, reflexive regulation seeks to cope with the challenge of regulatory decisionmaking by privileging the process through which decisions are being made. Reflexive regulation argues that the establishment of an experimental, introspective, and participatory decisionmaking environment provides a better response to the moral–epistemic challenge underlying regulatory action than does the model of technique (Glasbergen 2005; Farber 2009a; Sabel & Zeitlin 2012). But, as I will argue, while the literature on reflexive regulation has indeed identified some of the inherent problems with technique-based regulation, its theoretical framework and, consequently, its policy recommendations suffer from certain flaws. In particular, this literature – and I focus here especially on the literature on experimental governance (Sabel & Zeitlin 2008, 2012)[7] – has failed to follow through on its commitment for reflexivity. Its account of "reflexivity" disregards, I will argue, the problem of higher-order reflexivity and the impact of this problem on regulatory decisionmaking. This theoretical "blind spot" has also caused the "experimental governance" literature to downplay the critical role of discretionary judgment and individual agency in regulatory decisionmaking (by putting too much faith in the capacity of well-designed procedures to produce outcomes that are well supported from epistemological and moral perspectives).

The article seeks to fill the gap in the literature on reflexive regulation by developing a conceptual framework for thinking about the problem of higher-order reflexivity. The article argues that the idea of "regulatory courage," especially as developed in the Socratic dialogue *Laches*, constitutes a possible response to the challenge of higher-order reflexivity by providing an ethical framework for the exercise of regulatory discretion. The idea of courage does not claim to solve the challenge of higher-order reflexivity through some overarching (meta) algorithmic or normative framework. Rather, it provides an ethical framework for coping with the challenge of higher-order reflexivity, in its individual and institutional facets, as it is manifested in the everyday dynamics of regulatory praxis. There are close links, I will argue, between idea of regulatory courage and the notion of forward-looking responsibility developed by the philosopher Richardson (Richardson 1999). The idea of regulatory courage cannot be discussed, however, independently of the political and legal environment in which the regulatory intervention is embedded. This question is addressed in the last section of the article.

The article proceeds as follows. Section 2 starts with a critical discussion of technique-based regulation. It then moves to examine critically the idea of experimental governance – one of the more prominent contemporary strands of reflexive regulation. Section 3 explores the problem of higher-order reflexivity. The next section discusses the ideas of "regulatory courage" and forward-looking responsibility. The last section examines the legal and institutional preconditions that could both facilitate and put to scrutiny this notion of regulatory responsibility. It concludes with a discussion of the various institutional barriers that exist in the contemporary society for the realization of regulatory courage.

I should say a word about the methodology that I use in this article. The two regulatory models depicted above reflect, to a large extent, ideal types that extract different ways of understanding regulatory intervention from a plethora of legal doctrines and regulatory practices. As ideal types, these models should not be viewed as accurate descriptions of these doctrines and practices (Frug 1984, pp. 1281–1282). There are, therefore, inevitable oversimplifications in the way in which I constructed these two models. The value of this distinction lies in providing what I think is a convincing way to understand some of the key blind spots and challenges facing

contemporary regulation. These two idealized prototypes are designed to allow us to grasp some general features of the regulatory field as a whole, without being overwhelmed by the compound details of regulatory praxis.

2. Reflexivity as an antidote to technique: Exploring the blind spots of reflexive regulation

The increasing use of techniques is one of the hallmarks of contemporary regulation. Prominent examples include CBA, risk-assessment and environmental management systems (Shapiro & Scroeder 2008, p. 446; Wagner *et al.* 2010, pp. 297–306). Computational models constitute the quintessential example of the use of techniques in modern regulation. In a recent article, Wagner, Fisher, and Pascual have provided a thorough account of the use of computational models in US environmental and public health regulation (Wagner *et al.* 2010). They demonstrate how models are used in a variety of circumstances to assess, measure, or predict exposure or harm (Wagner *et al.* 2010, pp. 297–306). In addition to these ecological models, the EPA has also been relying, increasingly, on economic models to carry out CBA of proposed regulations, reflecting a more general US policy on the appropriate structure of regulatory assessment (Wagner *et al.* 2010, pp. 300–305). Environmental regulators outside the US are also relying extensively on computational models.[8] Computational models are used in other regulatory contexts, such as financial regulation, transportation, and anti-trust (Baker & Rubinfeld 1999; Fanto 2009).

The regulatory reliance on techniques generates two key problems. First, it may lock regulators into a particular world view, causing them to lose sight of opposing world views. Thus, for example, CBA has been criticized for assuming that "welfarism provides the correct moral philosophy to guide public policy," disregarding a range of non-welfarist moral principles that could be relevant to the design of public policy (Sinden *et al.* 2009, pp. 51, 56). The second problem reflects the risk that once put in place, techniques may become highly autonomous – driven and controlled by their own necessities and internal rules (Ellul 1964, p. 133). This process could *decouple* the technique from the policy objectives attributed to it. Studies that examined the way in which CBA has been applied by US regulatory agencies have indeed exposed how the use of CBA could lead to regulatory outputs that are inconsistent with the welfarist model underlying the CBA method (Farber 2009b; Steinzor *et al.* 2009). Sen has described current CBA practices as "daydreams," pointing similarly to the implausibility of their assumptions and presuppositions (Sen 2000, p. 952). Such processes of decoupling have probably played a key role in the 2008 economic crisis (Fanto 2009; Miller & Rosenfeld 2009; Nocera 2009). The models used by the Wall Street Banks in order to evaluate their financial risks – in particular the Value at Risk model (VAR) – have proven to be fundamentally flawed, ultimately preventing banks from coping properly with the financial crisis (Crotty 2009, p. 571).

These dual problems underlying the use of techniques suggest that, in responding to social dilemmas, regulators should be careful not to put their trust (fully) in the logic of technique and maintain a critical stance toward it. Reflexive regulation emerged as a kind of antidote to the mechanical vision of technique-based regulation. Reflexive regulation argues that the establishment of an experimental, introspective, and participatory decisionmaking environment should provide a better response to the moral–epistemic challenge underlying regulatory action than the elusive sureness of technique. Major Colvin's critique of the "statistical flummery," which guided the enforcement strategy of Baltimore's police and his "Hamsterdam" experiment is a good example of this type of experimental regulatory strategy.

The concept of experimental governance, which has been developed by Sabel and Zeitlin, constitutes a powerful contribution to the reflexive regulation program. Zeitlin notes that what characterizes experimental forms of regulation is that "they systematically provoke doubt about their own assumptions and practices; treat all solutions as incomplete and corrigible; and produce an ongoing, reciprocal readjustment of ends and means through learning from disciplined comparison of local efforts to advance general goals" (Zeitlin 2011, p. 188). More specifically, Sabel and Zeitlin argue that experimentalist governance architectures have three salient virtues (Sabel & Zeitlin 2011, pp. 1–3; Zeitlin 2011, pp. 189–191). First, they accommodate diversity in adapting general goals to varied local contexts, rather than imposing one-size-fits-all solutions. Second, they provide a mechanism for coordinated learning from local experimentation through disciplined comparison. Third, both the goals themselves and the means for achieving them are conceived as provisional and subject to revision in light of experience.

The notion of experimental regulation represents a bold attempt to cope with the uncertainties and complexities of regulatory decisionmaking. It is motivated by skepticism of the capacity of "fixed rules written by a hierarchical authority" to cope with our "turbulent, fast-moving world" (Sabel & Zeitlin 2011; Zeitlin 2011, p. 191). By portraying the regulatory endeavor as intrinsically contingent and indeterminate it challenges the illusory assuredness of technique-based regulation. While I agree with the underlying vision of experimental regulation, I think that its conceptualization of the idea of reflexivity is incomplete. This theoretical blind spot also puts the practical recommendations of this literature in doubt. The main problem with experimental regulation is that it does not follow through its claim for reflexivity; it is not sufficiently attentive to the dilemma of higher order reflexivity. This failure is most notably manifested in the idea of retrospective learning, which is one of the key tenets of experimental regulation (Sabel & Zeitlin 2011, p. 2). Experimental regulation asks us to abandon the idea that regulation offers a decisionmaking framework that can produce a priori optimal regulatory decisions (in a welfarist sense). Rather, the main goal of experimental regulation is to instill institution-wide sensitivity to mistakes, based on a *retrospective* (rather than a *prospective*) approach. This shift in perspectives reflects deep skepticism of the feasibility of forward-looking optimization.

The problem with experimental regulation does not lie, however, in its skepticism of *ex ante rationality*, but in its over-confidence in in our capacity to learn from our mistakes (our *ex post rationality*). *Ex post* learning is facilitated by a comparison between actual and counterfactual outcomes, driven by a qualitative causal model and empirical feedback (Selten 1998; Selten *et al.* 2005). *Ex post* learning under the foregoing account, raises a series of difficulties. The first difficulty involves the problem of choosing a particular causal model: defining the relevant parameters and their underlying dynamics. In the context of a green tax program, for example, such a model would have to specify the relevant parameters (e.g. tax level, emission levels, enforcement infrastructure, macroeconomic environment) and the projected linkage between them (e.g. what is the causal linkage between tax levels and emission levels) (Bosquet 2000). Another difficulty concerns the issue of cross-scale extrapolation: to what extent can learning occur across scales (Turner *et al.* 1989; Ford 2013)? Given the complexities of model design there is a good chance that our chosen model, and, consequently, any policy (learning) conclusions we draw from it, will be incorrect (e.g. by neglecting to include some hidden variables). This risk highlights the need to develop a meta strategy that could allow us not just to change our policy (in view of the model), but also to revise the model itself ("higher-order learning"). The problem, however, is that there is no universal model of model revision. The regulatory literature offers various institutional strategies to cope with this challenge, such as "parallel modeling" and

learning loops (Moss *et al.* 2010, p. 752; Ford 2013, p. 24). But these solutions seem to exacerbate the problem: how should the decisionmaker choose between competing models? Should he trust Stern or Nordhaus (Mendelsohn 2006; Nordhaus 2007; Stern 2007)?[9]

Finally, the ability to achieve welfare-enhancing results *ex post* strongly depends on the initial design of the regulatory program. Even assuming that we have a reasonable model of learning, if our initial choice of the relevant parameters (e.g. the level of green tax) was deeply off the mark, successful learning would not necessarily help us in achieving our policy goals. In the environmental context, for example, there is no guarantee that learning (and, consequently, policy revision) would occur before the economy reaches ecological thresholds beyond which environmental deterioration is irreversible (Dinda 2004, p. 447).

These theoretical considerations receive confirmation from scholars that explored the methodological challenges associated with empirical study of regulatory interventions. These challenges involve both theoretical puzzles (e.g. model design and cross-scale extrapolation) and practical dilemmas (e.g. the problem of attaining necessary information) (Parker & Nielsen 2009). Bosquet, for example, notes in the context of a study of environmental tax reforms: "all models of economic impact are *ex ante* studies. Ex post interpretation is notoriously difficult because of the existence of a myriad of confounding factors and the small size of environmentally motivated changes relative to other factors" (Bosquet 2000, p. 30). In a study of flexible environmental regulation, Bennear and Coglianese have emphasized how little is known about the empirical aspects of this regulatory strategy (Bennear & Coglianese 2012, pp. 598–599):

> Notwithstanding the great interest in flexible approaches by environmental policy makers, the existing research has only scratched the surface in what needs to be known in order to use these approaches in appropriate circumstances with intended results. In particular, more research is needed to measure a broader range of effects from these approaches and then to compare the results with similar full accountings across the range of all regulatory approaches. We know of no systematic analysis, for example, of flexible approaches that has fully assessed both their benefits as well as their costs, nor that has compared these benefits and costs to those of other policy approaches.

The capacity of experimental regulation to achieve welfare-enhancing results through continuous learning depends, therefore, on various meta-theoretical choices to which the model itself provides no guidance.

3. Higher-order reflexivity and discretionary judgment

Experimental governance represents a bold attempt to address the failings of technique-based regulation. By adopting an approach that systematically raises doubt about its own assumptions and practices, experimental forms of regulation seek to offer an enlightened alternative to the problematic technique-based regulation. However, the main problem with Sabel and Zeitlin's approach is that they do not follow their argument all the way. In particular, they make no attempt to subject their argument to higher-order critique. This failure causes them to understate the critical role of discretionary judgment and individual agency in the operationalization of experimental regulation (e.g. in leading processes of regulatory learning) and, consequently, also undermines the pragmatic appeal of their model.

The need to cope with the challenge of higher-order reflexivity emerges, therefore, not just from the need to respond to the flaws of technique-based regulation; it also reflects a necessary response to certain blind spots of the counter-project of reflexive regulation. But what exactly is

entailed by the idea of higher-order reflexivity? Higher-order reflexivity refers to the attempt to lay bare the latent presuppositions of regulatory models, challenge their accepted meanings, and, more generally, expose them to criticism (Yolton 1955, p. 477). But higher-order reflexivity aspires not only to unveil these latent structures; it also seeks to provide a vantage point from which competing regulatory models can be compared, assessed, and, ultimately, chosen. Furthermore, higher-order reflexivity is not limited to thinking reflexively about the underlying presuppositions of competing regulatory models. It also consists of an attempt to critically observe the reflexive process itself: that is, to examine critically the decisionmaking procedure used to make choices, taking into account the practical limits of the regulatory endeavor (the need of regulatory agents to make a decision in a reasonable time, given a scarcity of resources, and bounded epistemic and computational capacities).

Higher-order reflexivity represents, therefore, the effort to examine, introspectively, the standards of correctness that apply to regulatory decisionmaking.[10] It refers to the introspective process of articulating criteria that can be used to choose among (first order) theories, interpretations, and norms, which are relevant to the resolution of a particular regulatory dilemma. As I will demonstrate below this introspective process involves epistemic, moral, and procedural–pragmatic aspects, which are closely interconnected.[11] The puzzle of meta-order inquiry has been explored by a vast literature ranging from philosophy and economics, to psychology and law; ultimately, however, these multifaceted attempts have failed to provide a definitive solution to the puzzle of meta-order inquiry.

Consider first the field of epistemology. The debate on higher-order evidence (HOE) demonstrates the failure of the philosophical literature to resolve the meta-epistemological debate (Feldman & Conee 1985, p. 15). HOE consists of "evidence about the existence, merits, or significance of a body of evidence" (Feldman 2009, p. 304). It includes, for example, evidence of the believer's own epistemic malfunction (Christensen 2010, p. 186) or evidence one obtains when one learns how someone else assesses a body of evidence (Feldman 2009, p. 304). There is, however, no agreement among philosophers about the meta-criteria that should govern the use of HOE. Consider the case of peer disagreement. How should you revise (if at all) your beliefs if you learn that one of your peers assesses the evidence (E) on which you rely in forming your belief differently, in some hypothesis (H)? This question is particularly relevant to the regulatory context because in many instances regulators need to decide among conflicting expert opinions. According to one line of thought ("*equal weight view*"), advocated by Feldman, it would be unreasonable for each believer to simply retain his or her original opinion in the face of conflicting opinion. Each believer should give *equal* weight to his or her opinion and to the opinion of the other in arriving at a revised view. The *"equal weight view"* requires the two believers, therefore, to *split the difference*. Other scholars, such as Kelly, have argued that in at least some cases of peer disagreement, both parties to the dispute might be perfectly reasonable even if neither gives any weight at all to the opinion of the other party (*"the symmetrical no independent weight view"*). It makes no sense to abandon your initial assessment of the evidence, simply upon learning of the views of another person. After all, your initial opinion may have been much more reasonable than that of your peer.

One could seek a higher-order conciliation of these two approaches. For example, in cases in which the only relevant evidence available to a third party (regulator, judge) are two expert opinions about H, and the third-party lacks any direct access to E, it may be reasonable for him to split the difference (Kelly 2010). However, in order to make this higher-order solution plausible it would have to be qualified by various further conditions. For example, splitting the difference should make sense only if the two experts are equally well informed and have similar

reputations. Unless we are able to enumerate all of these qualifying conditions, we have no reason to believe in the epistemic superiority of this meta-order strategy. Other meta-epistemic models based on relativistic or pragmatic strategies have been similarly controversial, and have been criticized as leading to either nihilism or irrational indifferentism (Rescher 2003, p. 170, 172), or to hunch-based epistemology (Modak-Truran 2001).

Similar theoretical dissonance characterizes the literature on meta-ethics, which remains divided about basic questions, such as who are the subjects of ethical discourse, and what are the basic values that should guide ethical reasoning (Cannon 2010). The debate over CBA is particularly relevant to the regulatory context. CBA has been criticized for embracing, uncritically, the assumptions of welfare economics regarding the definition and measurement of value, disregarding alternative moral world views, such as deontological theories (e.g. Sen's theory of freedom and capabilities) or theories that challenge the nature–society distinction (Kysar & Driesen 2008). Sen, for example, has criticized the utility-based thinking which underlies the CBA framework, for focusing on the means of living (measured by commodity bundles, real income, or real wealth), instead of on the actual *opportunities* of living. Under this approach, people's condition is improved, not by raising their "living standards," but by raising their capabilities and opportunities to achieve those things they have reason to value (Sen 2009, pp. 231–233). Deep ecology has challenged the CBA focus on human welfare, arguing that nonhuman life has intrinsic value, independent of the usefulness of the nonhuman world for human purposes (Naess 1973). Attempts to reconcile first-order debates about CBA through some higher-order principles remain controversial. This failure probably holds more generally to the tension between environmental ethics and more traditional consequentialist or deontologist ethical views.[12]

The scholarly discussion of the reflexive process itself reveals a similar lack of closure. The paradox of "deciding how to decide," is particularly insightful in this context. The starting point of the deciding how to decide paradox is the recognition that information gathering and deliberation are costly. Consequently, any regulatory endeavor that seeks to develop introspective sensitivities must also be sensitive to the costs of engaging in introspective processes. What is at stake in the second-order level of inquiry is the question of how much (costly) effort should be invested in information gathering and deliberation in order to find an optimal regulatory strategy (let us call it $x^\star$).[13] But solving this augmented decision problem requires in itself some costly deliberation and possibly data collection, generating a new meta-problem, producing presumably a *different value* for $x^\star$, and so on ad infinitum (Conlisk 1996, p. 687). The resulting augmented problem, which incorporates the costs of deciding how to decide, leads to an infinite regress.[14] It is interesting to note that despite the clear relevance of this paradox to the CBA literature, even rigorous law and economic thinkers such as Adler and Posner have made no attempt to develop a theory of CBA, in which the implications of applying the logic of CBA to itself are fully explored (Adler & Posner 2009; Sinden *et al.* 2009, p. 63).

The literature on the deciding how to decide paradox provides conflicting solutions. One theoretical response to the dilemma focused on developing optimal stopping rules that would allow decisionmakers to stop the search when the costs of further search exceed its benefits (MacLeod 2003; Bolton & Faure-Grimaud 2009). The optimal stopping rule approach was criticized on the grounds that it fails to fully track the regress (Gigerenzer 2001). An alternative approach to the paradox, which is based on a non-optimizing solution, can be found in the work of Gigerenzer on fast and frugal heuristics (Gigerenzer & Gaissmaier 2011). Fast and frugal heuristics cut the regress by using simple stopping rules that allow decisionmakers to solve the first-order problem with little computation ("fast") and information ("frugal"). Gigerenzer and

his colleagues at the ABC Research Group have described a variety of fast and frugal heuristics that enable individuals to cope with complex decisionmaking tasks.[15] The fast and frugal model argues that individuals consider only the single most valid cue that discriminates between options; all other cues are ignored.

But as critics have noted, it is unclear to what extent Gigerenzer's work actually solves the regress problem. The question of "how do we select the fast and frugal heuristic to decide which fast and frugal heuristic to apply in the first place" results in the same type of regress that the fast and frugal method claimed to solve (Cooper 2000, p. 746). Feeney noted: "given that Gigerenzer *et al.*'s central complaint about the optimization under constraints view of rationality is that it leads to an infinite regress, it is ironic that unless their own account can be supplemented with meta-cognitive principles, it must be adjudged merely to have replaced one infinite regress with another" (Feeney 2000, p. 750). The fact that the fast and frugal model does not offer a universal response to this meta question seems to undermine its usefulness as a decisionmaking strategy.

Ultimately the vast and diverse literature on meta-order inquiry seems to leave us at a somewhat uneasy position: we better understand the scope and scale of the problem but are no closer to resolving it.

4. Courage and forward-looking responsibility: From *Laches* to *The Wire*

The foregoing discussion demonstrates that neither technique nor reflexive regulation can be trusted to deliver policy objectives without critical scrutiny. However, as the discussion in the previous section shows, there is no simple solution to the challenge of higher-order reflexivity. The tension between these two conclusions points to the need for a theory of regulatory judgment that would transcend the bounds of instrumental rationality. The idea of courage, as developed in particular by Socrates in *Laches*, offers, I will argue, a pragmatic framework for thinking and coping with this challenge. Socrates' discussion of courage captures the dilemma facing contemporary regulators: the need to make decisions that may adversely affect the life of others, under conditions of epistemic scarcity and ideological divide. Socrates' main interlocutors in the dialogue of *Laches* are Laches and Nicias, important political and military figures in Athens at the time when the dialogue is set (420 BC). The discussion on courage is part of a more general exploration of the proper definition of virtue. Because virtue is too broad a subject, Socrates suggests that they focus on the manifestation of virtue in "courage," a subject in which Laches and Nicias, as army generals, are expected to have the necessary expertise.

The dialogue contrasts two positions, neither of which is accepted by the interlocutors as a manifestation of true courage. First, Socrates considers the soldier "who is prepared to fight, because he's used his intelligence to calculate the odds" (Plato 2005, pp. 55, 193a). Socrates implies (and Laches agrees with him) that such risky action, which draws upon fully informed and calculating logic, does not constitute true courage (Plato 2005, pp. 55, 193a). At the same time, as Nicias argues a few pages later, a person who is "too mindless to be afraid of threats" should also not be considered courageous. Ignorant risk taking does not constitute courage, but rather irrational fearlessness (Plato 2005, pp. 61, 197b).

The closing part of *Laches*, which contains a dialogue between Socrates and Nicias, suggests a possible resolution to this conundrum. This interpretation is somewhat speculative because *Laches*, one of Plato's aporetic dialogues, offers no expressly formulated conclusion (Dobbs 1986, p. 827). Nicias suggests that courage is "knowledge of what's threatening and what's reassuring in warfare and in all other situations" (Plato 2005, pp. 58, 195a). But, Socrates argues, knowledge of "what's threatening and what's reassuring" is equal to knowledge of "good and evil in every

possible time" (Plato 2005, pp. 64, 199d) because "what's threatening is future evil, and what's reassuring is a future event which isn't evil or which is good" (Plato 2005, pp. 62, 198c). Socrates can be understood as claiming that the process of belief acquisition is morally laden. In evaluating future risks we need also to invoke our understanding of good and evil. In contemporary terminology, Socrates' argument reflects the fact that risk assessors need to employ moral reasoning in order to decide what risks to assess and what kind of statistical tests to employ.[16] In contrast to the contemporary practice of risk assessment, Socrates considers the risk-assessment enterprise to be an intrinsically moral activity. But courage is not simply the morally driven process of belief acquisition. It also must be accompanied, as suggested by Laches, by persistence or endurance (Plato 2005, pp. 54, 192c). Courage then, consists of endurance or persistence combined with morally driven knowledge of what is and what is not to be feared (Devereux 2006).

It is the exercise of courage that enables the decisionmaker to cut short the regress associated with deeply introspective reasoning by providing him with the emotive force and moral resolve needed to make difficult choices in the face of epistemic scarcity and value pluralism; courage, thus, reflects the capacity to "take a stand." But the idea of courage also requires agents to be able to provide an articulated moral justification for their choices and to take responsibility for their choices. The capacity to "take a stand" reflects a willingness to "grapple with uncertainty, [and] to dare to venture beyond the known."[17] But this willingness should also involve the recognition by the agent of its own state of epistemic and normative perplexity (Dobbs 1986, p. 839), Courage is, therefore, neither the ignorant persistence of animals nor the super-calculating persistence of *homo economicus*, but the intelligent, reflexive persistence of a cognitively bounded human being.

There is family resemblance between the idea of regulatory courage and the concept of forward-looking responsibility, which was proposed by Richardson (Richardson 1999, p. 218). The idea of forward-looking responsibility adds important dimension to the notion of regulatory courage by distinguishing between *ex ante* and *ex post* responsibility. First, the idea of "taking responsibility" in a prospective context reflects the agent's acknowledgment, *ex ante*, of his openness for *ex post* moral, political, and legal appraisal of his decision (Richardson 1999, p. 220; Smith 2007, p. 469). The second important feature of forward-looking responsibility concerns the idea that agents enjoy deep autonomy in exercising their responsibility. This reflects the fact that "an essential aspect of taking responsibility for something, prospectively, is undertaking to cope with surprises" (Richardson 1999, p. 221). "Because the future always surprises us, and because concerns and rules end up clashing and harmonizing in ever-novel ways," Richardson argues, "it can be appropriate for the individual agent to revise his or her understanding of the preexisting rules relevant to his or her responsibility" (Richardson 1999, p. 221).

A further common feature of the concept of regulatory courage and the idea of forward-looking responsibility is that they are not outcome oriented. Whether the agent has properly exercised his responsibility *should not be judged* on the basis of outcome alone. The possibility of failure is part and parcel of the need to make decisions in an epistemologically and normatively uncertain environment. Failure should not (necessarily) be seen as a trigger for the imposition of blame or liability, but as an opportunity for learning (Carroll & Fahlbruch 2011). This feature of regulatory courage makes explicit the distinction between *holding a regulatory agent responsible* for some regulatory decision (in the sense that this decision and its consequences can be attributed to her in a way that makes moral, political, and legal appraisal appropriate) and asking whether she is *culpable* for it. The key insight of the concepts of regulatory courage and

forward-looking responsibility is that the question of culpability should be severed from the question of responsibility or attributability.

Major Colvin's bold experiment of (de facto) drug legalization, drawing on his broad discretion in applying his enforcement authority, is a good example of the exercise of courage or of forward-looking responsibility. Despite the deep moral and epistemic controversies surrounding the question of drug legalization, Colvin has decided to take action, drawing on his moral and epistemic convictions. Importantly he also refused to be bounded by the entrenched practices of the Baltimore police department. Indeed, the phenomenon of a paralyzing institutional memory that does not adjust to changed circumstances could be a source of major regulatory failings (Heinzerling 2013). Colvin's actions also reflected deep sensitivity to the voice of the Baltimore community. Lastly, Colvin did not try to disavow his responsibility for his choices.

The regulatory dilemma underlying the commercial utilization of genetically modified organisms (GMOs) provides another example for the potential invocation of regulatory courage. The application of genetic engineering in the food and agriculture industry has been a source of a fierce debate for more than a decade. This debate has both moral and epistemic aspects. There is, first, a scientific controversy about the potential risks and benefits of bioengineering. GMO supporters see recombinant DNA technology as a potent tool for enhancing crop productivity, food quality, and eventually also as enabling new forms of drug delivery. These features are seen as crucial for coping with critical global problems, such as hunger, malnutrition, and pollution from pesticides. On the other hand, antagonists point to the potential adverse impacts of GMOs on the environment and human health. Among the risks noted by GMO critiques are the capability of GMOs to potentially transfer engineered genes into wild populations, the instability of new genes, and the loss of biodiversity. As for human health, the main concerns have been the possibility of a transfer of allergens into new foods. There is still, however, broad scientific uncertainty as to both the risks and benefits (Buiatti *et al.* 2012). This uncertainty is used by the opponents of GMO, drawing on the precautionary principle, to argue that more research should be done before allowing the full commercialization of GMO technology. But the GMO debate also has a moral facet, which reflects opposing views regarding the human/nature divide and the idea of global justice. Against those who oppose GMO technology as improper intervention in nature (Davies 2001), other voices have argued that there is a moral obligation to develop this technology because of considerations of (global) distributive justice (Borlaug 2000; Toft 2012).

The moral and epistemic perplexities associated with the GMO debate call for invocation of courageous vision and forward-looking responsibility. Our current scientific knowledge and moral understanding are simply not sufficient to make a completely justified decision. What this dilemma calls for is a morally articulated decision, which recognizes the responsibility of the decisionmaker to the outcomes of her decision and also reflects willingness to continue the inquiry.

5. Courage, politics and law: Institutional preconditions and checking mechanisms

The ideal of courage offers a moral framework through which regulators can exercise their discretionary judgment in the face of moral and epistemic uncertainty. It calls on regulators to "take a stand" and not to give in to the elusive assuredness of technique or procedure. But understanding the pragmatic implications of the ideas of courage and forward-looking

responsibility requires sensitivity to the social and political contexts in which regulatory agents operate. As noted above, forward-looking responsibility reflects openness for *ex post* moral, political, and legal appraisal. Implicit in this openness is sensitivity to the moral and epistemic convictions of the community. Such sensitivity should reflect willingness by regulators to engage in a collaborative, open-minded discussion, which could advance the understanding of the correct epistemic and moral response to a particular regulatory dilemma. This argument does not deny that in modern bureaucracies public officials hold asymmetric decisionmaking powers: both with respect to the final decision and with respect to the structure of the decisionmaking process (Galligan 1986, p. 21). Neither is it based on a naïve faith in the capacity of deliberative processes to produce consensus. Rather, it is based on a Socratic belief in the fallibility of our reason and in the power of sincere and open-minded deliberation to improve our understanding (Vlastos 1985; Hare 2009). This view draws on Vlastos' intepretation of Socratic ethical knowledge. Whatever Socrates might be willing to say he knows in the domain of ethics, Vlastos argues "would have to be knowledge reached and tested through his own personal method of inquiry, the elenchus: this is his only method of searching for moral truth. So when he avows knowledge … the content of that knowledge must be propositions he thinks elenctically justifiable" (Vlastos 1985, p. 18).[18] The elenchus represents a "search for moral truth through two-part question-and-answer adversative argument," which is used to expose inconsistencies and points of agreement within the interlocutors' beliefs (Vlastos 1982, pp. 711–712). This means that in "taking a stand," regulators are limited in the range of moral, epistemic, and policy choices they can adopt in the sense that these positions have to be "elenctically justifiable." Indeed, in *The Wire* it was Major Colvin's participation in a town hall meeting that triggered his bold initiative.

Collective deliberative processes also serve as critical checking mechanisms. There is something dangerous in courage. In the traditional understanding of courage as a disposition to overcome fear and to oppose obstacles, it can lead agents to advance socially problematic ends (Rorty 1986). Its vagueness and lack of systematicity are worrisome because they may make it difficult to judge the appropriateness of courageous behavior. These critiques underscore the need for a checking mechanism that would ensure that courage is exercised appropriately. Responding to these concerns requires us to locate the ideal of regulatory courage within a political framework of reflexive deliberation, which could both support novel regulatory actions and put them to collective scrutiny. It calls for the development of recursive mechanisms of peer review, which could simultaneously institutionalize learning and accountability.[19] Creating this form of mutual accountability between regulatory officials and citizens depends on the establishment of reliable systems of monitoring, disclosure, and participation (Zeitlin 2011, p. 199; Perez 2013). Indeed, in this context my argument coincides with the argument of "experimental regulation" (although we differ, as noted above, in our approaches to the problem of higher-order reflexivity).

However, the exercise of discretionary judgment according to the framework developed above faces additional barriers in today's society; these barriers reflect the disparity between the ideal according to which regulators are expected to exercise their discretion *ex ante* and the criteria according to which regulators tend to be assessed, *ex post*, after the consequences of their choices are revealed. The disparity between the *ex ante* and *ex post* criteria is particularly important because the concepts of regulatory courage and forward-looking responsibility entail the possibility of *non-culpable failure*. The three main social systems through which *ex post* judgments of regulatory decisions take place – law, politics, and the mass media – all exhibit significant disparity with the concept of regulatory responsibility proposed above. Jointly, these

disparities produce an environment that is likely to undermine the capacity of regulators to exercise regulatory courage.

In law, the question of *ex post* judgment of regulatory decisions is most prominently influenced by the conceptual apparatus of tort law. Tort law deals directly with this issue in cases focusing on negligent regulatory actions (state liability doctrine) (Rosenthal 2006; Dari-Mattiacci *et al.* 2010). However, the social impact of the conceptualization of liability in tort law transcends its formal (doctrinal) power; it constitutes, as I have argued, a key element in a broader cultural conception of responsibility, supported also by parallel political and mass media discourses.[20] The way in which courts in the domain of tort law have applied the concept of reasonableness presents a barrier to the implementation of the vision of responsibility developed above because of the way in which it has become intertwined with the outcome of regulatory decisions (Lucy 2007, pp. 53–54). As Lucy has put it: "What is significant about legal liability-responsibility in private law is that it is often a matter of judgment on the basis of outcomes: one's intentions and one's conduct are less often rarely directly in issue" (Lucy 2007, p. 54).[21] Making judgments of reasonableness dependent on the decision's outcome is inconsistent, however, with the possibility of non-culpable mistakes, which is central to the vision of regulatory courage. While economic inspired models of liability, such as the Learned Hand (LH) formula, are, in principle, open to the idea of non-culpable harm-generating decisions, they have not seemed to change this deep-seated legal tendency.

The main political barrier to the idea of regulatory courage is a pervasive "negativity bias:" "successes go largely unacknowledged, but failures push reluctant public organizations into the spotlight" (Moynihan 2012, p. 568). As Carrigan and Coglianese argue in a recent article, in an effort to find actors to blame when calamities occur, politicians often make quick judgments, allocating blame before learning all the necessary facts: "Even if they initially target the business firms involved in the disaster, soon thereafter they heap blame on the regulator charged with oversight" (Carrigan & Coglianese 2012, p. 6). To some extent this political reality reflects the fact that politicians find it hard to convey to the public the fact that regulation involves delicate balancing between competing social objectives, which in most cases mean that risk cannot be eliminated altogether (Carrigan & Coglianese 2012, p. 10). While welfare economics provides a powerful argument for why living in a zero-risk environment is not justified from a collective welfare perspective (Majone 2010, p. 13), this argument does not sell well at the political realm once a calamity occurs. This political atmosphere means that public officials have a strong incentive to develop strategies of blame avoidance that encourage passivity, over-cautiousness and deference tactics ("passing the buck") (Hood 2002; Moynihan 2012, p. 569).

The mass media also tend to encourage blame avoidance. As Luhmann observed, the mass media selection of information is guided by several selectors, which include norm violation and clear causal attributions. When some focal mishap occurs "the media favour attributing things to action, that is, to actors. Complex background circumstances which might have motivated, if not coerced, an actor to do what he or she did cannot be fully illuminated" (Luhmann 2000, p. 31).

To enable regulators to exercise their discretion in the way envisioned by the ideas of regulatory courage and forward-looking responsibility we need to minimize the disparities between the social structures described above and the concept of regulatory responsibility encapsulated in these ideas. Coping with these disparities constitutes a difficult policy challenge because of their deep social roots. There is no easy answer for this challenge and I can only offer some tentative proposals. In law, the key challenge is to develop doctrinal structures that would be better attuned to the contingent nature of regulatory judgment and would be less susceptible

to "outcome" or "hindsight" bias. One way to achieve that is to shift the legal focus from an analysis of the quality of the regulatory decision to an analysis of the decisionmaking process. To use the terminology of US administrative law, courts should refrain from engaging in a "hard-look" evaluation of regulatory decisions (Meazell 2011, p. 1728), focusing instead on a hard-look evaluation of the decisionmaking process. Such hard-look evaluation could draw on the procedural framework developed by the experimental regulation literature. To be consistent with the outlook of this article, process-based judicial review should be grounded in a pluralistic understanding of "process choice." It should condemn decisions that are based on a whim or reflect a shallow commitment for public participation or experimentation (which could be described a "process pretense"),[22] but at the same time be careful not to superimpose a particular vision of "how decisions should be made" on the regulator. Obviously more work is required in order to link this argument to the vast literature on judicial review and state liability in tort, but such detailed discussion lies beyond the scope of this article.[23]

In politics, the establishment of mechanisms of civic participation could potentially reduce the force of the "negativity bias." As Tyler has shown in his study of procedural justice, providing citizens with reliable mechanisms of voice and participation enhances the legitimacy of the authority and minimizes distrust (Tyler 2006). When responsibility for failure can be shared, the incentive to shift blame should also be reduced. The creation of permanent procedures for retrospective evaluation of regulatory systems that operate in a continuous fashion (and not as sporadic reactions to particular cases of regulatory failure) could also minimize distrust toward the government by signaling a long-lasting commitment for learning (Greenstone 2009; Carrigan & Coglianese 2012, p. 15).

There are obvious prices for these approaches in that they require us to forego the assuredness of strict decisionmaking criteria. Ultimately, however, as I have tried to demonstrate in this article, the assuredness associated with technique is merely elusive. Courage and reflexive deliberation are not, however, a panacea to the problems of modern regulation. By highlighting the resistance of regulatory decisionmaking to a priori deductive reasoning and universal categories, the idea of regulatory courage denounces the illusory hope to base our regulatory decisionmaking on fully rational grounds. But in that very denouncement this idea also opens the way for a morally inspired regulation, which would both recognize and embrace the singularity of regulatory decisionmaking.[24]

Acknowledgments

Notes

1 For further details on *The Wire* and the Hamsterdam story (which takes place on the fourth episode of the third season) and its connection to Baltimore's actual drug problems see Kinder (2008), Bryant & Pollock (2010), and Moyers (2011).
2 This critique has close affinities with the reality of police work in the US. See, for example, the criticism that was made recently against the NYPD "stop-and-frisk" policy (*The Economist* 2013).
3 For conflicting views on this question see Moyers (2011), Simon (2011, for a pro-legalization view), and Inciardi and McBride (1989, for a more sceptical view).

4   Epistemic scarcity refers to the gap between the questions regulators ask regarding various risks and the epistemologically warranted answers provided by science. The extent of this gap is a function of both the kinds of questions regulators ask and the criteria of epistemic warrant that are used by the scientific and regulatory communities (that determine which answers will be deemed valid for the purposes of a particular risk dilemma). The question whether science should be the only epistemic source regulators rely on is in itself a contested issue. For the concept of "epistemic warrant," see Siegel and Biro (1997, p. 278).

5   I understand the term "ideological divide" in a broad way, which includes both competing conceptions of the "good life," different conceptions of morality (e.g. deontological versus consequential views), and different visions of a "good political order."

6   Techniques are the ensemble of means used to achieve certain regulatory ends (Ellul 1964, p. 19).

7   Other important interpretations of the concept of reflexive regulation were developed by Teubner (1993), Black and Baldwin (2010), and Braithwaite (2011). For a broader critique of reflexive regulation that examines these other views as well, see Perez (2011).

8   See, for example, UK DEFRA's use of economic models to measure ecosystems services (http://www.defra.gov.uk/environment/natural/ecosystems-services/) and the Treasury Board of Canada Secretariat, Canadian Cost-Benefit Analysis Guide: Regulatory Proposals (2007).

9   The debate about the economic modeling of climate change provides a powerful illustration of this problem; see the review of the Stern report by Nordhaus (2007).

10 The foregoing definition explores the higher-order reflexivity puzzle from a normative perspective – seeking a normative scheme that could be used to resolve it and consequently guide regulatory action. It does not refer to the cognitive processes that take place in the mind while we engage in reflexive reasoning. See Kornblith (2012) on that question.

11 Consider, for example, the concept of cost–benefit analysis (CBA). CBA, its proponents argue, is a better decisionmaking mechanism than alternative techniques, to the extent that collective welfare is taken as a policy goal. But given its underlying logic, CBA must also take into account the cost of the decisionmaking process itself (in terms of time, manpower, etc.).

12 Compare the diverse positions in Light (2002), Roberts and Reich (2002), and Sagoff (2011).

13 Where x is a vector that denotes the various elements of a particular regulatory program (rules, organizational structure, etc.). Note that what is at stake at the second-order stage is not only the cost of the information search, but also the computation costs associated with the analysis of that information.

14 Schematically the infinite regress argument looks like this: (1) devise an algorithm for solving the problem at hand, collect an optimal amount of information, compute to find a solution (the *first maximization* problem); (2) to do (1), we must first collect information about how much information it would be optimal to collect, devise an algorithm for solving this second-order problem, and compute a solution (the *second maximization* problem); (3) to do (2), we must collect an optimal amount of information about how much information we should collect before we decide how much information to collect, devise an algorithm for solving this third-order problem, and compute a solution (the *third maximization* problem), et cetera.

15 Borges, Goldstein, Ortmann, and Gigerenzer have tested, for example, the recognition heuristic in the context of investment decisions (Borges *et al*. 1999).

16 For example, the question whether to put the emphasis on the avoidance of false negatives (Type II error) or on the avoidance of false positives (Type I error) is value laden (Hrudey & Leiss 2003, p. 1580). It requires the decisionmaker to decide what is more important for her: avoiding a failure to detect a true hazard or avoiding falsely describing something as hazardous.

17 Laches' willingness to deal with the fear of the unknown, Dobbs argues, is what makes his approach more convincing (Dobbs 1986, p. 848).

18 Note that Socrates does not expose the elenctic method itself to elenctic investigation. "As a purely moral inquirer Socrates abstains on principle from inquiry into the theory and method of moral inquiry" (Vlastos 1982, p. 712).

15

19 For a more detailed discussion of the institutional conditions needed to facilitate such an environment see Perez (2011, pp. 769–778) and Sabel and Zeitlin (2012, p. 411).

20 Indeed, my argument is not based on the claim that the threat of liability in tort – in itself – deters regulators from "taking responsibility." In contrast to the private realm, in the public realm, tort law does not produce the kind of incentives that could directly influence public officials' behavior (Rosenthal 2006). Rather, the conceptual structure produced by tort law is part of a broader social architecture, which together creates the chilling effect I described above.

21 This legal bias may be a reflection of a general psychological bias – the hindsight bias – which reflects the fact that finding out that an outcome has occurred tends to increase its perceived likelihood (Fischhoff 1975); this could lead to mistaken allocations of liability (Hugh & Dekker 2009)

22 A good illustration of what I mean by "process pretense" is the use of auctions or tenders in public procurement. While in theory the mechanism of tender could yield results that are both fair and efficient, it could also be manipulated quite easily (e.g. by disclosing internal information to preferred bidders or by designing the terms of the tender beforehand to match the profile of a particular bidder) in a way that would undermine both of these objectives (Lengwiler & Wolfstetter 2006).

23 For an attempt to develop a model of judicial review that shifts the courts' focus from substance to process, see Wagner (2010, pp. 1406–1413).

24 For a discussion of the singularity/universality distinction in the context of the possibility of justice in law, see Teubner (2013).

References

Adler M, Posner EA (2009) New Foundations of Cost–Benefit Analysis. *Regulation & Governance* 3, 72–83.

Baker JB, Rubinfeld DL (1999) Empirical Methods in Antitrust Litigation: Review and Critique. *American Law and Economics Review* 1, 385–435.

Bennear L, Coglianese C (2012) Flexible Environmental Regulation. In: Kamieniecki S, Kraft ME (eds) *The Oxford Handbook of U.S. Environmental Policy*, pp. 582–604. Oxford University Press, Oxford.

Black J, Baldwin R (2010) Really Responsive Risk-Based Regulation. *Law & Policy* 32, 181–213.

Boiral O (2011) Managing with ISO Systems: Lessons from Practice. *Long Range Planning* 44, 197–220.

Bolton P, Faure-Grimaud A (2009) Thinking Ahead: The Decision Problem. *Review of Economic Studies* 76, 1205–1238.

Borges B, Goldstein DG, Ortmann A, Gigerenzer G (1999) Can Ignorance Beat the Stock Market? In: Gigerenzer G, Todd PM, ABC-Research-Group (eds) *Simple Heuristics That Make Us Smart*, pp. 59–74. Oxford University Press, Oxford.

Borlaug N (2000) We Need Biotech to Feed the World – Op-Ed. *Wall Street Journal* (New York) 6 Dec.

Bosquet B (2000) Environmental Tax Reform: Does It Work? A Survey of the Empirical Evidence. *Ecological Economics* 34, 19–32.

Braithwaite J (2011) Fasken Lecture: The Essence of Responsive Regulation. *University of British Columbia Law Review* 44, 475–520.

Bryant A, Pollock G (2010) Where Do Bunnys Come from? From Hamsterdam to Hubris. *City* 14, 709–729.

Buiatti M, Christou P, Pastore G (2012) The Application of GMOs in Agriculture and in Food Production for a Better Nutrition: Two Different Scientific Points of View. *Genes & Nutrition* 8, 255–270.

Cannon JZ (2010) The Sounds of Silence: Cost–Benefit Canons In Entergy Corp. V. Riverkeeper, Inc. *Harvard Environmental Law Review* 34, 425–460.

Carrigan C, Coglianese C (2012) Oversight in Hindsight: Assessing the U.S. Regulatory System in the Wake of Calamity. In: Coglianese C (ed) *Regulatory Breakdown: The Crisis of Confidence in U.S. Regulation*, pp. 1–20. University of Pennsylvania Press, Philadelphia, PA.

Carroll JS, Fahlbruch B (2011) "The Gift of Failure: New Approaches to Analyzing and Learning from Events and near-Misses." Honoring the Contributions of Bernhard Wilpert. *Safety Science* 49, 1–4.

Christensen D (2010) Higher-Order Evidence. *Philosophy and Phenomenological Research* 81, 185–215.

Conlisk J (1996) Why Bounded Rationality? *Journal of Economic Literature* 34, 669–700.

Cooper R (2000) Simple Heuristics Could Make Us Smart; But Which Heuristics Do We Apply When? *Behavioral and Brain Sciences* 23, 746.

Crotty J (2009) Structural Causes of the Global Financial Crisis: A Critical Assessment of the "New Financial Architecture". *Cambridge Journal of Economics* 33, 563–580.

Dari-Mattiacci G, Garoupa N, Gómez-Pomar F (2010) State Liability. *European Review of Private Law* 18, 773–811.

Davies KG (2001) What Makes Genetically Modified Organisms So Distasteful? *Trends in Biotechnology* 19, 424–427.

Devereux D (2006) The Unity of the Virtues. In: Benson HH (ed) *A Companion to Plato*, pp. 325–340. Wiley-Blackwell, Oxford.

Dinda S (2004) Environmental Kuznets Curve Hypothesis: A Survey. *Ecological Economics* 49, 431–455.

Dobbs D (1986) For Lack of Wisdom: Courage and Inquiry in Plato's "Laches". *Journal of Politics* 48, 825–849.

Ellul J (1964) *The Technological Society*. Vintage, London.

Fanto J (2009) Anticipating the Unthinkable: The Adequacy of Risk Management in Finance and Environmental Studies. *Wake Forest Law Review* 44, 731–755.

Farber DA (2009a) Adaptation Planning and Climate Impact Assessments: Learning From NEPA's Flaws. *ELR* 39, 10605–10614.

Farber DA (2009b) Rethinking the Role of Cost–Benefit Analysis. *The University of Chicago Law Review* 76, 1355–1406.

Feeney A (2000) Simple Heuristics: From One Infinite Regress to Another? *Behavioral and Brain Sciences* 23, 749–750.

Feldman R (2009) Evidentialism, Higher-Order Evidence, and Disagreement. *Episteme* 6, 294–312.

Feldman R, Conee E (1985) Evidentialism. *Philosophical Studies* 48, 15–34.

Fischhoff B (1975) Hindsight ≠ Foresight: The Effect of Outcome Knowledge on Judgment Under Uncertainty. *Journal ol Experimental Psychology* 1, 288–299.

Ford C (2013) Prospects for Scalability: Relationships and Uncertainty in Responsive Regulation. *Regulation & Governance* 7, 14–29.

Frug GE (1984) The Ideology of Bureaucracy in American Law. *Harvard Law Review* 97, 1276–1388.

Galligan DJ (1986) *Discretionary Powers: A Legal Study of Official Discretion*. Clarendon Press, Oxford.

Gigerenzer G (2001) Decision Making: Nonrational Theories. *International Encyclopedia of the Social and Behavioral Sciences* 5, 3304–3309.

Gigerenzer G, Gaissmaier W (2011) Heuristic Decision Making. *Annual Review of Psychology* 62, 451–482.

Glasbergen P (2005) Decentralized Reflexive Environmental Regulation: Opportunities and Risks Based on an Evaluation of Dutch Experiments. *Environmental Sciences* 2, 427–442.

Greenstone M (2009) Toward a Culture of Persistent Regulatory Experimentation and Evaluation. In: Moss D, Cisternino J (eds) *New Perspectives on Regulation*, pp. 111–126. The Tobin Project, Cambridge, MA.

Hare W (2009) Socratic Open-Mindedness. *Paideusis* 18, 5–16.

Heinzerling L (2013) Undue Process at the FDA. *Vermont Law Review* 37, 1007–1031.

Hood C (2002) The Risk Game and the Blame Game. *Government and Opposition* 37, 15–37.

Hrudey SE, Leiss W (2003) Risk Management and Precaution: Insights on the Cautious Use of Evidence. *Environmental Health Perspectives* 111, 1577–1581.

Hugh TB, Dekker SW (2009) Hindsight Bias and Outcome Bias in the Social Construction of Medical Negligence: A Review. *Journal of Law and Medicine* 16, 846–857.

Inciardi JA, McBride DC (1989) Legalization: A High-Risk Alternative in the War on Drugs. *American Behavioral Scientist* 32, 259–289.

Kelly T (2010) Peer Disagreement and Higher-Order Evidence. In: Feldman R, Warfield T (eds) *Disagreement*, pp. 111–174. Oxford University Press, Oxford.

Kinder M (2008) Re-Wiring Baltimore: The Emotive Power of Systemics, Seriality, and the City. *Film Quarterly* 62, 50–57.

Kornblith H (2012) *On Reflection*. Oxford University Press, Oxford.

Kysar D, Driesen D (2008) Amicus Brief of Economists Ackerman *et al.* in Entergy v. Riverkeepers. *Entergy v. Riverkeepers* (6 Oct).

Lengwiler Y, Wolfstetter EG (2006) Corruption in procurement auctions. SFB/TR 15 Discussion Paper No. 90.

Light A (2002) Contemporary Environmental Ethics From Metaethics to Public Philosophy. *Metaphilosophy* 33, 426–449.

Lucy W (2007) *Philosophy of Private Law*. Oxford University Press, Oxford.

Luhmann N (2000) *The Reality of the Mass Media*. Stanford University Press, Stanford, CA.

MacLeod WB (2003) Planning Costs and the Theory of Learning by Doing. USC CLEO Research Paper No. C03-16. University of Southern California Law School, Los Angeles, CA. [Last accessed 4 September 2013.] Available from URL: http://ssrn.com/abstract=425961.

Majone G (2010) Foundations of Risk Regulation: Science, Decision-Making, Policy Learning and Institutional Reform. *European Journal of Risk Regulation* 1, 5–19.

Meazell EH (2011) Deference and Dialogue in Administrative Law. *Columbia Law Review* 111, 1722–1878.

Mendelsohn RO (2006) A Critique of the Stern Report. *Regulation* 29, 42–46.

Miller GP, Rosenfeld G (2009) Intellectual Hazard: How Conceptual Biases in Complex Organizations Contributed to the Crisis of 2008. NYU Law and Economics Research Paper (09-43). New York University School of Law, New York.

Modak-Truran MC (2001) A Pragmatic Justification of the Judicial Hunch. *University of Richmond Law Review* 35, 55–89.

Moore A (2011) Teaching HBO's *The Wire. Transformative Dialogues: Teaching & Learning Journal* 5, 1–14.

Moss RH, Edmonds JA, Hibbard KA, Manning MR, Rose SK, van Vuuren DP *et al.* (2010) The Next Generation of Scenarios for Climate Change Research and Assessment. *Nature* 463(7282), 747–756.

Moyers B (2011) The Straight Dope. Bill Moyers Interviews David Simon. *Guernica/A Magazine of Art & Politics* (New York) 1 Apr.

Moynihan DP (2012) Extra-Network Organizational Reputation and Blame Avoidance in Networks: The Hurricane Katrina Example. *Governance* 25, 567–588.

Naess A (1973) The Shallow and the Deep, Long-Range Ecology Movement. A Summary. *Inquiry* 16, 95–100.

Nocera J (2009) Risk Mismanagement. *The New York Times Magazine* (New York) 4 Jan, p. 24.

Nordhaus WD (2007) A Review of the *Stern Review on the Economics of Climate Change. Journal of Economic Literature* 45, 686–702.

Parker C, Nielsen V (2009) The Challenge of Empirical Research on Business Compliance in Regulatory Capitalism. *Annual Review of Law and Social Science* 5, 45–70.

Perez O (2011) Responsive Regulation and Second-Order Reflexivity: On the Limits of Regulatory Intervention. *UBC Law Review* 44, 743–778.

Perez O (2013) Open Government, Technological Innovation and the Politics of Democratic Disillusionment: (E-)Democracy from Socrates to Obama. *I/S: A Journal of Law and Policy for the Information Society* 9, 61–138.

Plato (2005) *Plato, Meno and Other Dialogues. A New Translation by Robin Waterfield*. R. Waterfield (trans.). Oxford University Press, Oxford.

Rescher N (2003) *Epistemology: An Introduction to the Theory of Knowledge*. SUNY Press, Albany, NY.

Richardson HS (1999) Institutionally Divided Moral Responsibility. *Social Philosophy and Policy* 16, 218–249.

Roberts MJ, Reich MR (2002) Ethical Analysis in Public Health. *The Lancet* 359, 1055–1059.

Rorty AO (1986) The Two Faces of Courage. *Philosophy* 61, 151–171.

Rosenthal L (2006) A Theory of Government Damages Liability: Torts, Constitutional Torts, and Takings. *University of Pennsylvania Journal of Constitutional Law* 9, 797–870.

Sabel CF, Zeitlin J (2008) Learning from Difference: The New Architecture of Experimentalist Governance in the EU. *European Law Journal* 14, 271–327.

Sabel CF, Zeitlin J (2011) Experimentalism in Transnational Governance: Emergent Pathways and Diffusion Mechanisms. Paper presented at the panel on "Global Governance in Transition", Annual Conference of the International Studies Association, 16-19 March 2011, Montreal.

Sabel CF, Zeitlin J (2012) Experimentalism in the EU: Common Ground and Persistent Differences. *Regulation & Governance* 6, 410–426.

Sagoff M (2011) The Quantification and Valuation of Ecosystem Services. *Ecological Economics* 70, 497–502.

Selten R (1998) Aspiration Adaptation Theory. *Journal of Mathematical Psychology* 42, 191–214.

Selten R, Abbink K, Cox R (2005) Learning Direction Theory and the Winner's Curse. *Experimental Economics* 8, 5–20.

Sen A (2000) The Discipline of Cost–Benefit Analysis. *The Journal of Legal Studies* 29(S2), 931–952.

Sen AK (2009) *The Idea of Justice*. Harvard University Press, Cambridge, MA.

Shapiro SA, Scroeder CH (2008) Beyond Conflict-Benefit Analysis: A Pragmatic Reorientation. *The Harvard Environmental Law Review* 32, 433–502.

Siegel H, Biro J (1997) Epistemic Normativity, Argumentation, and Fallacies. *Argumentation* 11, 277–292.

Simon D (2011) "The Wire" Has Nothing to Apologize for. *Baltimore Sun* (Baltimore) 24 Jan.

Sinden A, Kysar DA, Driesen DM (2009) Cost–Benefit Analysis: New Foundations on Shifting Sand. *Regulation & Governance* 3, 48–71.

Smith A (2007) On Being Responsible and Holding Responsible. *The Journal of Ethics* 11, 465–484.

Steinzor R, Sinden A, Shapiro S, Goodwin J (2009) A Return to Common Sense: Protecting Health, Safety, and the Environment Through "Pragmatic Regulatory Impact Analysis". CPR White Paper No. 909. Center for Progressive Reform, Washington, DC. [Last accessed 1 September 2013.] Available from URL: http://www.progressivereform.org/articles/PRIA_909.pdf.

Stern N (2007) *The Economics of Climate Change: The Stern Report*. Cambridge University Press, Cambridge, UK.

Teubner G (1993) *Law as an Autopoietic System*. Blackwell, Oxford.

Teubner G (2013) The Law before Its Law: Franz Kafka on the (Im)Possibility of Law's Self-Reflection. *German Law Journal* 14, 405–422. [Last Accessed 4 September 2013.] Available from URL: http://www.germanlawjournal.com/index.php?pageID=11&artID=1515.

The Economist (London) (2013) Too Frisky. 27 Apr, p. 37.

Toft K (2012) GMOs and Global Justice: Applying Global Justice Theory to the Case of Genetically Modified Crops and Food. *Journal of Agricultural and Environmental Ethics* 25, 223–237.

Treasury Board of Canada Secretariat, Canadian Cost-Benefit Analysis Guide: Regulatory Proposals (2007) Catalogue No. BT58-5/2007, ISBN 978-0-662-05039-1, available at: http://www.tbs-sct.gc.ca/rtrap -parfa/analys/analystb-eng.asp.

Turner MG, Dale VH, Gardner RH (1989) Predicting Across Scales: Theory Development and Testing. *Landscape Ecology* 3, 245–252.

Tyler TR (2006) Psychological Perspectives on Legitimacy and Legitimation. *Annual Review of Psychology* 57, 375–400.

Vlastos G (1982) The Socratic Elenchus. *The Journal of Philosophy* 79, 711–714.

Vlastos G (1985) Socrates' Disavowal of Knowledge. *The Philosophical Quarterly* 35(138), 1–31.

Wagner WE (2010) Administrative Law, Filter Failure, and Information Capture. *Duke Law Journal* 59, 1321–1432.

Wagner W, Fisher E, Pascual P (2010) Misunderstanding Models in Environmental and Public Health Regulation. *N.Y.U. Environmental Law Journal* 18, 293–356.

Yolton JW (1955) History and Meta-History. *Philosophy and Phenomenological Research* 15, 477–492.

Zeitlin J (2011) Pragmatic Transnationalism: Governance Across Borders in the Global Economy. *Socio-Economic Review* 9, 187–206.