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INTRODUCTION

In 2009, in a case called *Entergy Corp. v. Riverkeeper, Inc.*, the decades-old debate over the use of cost-benefit analysis (CBA) in environmental regulation went before the U.S. Supreme Court.¹ In the briefing before the Court, a peculiar pattern emerged: the briefs for the environmentalists opposing CBA portrayed it as highly formal, rigid, quantitative, and technical. The industry and think-tank briefs advocating CBA, on the other hand, painted it as informal, qualitative, and almost synonymous with common sense—a simple, rational weighing of pros and cons endorsed by none other than the granddaddy of common wit and wisdom himself, Ben Franklin.²

These contrasting depictions raise an interesting but too often overlooked point: cost-benefit analysis is not a monolith. The term actually encompasses a wide and divergent array of decision-making practices and techniques, from a Ben Franklin-style listing of qualitatively described pros and cons to a highly technical-analytic method grounded in economic theory that attempts to fully quantify and monetize all of the social costs and benefits of a whole range of regulatory options and then identify the option that maximizes net social benefits. This overlooked point, in turn, raises a nagging question: Which is it? Were CBA's detractors setting up a straw man—attacking a highly formal version of CBA that no one actually uses? Or were CBA's cheerleaders playing a game of bait and switch—using Ben Franklin to put a benign face on what is actually a highly formal (and fraught) practice?

What follows is a case study of the rulemaking that was before the Court in *Riverkeeper*, which, after remand, finally just wrapped up in May 2014 with the Environmental Protection Agency's (EPA) publication of a new final rule. In this case study, I will try to answer the nagging question, while also further investigating the overlooked point, hoping along the way to shed a little new light on this decades-old debate.

The rulemaking came under section 316(b) of the Clean Water Act, an obscure provision aimed at reducing fish kills at the cooling water intake structures of power plants and other large industrial facilities.³ It came before the

1. *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009).

2. In 1772, Franklin described his version of CBA in a letter to a friend: [M]y way is to divide half a sheet of paper by a line into two columns; writing over the one Pro, and over the other Con. Then, during three or four days consideration, I put down under the different heads short hints of the different motives, that at different times occur to me, for or against the measure. When I have thus got them all together in one view, I endeavor to estimate their respective weights. . . . And, though the weight of reasons cannot be taken with the precision of algebraic quantities, yet when each is thus considered, separately and comparatively, and the whole lies before me, I think I can judge better, and am less liable to make a rash step, and in fact I have found great advantage from this kind of equation, in what may be called moral or prudential algebra.

See EDWARD M. GRAMLICH, A GUIDE TO BENEFIT-COST ANALYSIS 1 (2d ed. 1990) (quoting Letter from Benjamin Franklin to Joseph Priestly (Sept. 19, 1772)).

3. Clean Water Act, 33 U.S.C. § 1326(b) (2012).

Supreme Court on a challenge by environmental groups, who argued that the EPA improperly used CBA in promulgating the rule.⁴ The briefing was copious, with industry weighing in alongside the EPA to defend the rule and with numerous amicus briefs on both sides largely hewing to the pattern described above. What followed was an odd series of twists and ironies, which highlight the distinction between formal and informal CBA and the importance of clearly distinguishing between the two.

The first irony appeared in the Supreme Court's opinion, where, if the proponents of CBA were playing a game of bait and switch, it backfired. Justice Scalia, writing for the majority, took the bait but never made the switch. Instead, he seemed to take CBA's proponents at their word, endorsing only an informal version of CBA and even expressing skepticism about more formal versions.⁵ This aspect of the case provides the first lesson in the importance of defining terms. If we view CBA in simplistic terms as a monolithic concept, then *Riverkeeper* appears as a victory for CBA's proponents. But if we focus the lens and see CBA more clearly for what it is—a range of quite disparate decision-making procedures—then we can see that *Riverkeeper* in fact contained an important victory for CBA skeptics, since the kind of formal CBA they most vehemently oppose did not actually receive the Court's endorsement. But the story doesn't end there.

A second irony becomes apparent if we dig deeper into the events leading up to the Supreme Court's decision. A little investigation reveals that the Supreme Court majority got their facts wrong: the Court held that the EPA acted properly in using an informal CBA to evaluate the cooling water intake rule, but that's not actually what the EPA did. In fact, the CBA the Agency performed in connection with this rule contained many of the essential hallmarks of formality, monetizing both costs and benefits and expressing both values in terms of a single (seemingly precise) number. Moreover, at the urging of the White House Office of Information and Regulatory Affairs (OIRA),⁶ the EPA appears to have used that formal CBA to weaken the rule, thus ratifying CBA skeptics' worst fears.

Indeed, the EPA's CBA in this instance appears to be an example of what I call "false formality"—a corruption of CBA that can occur when agencies fail to clearly define where on the formality-informality spectrum a particular CBA falls. Here, the EPA (at OIRA's urging) inappropriately combined elements of formal and informal CBA. The evaluation of the benefits of this rule was necessarily informal because the vast majority of the benefits at issue—reduced harms to fish and aquatic ecosystems—were not quantifiable or monetizable. Nonetheless, the CBA expressed them in formal terms as a single (incomplete) dollar figure. It then used a formal balancing formula ("Do the costs outweigh the benefits?") to reject

4. See *Riverkeeper*, 556 U.S. at 222.

5. See *id.* at 219–20, 224.

6. OIRA is a small office within the White House Office of Management and Budget that is charged with administering the requirement in Executive Order 12,866 that agencies conduct CBA of major rules. See *infra* note 36.

the most environmentally protective option on the grounds that the dollar costs outweighed the dollar benefits, without acknowledging that the dollar benefits were incomplete. Thus, CBA, which had been promoted by its defenders as the “imperative of basic rationality,” in this instance, produced a result that was patently irrational and nonsensical.⁷

While this result was unquestionably bad news for the fish, the Supreme Court’s misapprehension of the EPA’s analysis was arguably good news for CBA skeptics. While they might have preferred to see the Court look more carefully at the CBA the Agency actually performed and issue a clear condemnation of formal CBA (or at least failed formality), an opinion that gives the EPA only limited discretion to do a relatively innocuous Ben Franklin brand of qualitative balancing might not seem like a bad result. But here the story takes yet another turn.

A third irony of the *Riverkeeper* case has become apparent in the aftermath of the Supreme Court’s opinion: the rule was remanded back to the EPA to fix problems identified by the Second Circuit, but in conjunction with the new rule, the Agency set to work preparing a CBA that was a far cry from the informal brand endorsed by the Supreme Court. Indeed, the EPA embarked on precisely the kind of “lengthy formal cost-benefit proceedings and futile attempts at comprehensive monetization” that Justice Breyer had admonished the Agency to “avoid,”⁸ investing substantial time and resources in a strained attempt to assign monetary equivalents to the biological and ecological values implicated by the rule through the use of highly controversial and resource intensive contingent valuation techniques. Ultimately, as we will see, their approach failed, and their attempts were—as Justice Breyer had warned—“futile.” Thus, while the Supreme Court misread the facts to find informality where there was in fact formality, the EPA seems to have misread the Court’s opinion to find formality where there was in fact informality.

There are lessons here for the broader academic debate over cost-benefit analysis in environmental law. If we’re not careful to define terms and we lump all forms of CBA together into one category, then *Riverkeeper* will inevitably be read the way that the EPA appears to be reading it now—as endorsing agency use of all forms of CBA, including highly formal versions. This same sloppiness allows proponents of CBA to use Ben Franklin as a shield, laying claim to the seemingly benign rationality of his “prudential algebra.”⁹ Failing to differentiate among levels of formality in CBA also leads to the kind of false formality that occurred in the EPA’s initial rulemaking. Carefully distinguishing among different forms of CBA, on the other hand, brings analytic integrity to the debate, helps to ensure that formal CBA is not mindlessly endorsed on the coat tails of Ben Franklin, and avoids the intellectual sloppiness and irrational outcomes that can occur when the

7. Brief for Petitioners at 29, *Riverkeeper*, 556 U.S. 208 (Nos. 07-588, 07-589, 07-597), 2008 WL 2753247, at *24.

8. *Riverkeeper*, 556 U.S. at 235 (Breyer, J., concurring in part and dissenting in part).

9. See GRAMLICH, *supra* note 2.

CBA analyst inappropriately combines formal and informal elements in a single analysis. Finally, this case study contains a warning for agencies that hope to find refuge from critics in seemingly hard, precise, and incontrovertible numbers: a move toward formality may further incite rather than quell controversy and criticism.

This Article proceeds in four parts. Part I explains in broad brushstrokes the rulemaking that landed the EPA in the U.S. Supreme Court. Part II describes what happened once they got there—the briefing and the Court’s opinion. Part III digs a little deeper into the rulemakings that preceded and followed the Supreme Court’s opinion in order to explain the three ironies outlined above. Finally, Part IV suggests some lessons we may draw from this case for the broader debate about the role of cost-benefit analysis in environmental rulemaking.

I. THE EPA’S INITIAL RULEMAKING

Most of the Clean Water Act is aimed at reducing the amount of pollution that is *discharged* into the nation’s waters.¹⁰ But an obscure provision of the Act, section 316(b), addresses the harm caused to aquatic ecosystems by the *withdrawal* of water from rivers, streams, lakes, and estuaries.¹¹ Power plants and other industrial facilities withdraw billions of gallons of water a day for cooling purposes.¹² In the process, billions of fish, shellfish, plankton, and other aquatic organisms are killed—either squashed against intake screens or sucked up into the mechanism and destroyed.¹³ The large scale of this destruction can have a profoundly destabilizing effect on aquatic ecosystems—an environmental impact that the Second Circuit called “staggering.”¹⁴

Congress was aware of this problem when it passed the Clean Water Act in 1972.¹⁵ Accordingly, it included a provision in that Act specifically directing the

10. See 33 U.S.C. §§ 1311–12, 1314, 1342–44 (2012).

11. *Id.* § 1326(b) (2012).

12. See National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41,576, 41,586 (July 9, 2004) [hereinafter Final Phase II Existing Facilities Rule].

13. According to the EPA, cooling water intakes kill over 3.4 billion fish and shellfish each year. *Id.* “Impingement” refers to the harm that occurs to aquatic organisms when they are trapped against intake screens; “entrainment” refers to the harm that occurs to organisms drawn through the screen into the internal mechanisms of the cooling water system. *Id.*

14. *Riverkeeper, Inc. v. EPA (Riverkeeper I)*, 358 F.3d 174, 181 (2d Cir. 2004).

15. See *Riverkeeper, Inc. v. EPA*, 475 F.3d 83, 90 (2d Cir. 2007), *rev’d and remanded sub nom. Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009); see also Comments of Riverkeeper, Inc. et al., on the National Pollutant Discharge Elimination System—Cooling Water Intake Structures at Existing Facilities and Phase I Facilities 23 n.137 (Aug. 18, 2011) (submitted to EPA, Docket ID No. EPA-HQ-OW-2008-0667-2391) (“Although Section 316(b) has been occasionally described as ‘something of an afterthought,’ because of the minimal discussion of that provision in the *published* legislative history of the Clean Water Act, that is plainly incorrect. More voluminous *unpublished* materials documenting the committee negotiations on the precise wording of what was eventually codified into the three subsection[s] of Section 316 show that, during extensive six-month

EPA to regulate cooling water intake structures. Section 316(b) of the Act states: the EPA “shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available [BTA] for minimizing adverse environmental impact.”¹⁶ This language closely tracks the many other feasibility provisions in the Clean Water Act, the Clean Air Act, and other U.S. environmental statutes, which essentially require the Agency to set an environmental standard at the most stringent level that is both technologically and economically feasible.¹⁷ There is a substantial literature on the operation of such feasibility provisions, which are prevalent in American environmental law and are quite distinct from provisions that require standards to be set on the basis of CBA.¹⁸

A. *The Phase I New Facilities Rule: Feasibility Analysis*

After the Fourth Circuit rejected on procedural grounds the EPA’s initial attempt to issue rules under this provision in the 1970s, the Agency delayed rulemaking for many years.¹⁹ During this period, the EPA directed state permitting agencies to use their “best professional judgment” to determine the “best technology available” on a case-by-case basis.²⁰ Although this was widely understood as a feasibility standard, the EPA instructed the permitting authorities that it would be appropriate to also measure their determinations against a limited and informal CBA that asked simply if a potential technology’s “cost [was] wholly disproportionate to the environmental benefit to be gained.”²¹

negotiations, the committee discussed and debated intake structure regulations at length.” (citation omitted)).

16. 33 U.S.C. § 1326(b).

17. See Wendy E. Wagner, *The Triumph of Technology-Based Standards*, 2000 U. ILL. L. REV. 83, 88–89.

18. See generally David M. Driesen, *Distributing the Costs of Environmental, Health, and Safety Protection: The Feasibility Principle, Cost-Benefit Analysis, and Regulatory Reform*, 32 B.C. ENVTL. AFF. L. REV. 1 (2005); David M. Driesen, *Two Cheers for Feasible Regulation: A Modest Response to Masur and Posner*, 35 HARV. ENVTL. L. REV. 313 (2011); Jonathan S. Masur & Eric A. Posner, *Against Feasibility Analysis*, 77 U. CHI. L. REV. 657, 669 (2010); Sidney A. Shapiro & Thomas O. McGarity, *Not So Paradoxical: The Rationale for Technology-Based Regulation*, 1991 DUKE L.J. 729 (1991); Wagner, *supra* note 17.

19. See *Appalachian Power Co. v. Train*, 566 F.2d 451, 459 (4th Cir. 1977).

20. See Final Phase II Existing Facilities Rule, *supra* note 12, at 41,584 (describing case-by-case permitting system); see also ENVTL. PROT. AGENCY, OFFICE OF WATER ENFORCEMENT PERMITS DIV., {DRAFT} GUIDANCE FOR EVALUATING THE ADVERSE IMPACT OF COOLING WATER INTAKE STRUCTURES ON THE AQUATIC ENVIRONMENT: SECTION 316(b) P.L. 92-500 (1977) (on file with UC Irvine Law Review).

21. *In re Pub. Serv. Co. of N.H.*, 1 E.A.D. 332, 340 (EAB 1977) (holding that formal CBA is not required under section 316(b), but also “that it [would not be] reasonable to interpret Section 316(b) as requiring use of technology whose cost is wholly disproportionate to the environmental benefit”), *remanded on other grounds by Seacoast Anti-Pollution League v. Costle*, 572 F.2d 872 (1st Cir. 1978); accord *In re Cent. Hudson Gas & Elec. Corp.*, Op. No. 63, 1977 WL 28250, at *8 (July 29, 1977).

While proponents of this site-specific permitting model lauded its flexibility and sensitivity to local conditions, critics (including many of the states themselves) complained that it imposed steep burdens on underresourced state agencies, created considerable administrative redundancies, and gave too much discretion to local permit writers, who some viewed as more vulnerable to industry pressure.²² Finally, environmental groups sued the EPA for delay, and the court approved a consent decree under which the Agency agreed to a timetable for issuing nationwide rules in three discrete phases.²³

The EPA issued the “Phase I rule,” governing cooling water intake structures at large new facilities in 2001.²⁴ In this rule, the EPA determined that the “best technology available” for new facilities was a system called “closed cycle cooling,” which recirculates cooling water.²⁵ In this way, it dramatically reduces the amount of water withdrawn through intake structures when compared to the standard “once-through” system, which simply withdraws water, circulates it once through the facility, and then discharges it back into the water body.²⁶ Closed-cycle cooling can reduce the amount of harm to fish and aquatic organisms by up to ninety-eight percent.²⁷ The EPA rejected a third option, dry cooling, which circulates air through the cooling towers instead of water, as too costly to be economically feasible.²⁸

In reaching this decision, the EPA interpreted its statutory authority to set a standard requiring the “best technology available” as one might expect—as a directive to set a “feasibility” or “technology-based” standard.²⁹ In doing so, the

22. See, e.g., Winston Harrington, *The Cooling Water Intake Structures Rule*, in REFORMING REGULATORY IMPACT ANALYSIS 160, 160 (Winston Harrington et al. eds., 2009), available at http://www.rff.org/RFF/Documents/RFF.RIA.V4.low_res.pdf.

23. *Cronin v. Browner*, 898 F. Supp. 1052, 1064 (S.D.N.Y. 1995).

24. See National Pollutant Discharge Elimination System: Regulations Addressing Cooling Water Intake Structures for New Facilities, 66 Fed. Reg. 65,256, 65,256 (Dec. 18, 2001) [hereinafter Final Phase I New Facilities Rule] (codified at 40 C.F.R. pts. 9, 122–25) (articulating “national requirements [to] establish the best technology available, based on a two-track approach, for minimizing adverse environmental impact associated with the use of [cooling water intake] structures”).

25. See *id.* at 65,259.

26. See *id.* at 65,273 (“[F]acilities located in freshwater areas that have closed-cycle recirculating cooling water systems can, depending on the quality of the make-up water, reduce water use by 96 to 98 percent from the amount they would use if they had once-through cooling water systems.”).

27. Final Phase II Existing Facilities Rule, *supra* note 12, at 41,601 (“[C]losed-cycle recirculating cooling systems . . . can reduce mortality from impingement . . . and entrainment by up to 98 percent . . .”).

28. National Pollutant Discharge Elimination System—Regulations Addressing Cooling Water Intake Structures for New Facilities, 65 Fed. Reg. 49,060, 49,080–81 (proposed Aug. 10, 2000) (to be codified at 50 C.F.R. pts 9, 122–125) [hereinafter Proposed Phase I New Facilities Rule].

29. See Harrington, *supra* note 22, at 161 (observing that the “usual approach” to technology-based or feasibility standards does not involve CBA); see also Douglas A. Kysar, *Fish Tales*, in REFORMING REGULATORY IMPACT ANALYSIS, *supra* note 22, at 190, 193 (“[B]est available technology (BAT) requirements long have been understood to preclude reliance on cost-benefit balancing by [the] EPA.”).

EPA followed a four-step process. First, the Agency evaluated in qualitative terms the environmental impacts of cooling water intake structures at large new facilities, simply to show that this was indeed a problem worthy of regulation.³⁰ Second, it identified the various technological options “available,” which essentially consisted of the three technologies described above.³¹ Third, it evaluated the costs (or economic “availability”) of those technologies, observing that the legislative history of the Act indicated that “‘best technology available’ should be interpreted as ‘best technology available commercially at an economically practicable cost.’”³² Fourth, the Agency adopted the “compliance cost/revenue test,” which evaluates costs by comparing a facility’s projected compliance costs to its projected revenues.³³ Under this test, the EPA concluded that dry cooling would not be economically practicable or “available” because it would impose compliance costs that were more than four percent of revenues for all eighty-three of the projected new facilities and greater than ten percent of revenues for the twelve worst off.³⁴ Closed-cycle cooling, in contrast, would be economically “available,” with costs of less than one percent of revenues for all but nine of the facilities.³⁵

Pursuant to Executive Order 12,866,³⁶ the EPA then put together a CBA to submit to OIRA, where John Graham—whom President Bush had appointed as OIRA Administrator—was just settling in to his new office. But the EPA left its CBA fairly informal, making no effort to quantify or monetize the environmental benefits of the rule, or to compare them to costs.³⁷ And while OIRA sometimes

30. ENVTL. PROT. AGENCY, EPA-821-R-00-019, ECONOMIC AND ENGINEERING ANALYSES OF THE PROPOSED § 316(b) NEW FACILITY RULE, at 11-16 (2000), available at <http://www.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-383.pdf> (“[I]t is not feasible to confidently assign monetary values . . .”).

31. See *Riverkeeper, Inc. v. EPA (Riverkeeper I)*, 358 F.3d 174, 182 n.5 (2d Cir. 2004).

32. Proposed Phase I New Facilities Rule, *supra* note 28, at 49,094–95 (emphasis added). The EPA found that this test “provides a reliable measure of whether costs are ‘economically practicable’” because “the data needed to perform the test are available or can be readily projected.” *Id.*

33. *Id.* at 49,095.

34. Final Phase I New Facilities Rule, *supra* note 24, at 65,282.

35. *Id.* at 65,324.

36. Exec. Order No. 12,866, 3 C.F.R. 638 (1994). Signed by President Clinton in 1993, E.O. 12,866 requires federal agencies to subject all major federal rules (those with costs of \$100 million or more) to a cost-benefit analysis to ensure that the benefits “justify” the costs. *Id.* at 639, 641. The E.O. also requires agencies to submit proposed rules to the White House’s Office of Information and Regulatory Affairs (OIRA), which reviews the rules to ensure compliance with the CBA mandate. *Id.* at 644. Modeled after a similar directive first put in place by President Reagan in 1981, (Exec. Order No. 12,291, 3 C.F.R. 127 (1982)), E.O. 12,866 has remained in place since 1993 through subsequent administrations, both Democratic and Republican. In 2011, President Obama issued Executive Order 13,563, “reaffirm[ing]” the principles of Executive Order 12,866. Exec. Order No. 13,563, 3 C.F.R. 215, 215 (2012).

37. Final Phase I New Facilities Rule, *supra* note 24, at 65,312 (“[I]t is neither required nor prudent for [the] EPA to develop empirical estimates of benefits where data limitations or other critical constraints preclude doing so in a credible and reliable manner.”).

has been known to push back in such situations—sending rules back to the EPA with demands for more quantification—this time it accepted the CBA as is.³⁸

Accordingly, the EPA issued a rule that required new plants to either install closed-cycle cooling or take alternative measures that would deliver equivalent environmental benefits.³⁹ The Second Circuit upheld this Phase I rule in relevant part.⁴⁰

B. *The Phase II Existing Facilities Rule: Cost-Benefit Analysis*

When the new facilities rule was in its final stages, the EPA set to work on the Phase II rule governing large existing power plants. This time, the EPA decided not to require closed-cycle cooling, as it had for the new facilities. Instead, the proposed Phase II rule set up five different “compliance alternatives.”⁴¹ The details of the five alternatives are not important here. Most of them essentially required plants to meet certain numeric targets for the reduction of fish mortality through the use of screens, filters, and other such devices that are considerably less effective than closed-cycle cooling.⁴² The last alternative, however—termed the “cost-benefit compliance alternative”—allowed a facility to escape national performance standards altogether and instead undergo site-specific permitting by the state agency if the facility could demonstrate that its compliance costs would be “significantly greater than the benefits of complying” with the national performance standards.⁴³

This was one of two ways that CBA entered into the Phase II rulemaking. The second was that the EPA appeared, unlike in the Phase I rulemaking, to

38. See *id.* at 65,327 (reporting review of final rule by OIRA); *id.* at 65,312 (noting that CBA left benefits unquantified).

39. *Id.* at 65,259–60.

40. *Riverkeeper, Inc. v. EPA (Riverkeeper I)*, 358 F.3d 174, 196 (2d Cir. 2004).

41. Final Phase II Existing Facilities Rule, *supra* note 12, at 41,591. These compliance alternatives set up performance standards that were relatively easy to meet. Indeed, the EPA estimated that 125 facilities would be able to meet them without installing impingement and entrainment controls at all. See ENVTL. PROT. AGENCY, ECONOMIC & BENEFITS ANALYSIS FOR THE FINAL SECTION 316(b) PHASE II RULE EXISTING FACILITIES RULE, at D1-1 (2004) [hereinafter EPA, ECONOMIC & BENEFITS ANALYSIS—FINAL PHASE II RULE] (Docket ID No. EPA-HQ-OW-2002-0049-1461, DCN 6-0002). Those that did install controls would be able to meet the performance standards without switching to closed-cycle cooling, by simply making relatively modest (and less effective) changes to their intake structures—new types of screens and filters more friendly to fish, barrier nets that deflect fish away from intakes, fish return systems, relocation of intakes, and other such modifications. See Final Phase II Existing Facilities Rule, *supra* note 12, at 41,599.

42. See National Pollutant Discharge Elimination System—Proposed Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 67 Fed. Reg. 17,122, 17,221 (proposed April 9, 2002) [hereinafter Proposed Phase II Existing Facilities Rule] (requiring plants to reduce impingement mortality by eighty to ninety-five percent and entrainment mortality by sixty to ninety percent).

43. *Id.* To qualify, a facility had to submit with its application a Comprehensive Cost Evaluation Study, Benefits Valuation Study, and Site Specific Technology Plan. *Id.* at 17,224.

actually use the CBA it performed for OIRA under Executive Order 12,866 to drive its decision about where to set the national performance standards.⁴⁴

Environmentalists and industry both went to court to challenge the Phase II rule on multiple grounds. The environmentalists' arguments included objections to both aspects of the agency's use of CBA in the rulemaking: First, the EPA's authorization of the use of CBA to determine the "best technology available" in the site-specific cost-benefit compliance alternative, and second, the EPA's use of CBA in setting the national performance standard.⁴⁵ The Second Circuit, in an opinion by then-Judge Sonia Sotomayor, agreed with the environmentalist challengers that section 316(b) does not allow a comparison of costs and benefits⁴⁶ and on that basis invalidated the site-specific cost-benefit compliance alternative.⁴⁷ With respect to the EPA's use of CBA in setting the standard as a whole, the court held that there was insufficient evidence in the record to determine whether the EPA had in fact based its decision on impermissible cost-benefit considerations, and so remanded the rule for further explanation from the Agency.⁴⁸ The Supreme Court granted industry's petition for certiorari, and thus the issue of cost-benefit analysis in environmental rulemaking made its way to the high Court.⁴⁹

II. THE COOLING WATER RULE IN THE SUPREME COURT

Once the case got to the Supreme Court, the myriad issues the two sides had raised in connection with the Phase II rule were narrowed to the question of CBA and the propriety of the EPA relying on it, both with respect to the site-specific compliance alternative and in setting the nationwide standards. The following pages describe first the briefing before the Court and then the Justices' opinions, with an ear tuned to the variety of forms that CBA can take along a spectrum from informal to formal.

A. *The Briefs: Two Contrasting Visions of CBA*

The striking thing about the briefing before the Supreme Court in *Riverkeeper*

44. *Riverkeeper, Inc. v. EPA (Riverkeeper II)*, 475 F.3d 83, 103 (2d Cir. 2007), *rev'd and remanded sub nom.* *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009); Final Phase II Existing Facilities Rule, *supra* note 12, at 41,604 (noting that "an important component of economic practicability" is "the relationship of costs to environmental benefits").

45. *Riverkeeper II*, 475 F.3d at 96. A group of six northeastern states brought similar claims, which were consolidated with the environmentalists' claims in the Second Circuit. *Id.*

46. *Id.* at 101 ("[T]he statute does not permit the EPA to select BTA [best technology available] on the basis of cost-benefit analysis.").

47. *Id.* at 114–15.

48. *Id.* at 101–05.

49. The Court consolidated three cases, *Entergy Corp. v. EPA*, *PSEG Fossil LLC v. Riverkeeper, Inc.*, and *Utility Water Act Group v. Riverkeeper, Inc.*, and granted certiorari on the question of whether section 316(b) authorized the EPA "to compare costs with benefits in determining the 'best technology available for minimizing adverse environmental impact' at cooling water intake structures." *Entergy Corp. v. EPA*, 552 U.S. 1309, 1309 (2008).

was the extent to which the two sides hued to the peculiar pattern described at the beginning of this Article. Industry, the federal government, and their supporting amici, arguing in favor of the EPA's use of CBA, portrayed it as informal and casual.⁵⁰ Some avoided the term "cost-benefit analysis" altogether, referring instead to "comparisons of benefits and costs" or a consideration of the "relationships between the benefits and costs."⁵¹ They equated the EPA's use of CBA with common sense, rationality,⁵² and reasonableness,⁵³ calling what agencies do "conceptually similar" to the common sense weighing of costs and benefits that individuals do,⁵⁴ and which is common "in human experience generally."⁵⁵ Thus, the Justice Department's brief asserted that "[i]n everyday life, people routinely weigh costs against benefits in deciding whether to do something."⁵⁶ Entergy's brief called CBA "nothing more than common sense—the imperative of basic rationality to ensure that actions do more good than harm."⁵⁷ Indeed, Entergy argued that "cost-benefit analysis is *always* reasonable," asserting that "[c]ost-benefit analysis (and particularly the modest form employed by [the] EPA here) is essentially just another way of describing common sense or basic rationality."⁵⁸

And, of course, there was the inevitable appeal to Ben Franklin. The amicus brief filed by the American Enterprise Institute (AEI) opened its argument section this way: "The general concept of comparing benefits and costs is familiar and long standing. Indeed, in 1772, Benjamin Franklin wrote in a letter about a method for making private decisions . . . that illustrates the basic features of benefit-cost assessments."⁵⁹ That brief also emphasized the fact that "[n]ot all impacts of a decision can be quantified or expressed in dollar terms," and that CBA should "give due consideration to factors that defy quantification but are thought to be important."⁶⁰

50. See, e.g., Brief of Amici Curiae the AEI Center for Regulatory & Market Studies and 33 Individual Economists in Support of Petitioners at 1, 3, 5–6, 11–12, Entergy Corp. v. Riverkeeper, Inc., 556 U.S. 208 (2009) (Nos. 07-588, 07-589, 07-597), 2008 WL 2817679, at *1, *3, *5–6, *11–12 [hereinafter Brief of Amici Curiae the AEI Center].

51. See, e.g., *id.* at 3, 5, 11–12; see also e.g., *id.* at 1, 6, 11–12 ("benefit-cost comparisons"); *id.* at 5 ("relationships between the benefits and costs").

52. Brief for Petitioners, *supra* note 7, at 4 (describing CBA as "further[ing] rational decisionmaking?"); Brief of Amici Curiae the AEI Center, *supra* note 50, at 6 ("Benefit-cost comparisons . . . foster rational decision making").

53. Brief for Petitioners, *supra* note 7, at 30 ("[A]ny reasonable judgment will ordinarily be based on some kind of weighing of costs and benefits . . ." (alteration in original) (quoting Cass R. Sunstein, *Cost-Benefit Default Principles*, 99 MICH. L. REV. 1651, 1694 (2001))).

54. Brief for the Federal Parties as Respondents Supporting Petitioners at 14, *Riverkeeper*, 556 U.S. 208 (Nos. 07-588, 07-589, 07-597), 2008 WL 2753248, at *14 [hereinafter Brief for the Federal Parties].

55. *Id.* at 13.

56. *Id.*

57. Brief for Petitioners, *supra* note 7, at 29.

58. *Id.* at 56.

59. Brief of Amici Curiae the AEI Center, *supra* note 50, at 6.

60. *Id.* at 12–13.

The other side, in contrast, stressed the formality of CBA. An amicus brief filed by a group of economists in support of the environmentalists portrayed the CBA at issue in the case as highly formal, technical, and grounded in economic theory: “CBA serves as a tool for identifying allocatively efficient regulation, defined as regulation that generates costs equaling benefits at the margin. . . . [T]he framework asks regulators to predict, weight, and aggregate policy impacts in dollar terms.”⁶¹ Another amicus brief in support of the anti-CBA side (written by this author) also took pains to define the CBA at issue in the case as “formal CBA” defined as “an analysis that estimates a regulation’s costs and benefits to society in quantified, monetary terms and then compares them.”⁶² And an amicus brief signed by a group of environmental law professors supporting the environmentalists called CBA a “detailed assessment[] of the environmental harms caused by cooling water intake technologies [that] then compares the monetized benefits of avoiding those harms against the costs of the technologies.”⁶³

Thus, the briefs paint two very different pictures of CBA. On the one hand, it can be an informal weighing of qualitatively described pros and cons, something many of us probably do—as the Justice Department brief said—“in everyday life.”⁶⁴ This is along the lines of Ben Franklin’s “moral or prudential algebra,” which he described in a letter to a friend as

divid[ing] half a sheet of paper by a line into two columns; writing over the one Pro, and over the other Con[,] . . . put[ting] down under the different heads short hints of the different motives . . . for or against the measure, . . . [and] estimating their respective weights, . . . [even] though the weight of reasons cannot be taken with the precision of algebraic quantities.⁶⁵

This informal Ben Franklin-style CBA involves: (1) a qualitative description of the costs and benefits (2) of a single alternative, and (3) a rough, apples-to-oranges balancing of the two.

On the other hand, CBA can be a highly formal method aimed at finding the point of economic efficiency, defined as “costs equaling benefits at the margin.”⁶⁶ This is a reference to welfare economics, which views CBA as a tool for optimizing regulations or public works projects in terms of Kaldor-Hicks efficiency.⁶⁷ This involves calculating the level of regulation that maximizes net

61. Brief of Economists Frank Ackerman et al. as Amici Curiae in Support of Respondents at 11–12, *Riverkeeper*, 556 U.S. 208 (Nos. 07-588, 07-589, 07-597), 2008 WL 4525129, at *11–12 [hereinafter Brief of Economists Frank Ackerman et al.].

62. Brief of Amicus Curiae OMB Watch in Support of Respondents at 4, *Riverkeeper*, 556 U.S. 208 (Nos. 07-588, 07-589, 07-597), 2008 WL 4525127, at *4.

63. Brief of Environmental Law Professors as Amici Curiae in Support of Respondents at 5, *Riverkeeper*, 556 U.S. 208 (Nos. 07-588, 07-589, 07-597), 2008 WL 4565601.

64. Brief for the Federal Parties, *supra* note 54, at 14.

65. GRAMLICH, *supra* note 2.

66. Brief of Economists Frank Ackerman et al., *supra* note 61, at 11–12; see also TOM TIETENBERG, ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS 66 (1984).

67. ANTHONY E. BOARDMAN ET AL., COST-BENEFIT ANALYSIS: CONCEPTS AND PRACTICE

social benefits, or, said another way, for which marginal social benefits are just equal to marginal social costs.⁶⁸ Identifying that point of efficiency requires measuring the costs and benefits not just of a single regulation but of every possible level of regulation at incrementally varying levels of stringency. And, since the goal is to find the point at which marginal costs and marginal benefits are just equal, it is not sufficient to measure costs and benefits in qualitative terms or to do a rough, apples-to-oranges comparison. Rather, costs and benefits must be fully, or close to fully, quantified and then converted to a common metric (usually dollars) so that they can be precisely compared. Accordingly, this formal, economic CBA involves: (1) quantification and monetization of all, or nearly all,⁶⁹ costs and benefits to society as a whole (2) for a full range of incrementally varying alternatives, in order to (3) identify the point at which marginal costs are just equal to marginal benefits.⁷⁰

These two different visions of CBA have very little in common, other than the general approach of juxtaposing positive and negative impacts. Informal CBA relies on qualitative descriptions intuitively compared and gives no more than general guidance. Formal CBA, on the other hand, relies on numbers and mathematics and purports, at least, to provide precise answers. Notice also that informal and formal CBA play entirely different roles in the decision-making process. Informal CBA simply provides a binary go-or-no-go answer to a single option and therefore provides no more than a secondary check on a decision that has been made by other means. Formal CBA, on the other hand, provides a

32–33 (4th ed. 2011); EDWARD J. MISHAN, *COST-BENEFIT ANALYSIS* 390 (1971). *But see generally* MATTHEW D. ADLER & ERIC A. POSNER, *NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS* (2006) (arguing for a justification of CBA as a welfarist decision procedure rather than a tool for meeting the Kaldor-Hicks criterion).

68. *See* GRAMLICH, *supra* note 2, at 33–36; EDITH STOKEY & RICHARD ZECKHAUSER, *A PRIMER FOR POLICY ANALYSIS* 137 (1978); TIETENBERG, *supra* note 66, at 25, 66; Kenneth J. Arrow et al., *Is There a Role for Benefit-Cost Analysis in Environmental, Health, and Safety Regulation?*, 272 *SCIENCE* 221 (1996); Richard D. Morgenstern, *Conducting an Economic Analysis: Rationale, Issues, and Requirements*, in *ECONOMIC ANALYSIS AT EPA: ASSESSING REGULATORY IMPACT* 25, 40 (Richard D. Morgenstern ed., 1997).

69. Presumably one could still undertake a meaningful analysis if unquantified benefits or costs were known to be de minimis.

70. Others have also distinguished between “strong and weak” or “soft and hard” forms of CBA. *See* DANIEL FARBER, *ECO-PRAGMATISM: MAKING SENSIBLE ENVIRONMENTAL DECISIONS IN AN UNCERTAIN WORLD* 39, 93 (1999) (distinguishing between CBA aimed at economic efficiency versus “soft” CBA, “which would compare costs and benefits without attempting to quantify every factor”); Jonathan Cannon, *The Sounds of Silence: Cost-Benefit Canons in Entergy Corp. v. Riverkeeper, Inc.*, 34 *HARV. ENVTL. L. REV.* 425, 428–29 (2010) (distinguishing between “strong” and “weak” forms of CBA); John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 *YALE L.J.* (forthcoming 2015) (Eur. Corporate Governance Inst. Working Paper No. 234, 2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2375396 (distinguishing between “quantified CBA,” “guesstimated CBA,” and “conceptual CBA,” roughly corresponding to my formal CBA, false formality, and informal CBA); John D. Graham, *Saving Lives Through Administrative Law and Economics*, 157 *U. PA. L. REV.* 395, 432–38 (2008) (distinguishing between “hard” and “soft” forms of CBA).

standard-setting tool for identifying the optimal choice from among a whole range of regulatory alternatives.

We can envision these two contrasting visions of CBA as forming two ends of a spectrum with yet more varieties of CBA in between.⁷¹ One might, for example, quantify and monetize some but not all costs and benefits. Or one might monetize all significant costs and benefits but only for a single alternative, and thus be able to say whether benefits outweigh costs for that alternative but not whether it is the efficient level of regulation (at which costs equal benefits at the margin). In sum, the briefing in the case makes clear that the term “cost-benefit analysis” can be used to refer to a wide variety of decision-making techniques that range on a spectrum from formal to informal.

B. *The Supreme Court Opinions*

The same pattern that came through in the briefs played out in the multiple opinions issued by the Supreme Court. Justice Scalia’s majority opinion and Justice Breyer’s concurrence upholding the EPA’s use of CBA both described it as informal, qualitative, and flexible. Justice Stevens’s dissent, in contrast, described the EPA’s CBA as formal, quantitative, and technical.

1. *The Majority*

Justice Scalia, writing for a five-justice majority, held that the EPA had permissibly relied on CBA in setting the Phase II regulations and upheld the site-specific cost-benefit compliance alternative. Based on an examination of the Clean Water Act’s text, he concluded that “it was well within the bounds of reasonable interpretation for the EPA to conclude that cost-benefit analysis is not categorically forbidden.”⁷² But he went on to suggest that the kind of CBA he was endorsing was far toward the informal end of the spectrum:

Other arguments may be available *to preclude such a rigorous form of cost-benefit analysis* as that which was prescribed under the statute’s former BPT standard, which required weighing “the total cost of application of technology” against “the . . . benefits to be achieved.” But that question is not before us.

In the Phase II requirements challenged here the EPA sought only to avoid extreme disparities between costs and benefits.⁷³

Justice Scalia’s reference to the Clean Water Act’s “best practicable control technology” (BPT) standard⁷⁴ as requiring a “rigorous” form of CBA is somewhat

71. For a more in-depth analysis of this idea, see Amy Sinden, *Formality and Informality in Cost-Benefit Analysis*, 2015 UTAH. L. REV. (forthcoming), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2442357.

72. *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208, 223 (2009).

73. *Id.* at 223–24 (emphasis added) (citation omitted).

74. BPT or “Best Practicable Control Technology” was an interim standard that the 1972 Clean Water Act required facilities to meet by 1977. 33 U.S.C. § 1311(b)(1)(A) (2012). In setting BPT,

puzzling, as the EPA and the courts interpreted that standard in the 1970s to require a form of CBA that was actually pretty far toward the informal end of the spectrum.⁷⁵ It did not require monetization of benefits, but instead, typically measured costs in dollars and benefits in pounds or tons of pollutant removed from industrial discharges.⁷⁶ The BPT CBA also employed an informal balancing formula, requiring only a finding that the costs were not “wholly disproportionate” to the benefits.⁷⁷ This seems pretty close to the way Justice Scalia characterized the balancing test associated with the cooling water intake rule—as seeking “only to avoid extreme disparities between costs and benefits.”⁷⁸ It is odd then, that Justice Scalia viewed the BPT test as significantly more “rigorous.”⁷⁹ Perhaps he did not understand just how informal and “non-rigorous” the CBA associated with the BPT standard actually was.⁸⁰ In any case, it seems clear that, in this passage, Justice Scalia sought to emphasize the informality

the Act explicitly required the EPA to compare costs and benefits. *Id.* § 1311(b)(2); *id.* § 1314(b)(1)(B) (BPT to be determined in part by consideration of “the total cost [imposed on industry by the standards] . . . in relation to the effluent reduction benefits to be achieved”). The Act required those same facilities to subsequently ratchet down to a more stringent set of standards; so BPT is no longer in force. *Id.*

75. *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1048 (D.C. Cir. 1978) (“[C]ost need not be balanced against benefits with pinpoint precision.”); *see also Chem. Mfrs. Ass’n v. EPA* 870 F.2d 177, 204 (5th Cir. 1989) (noting that the Clean Water Act requires a totality of the circumstances style balancing test, rather than a “quantitative cost-benefit ratio test”); *Ass’n of Pac. Fisheries v. EPA*, 615 F.2d 794, 809 (9th Cir. 1980) (“pinpoint precision” not required for CBA because “many of the benefits . . . are incapable of precise quantification”).

76. *See, e.g., Ass’n of Pac. Fisheries*, 615 F.2d at 808–09 (costs of \$6.2 million for investment and \$1.3 million in annual expenditures were justified by the generalized water-quality benefits and reductions in the amount of pollutant discharged); *Weyerhaeuser*, 590 F.2d at 1047 (estimating costs to industry as a whole of \$1.6 billion and benefits of “5,000 fewer tons per day of BOD discharged into the nation’s waters”).

77. *See, e.g., Ass’n of Pac. Fisheries*, 615 F.2d at 805; *Weyerhaeuser*, 590 F.2d at 1045, n.52. During this time, the EPA applied the same brand of CBA in its guidelines for site-specific permitting of cooling water intake structures under section 316(b)—directing state permit writers to simply ensure that costs were not “wholly disproportionate” to benefits. *See Riverkeeper*, 556 U.S. at 224–25; *Seacoast Anti-Pollution League v. Costle*, 597 F.2d 306, 311 (1st Cir. 1979).

78. *Riverkeeper*, 556 U.S. at 224.

79. *See Cannon*, *supra* note 70, at 450 (calling this part of Justice Scalia’s opinion “mysterious,” but suggesting that it may reflect “[t]he implication . . . that because the BPT provision expressly authorizes CBA (although not by its terms a ‘rigorous’ version), BTA under section 316(b) [which doesn’t mention CBA] is limited to a less demanding form of [CBA]”). To the extent Justice Scalia suggests in this passage that the standard the EPA used here was even less rigorous than the BPT “wholly disproportionate” test, he later contradicts that view in a passage that seems to suggest that he views the “significantly greater” formulation that the EPA used here for the site-specific compliance alternative as *more* rigorous than the “wholly disproportionate” test. *See Riverkeeper*, 556 U.S. at 226 n.8. In either case, however, it is clear that Justice Scalia viewed the CBA employed by the EPA in this case as falling well toward the informal end of the spectrum.

80. It is somewhat surprising that Justice Kennedy did not weigh in separately on this point. He clearly understood the kind of informal CBA required under the old *Weyerhaeuser* test, as evidenced by the opinion he authored while on the Ninth Circuit in *Ass’n of Pacific Fisheries*, 615 F.2d at 808.

of the CBA the EPA was employing in connection with this rule and, likewise, the informality of the form of CBA he was endorsing.⁸¹

2. *Justice Breyer's Concurring and Dissenting Opinion*

Justice Breyer, concurring in part and dissenting in part, made an even clearer distinction between formal and informal varieties of CBA. He went to great pains to make clear that, while he viewed the Act as giving the EPA some discretion to use CBA, that discretion was not unlimited. In Justice Breyer's view, the Clean Water Act's legislative history "make[s] clear that those who sponsored the legislation intended the law's text to be read as *restricting*, though not forbidding, the use of cost-benefit comparisons."⁸² Thus, in Breyer's view, the use of informal versions of CBA is permissible under the Clean Water Act, but formal CBA is not.

Justice Breyer highlighted the dangers of overly formal CBA and argued that Congress was well aware of those dangers when it passed the Clean Water Act:

[T]he Act's sponsors had reasons for minimizing the EPA's investigation of, and reliance upon, cost-benefit comparisons. The preparation of formal cost-benefit analyses can take too much time, thereby delaying regulation. And the sponsors feared that such analyses would emphasize easily quantifiable factors over more qualitative factors (particularly environmental factors, for example, the value of preserving nonmarketable species of fish). Above all, they hoped that minimizing the use of cost-benefit comparisons would force the development of cheaper control technologies; and doing so, whatever the initial inefficiencies, would eventually mean cheaper, more effective cleanup.

Nonetheless, neither the sponsors' language nor the underlying rationale requires the Act to be read in a way that would *forbid* cost-benefit comparisons. Any such total prohibition would be difficult to enforce, for every real choice requires a decisionmaker to weigh advantages against disadvantages, and disadvantages can be seen in terms of (often quantifiable) costs. Moreover, an absolute prohibition would bring about irrational results. As the respondents themselves say, it would

81. Jonathan Cannon has also observed that "Justice Scalia's opinion reflects an unspoken preference in favor of [what Cannon calls] the weak form of CBA." Cannon, *supra* note 70, at 447. Cannon also noted that this apparent preference for less formal CBA is consistent with views Justice Scalia expressed in a lecture at the University of Houston in 1987. *See id.* at 451; Antonin Scalia, *Responsibilities of Regulatory Agencies under Environmental Laws*, 24 HOUS. L. REV. 97, 101 (1987) (distinguishing between CBA in the "narrow sense" and a broader form and endorsing the broader form: "What I mean by cost-benefit analysis is simply a weighing of all the desirable effects of a proposed action against all the undesirable effects, whether or not they are susceptible of being expressed in economic terms."). At oral argument, the Solicitor General did not ask the court to define the outer limits of the level of formality that would be allowed. *See* Transcript of Oral Argument at 61, *Riverkeeper*, 556 U.S. 208 (Nos. 07-588, 07-589, 07-597) ("[W]e don't think the Court necessarily need[s] to expand—to opine on the outer limits here.").

82. *Riverkeeper*, 556 U.S. at 230 (Breyer, J., concurring in part and dissenting in part) (emphasis added).

make no sense to require plants to “spend billions to save one more fish or plankton.”⁸³

Thus, in his view, the Clean Water Act allows the EPA to use CBA if it wants to, but that CBA must be informal, not formal, with costs perhaps monetized but not necessarily benefits. He concluded with a passage that once again highlighted the dangers of formal CBA:

The EPA’s reading of the statute would seem to permit it to describe environmental benefits in non-monetized terms and to evaluate both costs and benefits in accordance with its expert judgment and scientific knowledge. *The Agency can thereby avoid lengthy formal cost-benefit proceedings and futile attempts at comprehensive monetization*, take account of Congress’ technology-forcing objectives; and still prevent results that are absurd or unreasonable in light of extreme disparities between costs and benefits.⁸⁴

Like the majority, then, Justice Breyer endorsed a form of CBA that is well toward the Ben Franklin end of the spectrum.⁸⁵ He specifically called for benefits to be expressed in nonmonetized terms and for a loose and imprecise balancing test that merely aims at avoiding “extreme disparities between costs and benefits” for a single alternative.⁸⁶

3. *The Dissent*

Finally, Justice Stevens’s dissenting opinion (joined by Justices Souter and Ginsburg) seems to read directly from the playbook of the anti-CBA camp, portraying CBA as formal and rigid.⁸⁷ The contrast with Justice Breyer’s opinion is immediately apparent. While Justice Breyer talked of “cost-benefit comparisons,”⁸⁸ the dissent from the outset identified the issue as “cost-benefit analysis.”⁸⁹ Indeed, Justice Stevens began his opinion by defining the CBA that the EPA “typically” performs in terms that clearly placed it on the formal end of the spectrum:

As typically performed by the EPA, cost-benefit analysis requires the Agency to first monetize the costs and benefits of a regulation, balance the results, and then choose the regulation with the greatest net benefits. The process is particularly controversial in the environmental context in which a regulation’s financial costs are often more obvious and easier to quantify than its environmental benefits. And cost-benefit analysis often,

83. *Id.* at 232–33 (citation omitted).

84. *Id.* at 235 (emphasis added) (citations omitted).

85. *See Cannon, supra* note 70, at 447 (characterizing Justice Breyer’s concurrence as “permitting a rough nonmonetized version of CBA designed to avoid irrational results rather than to achieve an optimal outcome”).

86. *Riverkeeper*, 556 U.S. at 235 (Breyer, J., concurring in part and dissenting in part).

87. *See Cannon, supra* note 70, at 453 (describing Justice Stevens’s dissent as “focusing its attack on the strong form of CBA”).

88. *Riverkeeper*, 556 U.S. at 230 (Breyer, J., concurring in part and dissenting in part).

89. *Id.* at 237 (Stevens, J., dissenting).

if not always, yields a result that does not maximize environmental protection.⁹⁰

Unlike Justice Breyer, who specifically said that the EPA's CBA should describe "benefits in non-monetized terms" and seemed to assume that was what the Agency in fact did, this account specified that the Agency typically monetizes both costs and benefits.⁹¹ Additionally, the reference to the EPA "choos[ing] the regulation with the greatest net benefits" implies a formal economic CBA that estimates costs and benefits for a whole range of regulatory alternatives in order to identify the point of equivalence between marginal costs and benefits.⁹² The dissent then went on to identify the dangers of formal CBA as illustrated by the CBA in this case, which—as described below—vastly undercounted the environmental benefits of the rule because the ecological values at stake couldn't be quantified.⁹³

In sum, in both the briefing and the opinions of the Supreme Court justices, the peculiar dynamic described above emerged, with CBA's proponents painting it in benign Ben Franklin terms as highly informal and flexible and CBA's skeptics painting it as formal, technical, and grounded in economic theory.⁹⁴ The next section begins to draw out the lessons this case holds for the larger debate about the role of CBA in environmental law and the importance of distinguishing between CBA's formal and informal varieties. In so doing, it also more closely examines the rulemakings leading up to the case and following remand.

III. DIGGING DEEPER: THE THREE IRONIES

When one looks at the *Riverkeeper* case with the distinction between formal and informal CBA in mind, three ironies emerge. The first is apparent on the face of the Supreme Court's opinion itself and involves its effect on the law of CBA. The opinion represents not so much a win for CBA, as a win for *informal* CBA. The second irony becomes apparent when one asks where along the formality-informality spectrum the CBA that was the subject of the Court's opinion actually fell. This requires a careful look at the EPA's original rulemaking, which reveals that the Court got its facts wrong—seeing informality where in fact there was formality. Finally, the third irony becomes apparent when one examines the rulemaking the EPA conducted on remand. Here, the EPA got the law wrong, seeing formality where there was only informality.

A. Irony Number One: Bait with No Switch

The first irony of the *Riverkeeper* case is apparent on the face of the Supreme

90. *Id.*

91. *Id.* at 235 (Breyer, J., concurring in part and dissenting in part).

92. *Id.* at 237 (Stevens, J., dissenting).

93. *Id.* at 237–46.

94. A similar pattern is discernible in the academic literature on CBA. See Sinden, *supra* note

Court's opinion. That is, if the proponents of CBA were trying to play a game of bait and switch—promoting an innocuous, informal Ben Franklin-style of CBA in order to ultimately enable agencies to engage in a much more formal kind of CBA—that strategy backfired. The Supreme Court majority arguably took the bait—taking CBA's proponents at their word with respect to the informality of the EPA's CBA—but then never made the switch, and endorsed only the kind of informal CBA it assumed the EPA to have done.

The majority opinion doesn't specify exactly what the CBA it is endorsing looks like, but it offers enough clues to make clear that it falls pretty far toward the informal end of the spectrum. First, Justice Scalia tells us that “the EPA sought only to avoid extreme disparities between costs and benefits.”⁹⁵ This indicates a fairly informal balancing formula. More formal balancing tests require benefits to specifically “outweigh” or “justify” costs, or require the analyst to identify the regulatory alternative with the highest net benefits.⁹⁶ Second, Justice Scalia tells us that the form of CBA he's endorsing is less “rigorous” than that performed under the BPT standard.⁹⁷ But the BPT CBA is itself pretty informal; it has not typically monetized benefits, for example.⁹⁸ This, then, puts Justice Scalia's CBA well toward the informal end of spectrum with respect to monetization as well as balancing, and is consistent with Justice Breyer's view that the EPA should describe benefits in “non-monetized terms” and “avoid lengthy formal cost-benefit proceedings.”⁹⁹

Thus, while on a superficial view, the Supreme Court's decision in *Riverkeeper* appears to be a victory for the proponents of CBA, on closer inspection, it looks more like a win for the anti-CBA camp.¹⁰⁰ The form of CBA the Court views the EPA as having performed and therefore endorses is only a very informal version. Indeed, it's a version to which many CBA skeptics would likely not object.¹⁰¹ Nor is it a huge departure from decades of precedent in the circuit courts, which have repeatedly and in many contexts endorsed informal versions of CBA.¹⁰²

95. *Riverkeeper*, 556 U.S. at 224.

96. See, e.g., Exec. Order No. 12,291, § 2(b), 3 C.F.R. 127, 128 (1982) (“outweigh”); Exec. Order No. 12,866, § 1(b)(6), 3 C.F.R. 638, 639 (1994) (“justify”). See generally Sinden, *supra* note 71.

97. *Riverkeeper*, 556 U.S. at 223.

98. See *supra* notes 74–77 and accompanying text.

99. *Riverkeeper*, 556 U.S. at 235 (Breyer, J., concurring in part and dissenting in part).

100. See Cannon, *supra* note 70, at 428 (“If the emergence of ‘the cost-benefit state’ in America is inevitable, as Sunstein has argued, the Supreme Court has not placed itself in the vanguard of that transformation.” (footnote omitted)).

101. See Sinden, *supra* note 71 (“[M]any of CBA's harshest critics don't object to informal Ben Franklin CBA at all.”).

102. See, e.g., *Nat'l Grain & Feed Ass'n v. Occupational Safety & Health Admin.*, 866 F.2d 717, 733 (5th Cir. 1989) (“The test under section 3(8) [of the Occupational Safety and Health Act] is an intermediate one between the feasibility mandate of section 6(b)(5) and a strict cost-benefit analysis that requires a more formal, specific weighing of quantified benefits against costs.”); *Alaska Factory Trawler Ass'n v. Baldrige*, 831 F.2d 1456, 1460 (9th Cir. 1987) (“[In reviewing a fisheries management plan for conformance with the national standards set forth in the Act,] the Secretary [of Commerce] does not have to conduct a formal cost/benefit analysis of [the measure at issue].”);

B. *Irony Number Two: The Court Gets the Facts Wrong*

The second irony is not apparent from the face of the Supreme Court's opinion. If we dig a little deeper into the details of the EPA's underlying rulemaking, however, it becomes apparent that the Court got its facts wrong. The CBA that the EPA actually performed here and that drove its decision on how stringent a national standard to set was not the innocuous, informal CBA that Justices Scalia and Breyer described in their opinions. Instead, it was a prime example of what I have elsewhere called "false formality": a CBA with the trappings of formality that actually misused formality so as to produce a result diametrically opposed to the rationality and common sense to which the EPA's defenders lay claim.¹⁰³

Weyerhaeuser Co. v. Costle, 590 F.2d 1011, 1045, 1048 (D.C. Cir. 1978) (holding that Clean Water Act's BPT standard calls for "a 'limited' balancing test," under which "cost need not be balanced against benefits with pinpoint precision"); Aqua Slide 'N' Dive Corp. v. Consumer Prod. Safety Comm'n, 569 F.2d 831, 839 (5th Cir. 1978) (CBA conducted under Consumer Product Safety Act need not be "elaborate"). For a more in-depth discussion of the treatment of formal and informal CBA in federal case law, see Sinden, *supra* note 71.

Riverkeeper is the first case in which a court has endorsed agency use of CBA under a feasibility standard that does not explicitly call for balancing costs and benefits (as the BPT standard does). See *supra* note 74 for a discussion of the requirements under the statute. Many other cases have rejected industry arguments that agencies should have performed CBA under a feasibility standard where the agency chose not to. See, e.g., Am. Textile Mfrs Inst., Inc. v. Donovan, 452 U.S. 490, 510 (1981) (provision in Occupational Safety and Health Act requiring agency to "set the standard which most adequately assures to the extent feasible . . . that no employee will suffer material impairment of health" does not require agency to conduct CBA); EPA v. Nat'l Crushed Stone Ass'n, 449 U.S. 64, 71 (1980) (Clean Water Act directs the EPA not to consider costs in relation to benefits in setting effluent limits under the Best Available Technology (BAT) standard); Tex. Oil & Gas Ass'n v. EPA, 161 F.3d 923, 936 (5th Cir. 1998) ("In applying the BAT standard, the EPA is not obligated to evaluate the reasonableness of the relationship between costs and benefits. . . . Indeed, the EPA may prescribe [effluent limitations guidelines] whose costs are significantly disproportionate to their benefits, just as long as the BAT determination remains economically feasible for the industry as a whole." (citations omitted)); Am. Petroleum Inst. v. EPA, 858 F.2d 261, 265 (5th Cir. 1988) ("[A] direct cost/benefit correlation is not required [for BAT], so even minimal environmental impact can be regulated, so long as the prescribed alternative is 'technologically and economically achievable.'" (citation omitted)); Reynolds Metals Co. v. EPA, 760 F.2d 549, 565 (5th Cir. 1985) (no CBA required for setting BAT, new source performance standards, PSES and PSNS standards); Nat'l Ass'n Metal Finishers v. EPA, 719 F.2d 624, 662 n.64 (3d Cir. 1983) ("[Under BAT,] 'cost is no longer considered *in comparison to* effluent reduction benefits.' . . . Instead, the Administrator looks only at the cost of achieving the requisite effluent reduction." (citations omitted)), *rev'd on other grounds*, Chem. Mfrs. Ass'n v. Natural Res. Def. Council, Inc., 470 U.S. 116 (1985); *Weyerhaeuser*, 590 F.2d at 1046 (distinguishing BAT from BPT standard in that a limited cost-benefit balancing is required under the latter, but not under the former); Am. Paper Inst. v. Train, 543 F.2d 328, 338 (D.C. Cir. 1976) (same); CPC Int'l Inc. v. Train, 540 F.2d 1329, 1341-42 (8th Cir. 1976) (same); see also Masur & Posner, *supra* note 18, at 670 ("Courts of appeals have occasionally used strong language rejecting CBA as 'incompatible' with feasibility-based statutory provisions, but those statements always came in the context of an agency decision not to perform CBA."). But *Riverkeeper's* holding doesn't actually move that far from that position; it simply ratifies an agency's choice to use CBA under a feasibility standard if it so chooses without requiring CBA. *Riverkeeper*, 556 U.S. at 226.

103. See Sinden, *supra* note 71.

This story begins back when the EPA was first drafting its proposed Phase II rule. As explained above, because retrofitting an existing plant to incorporate closed-cycle cooling costs more than incorporating it into a new plant's design, the EPA was concerned that closed-cycle cooling would not be "economically practicable" for many existing plants.¹⁰⁴ Accordingly, the EPA proposed to allow most plants to make relatively modest changes to their intake structures instead—new more fish-friendly screens and filters, barrier nets that would deflect fish away from intakes, and fish-return systems.¹⁰⁵ Because these measures are far less effective at preventing harm to fish and aquatic ecosystems, however,¹⁰⁶ the EPA still wanted to see the large plants that could afford it install the more effective closed-cycle cooling technology. Accordingly, with respect to the fifty-nine largest and most damaging plants, the EPA proposed to require closed-cycle cooling.¹⁰⁷

As it had done for the Phase I rule on new plants, the EPA assessed the "economic practicability" of this proposal by comparing compliance costs to annual revenues.¹⁰⁸ Its conclusion was that compliance costs would be "low."¹⁰⁹ Indeed, 82% of firms would incur compliance costs of less than 0.5% of revenues, and 92% would incur costs of less than 1%.¹¹⁰ The EPA also found that closed-cycle cooling is "the most effective technology" for reducing harm to fish, that it is "commercially available and economically practicable" and already in use in 21% of existing facilities, and that "facilities can and have installed these technologies years after the facility began operation."¹¹¹

Concluding that this rule was, like the earlier Phase I rule, subject to Executive Order 12,866, the EPA prepared a CBA and submitted it along with the draft rule to John Graham's OIRA on December 28, 2001.¹¹² This time, however, rather than declining to attempt any quantification of benefits, as it had done with the Phase I rule, the EPA spent enormous time and resources attempting to devise a fully quantified and monetized CBA.¹¹³ The analysis the EPA ultimately

104. *Riverkeeper*, 556 U.S. at 215.

105. Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,142.

106. ENVTL. PROT. AGENCY, OMB REVIEW DRAFT FOR THE PROPOSED SECTION 316(b) RULE FOR LARGE COOLING WATER INTAKE STRUCTURES AT EXISTING POWER GENERATING FACILITIES 75 (2001) (Docket ID No. EPA-HQ-OW-2002-0049, DCN 4-4005) [hereinafter EPA, OMB REVIEW DRAFT—PROPOSED PHASE II RULE].

107. *Id.* at 72.

108. See *supra* notes 32–35 and accompanying text.

109. Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,158.

110. *Id.*

111. EPA, OMB REVIEW DRAFT—PROPOSED PHASE II RULE, *supra* note 106, at 74–75.

112. See Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,208; EPA, OMB REVIEW DRAFT—PROPOSED PHASE II RULE, *supra* note 106.

113. The EPA recognized that the task would be "challenging." Final Phase II Existing Facilities Rule, *supra* note 12, at 41,655. The EPA expressed concern from the outset that formal CBAs under the Clean Water Act have generally "been limited in the range of benefits assessed," thus "hinder[ing] [the] EPA's ability to compare . . . benefits and costs . . . comprehensively." Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,191.

came up with was vastly incomplete, arbitrary, and ultimately meaningless—a perfect poster child for “false formality” in CBA.

1. *A Narrow Slice of Benefits: Most Nonfish Species Left Out*

First, the data the EPA had to work with were hopelessly incomplete. As a result, the EPA left out whole categories of aquatic organisms for which it simply had no data. These included a number of species that the EPA acknowledged might play crucial roles in the food chain and other aspects of the aquatic ecosystem—phytoplankton, zooplankton, endangered sea turtles, and even certain commercially valuable species, like shrimp, lobsters, crabs, and mussels.¹¹⁴

2. *A Narrow Slice of a Narrow Slice: Ninety-Eight Percent of Fish Left Out*

But even focusing just on those fish species the EPA did include in its analysis, less than two percent of those fish were actually counted.¹¹⁵ This represented the fraction of the total population of those species that commercial or recreational fisherman could actually be expected to catch once they escaped the cooling water intake structures.¹¹⁶ The EPA candidly admitted that this assumption vastly undercounted the fish that would be impacted, acknowledging that its estimate did “not account for the benefits from the remaining 98.2% of the . . . aquatic organisms estimated to be protected nationally under [the] rule.”¹¹⁷

114. See Final Phase II Existing Facilities Rule, *supra* note 12, at 41,624; ENVTL. PROT. AGENCY, ECONOMIC & BENEFITS ANALYSIS FOR THE PROPOSED SECTION 316(b) PHASE II EXISTING FACILITIES RULE C1-7 (2002) (Docket ID No. EPA-HQ-OW-2002-0049-2533, DCN 6-4070) [hereinafter EPA, ECONOMIC & BENEFITS ANALYSIS—PROPOSED PHASE II RULE]; ENVTL. PROT. AGENCY, REGIONAL ANALYSIS DOCUMENT FOR THE FINAL SECTION 316(b) PHASE II EXISTING FACILITIES RULE (2004) (Docket ID No. EPA-HQ-OW-2002-0049-1490, DCN 6-0003) [hereinafter EPA, REGIONAL ANALYSIS DOCUMENT—FINAL PHASE II RULE].

115. Final Phase II Existing Facilities Rule, *supra* note 12, at 41,660–61. Aside from the fact that the EPA only counted two percent of the fish, the numbers they started with were riddled with inaccuracy because they were based on data self-reported by the regulated facilities. *Id.* at 41,656; EPA, ECONOMIC & BENEFITS ANALYSIS—PROPOSED PHASE II RULE, *supra* note 114, at C1-6. Most facilities had never even conducted such studies. See EPA, ECONOMIC & BENEFITS ANALYSIS—FINAL PHASE II RULE, *supra* note 41, at A2-1. Among those that had, sampling methods and equipment were “highly variable.” Final Phase II Existing Facilities Rule, *supra* note 12, at 41,656. The “data [were] often limited to a subset of species,” Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,190, and in some instances, the data were as much as three decades old, Final Phase II Existing Facilities Rule, *supra* note 12, at 41,656. The EPA observed that as a result of these problems, “the magnitude of impingement and entrainment is often underestimated.” Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,190; see also EPA, ECONOMIC & BENEFITS ANALYSIS—PROPOSED PHASE II RULE, *supra* note 114, at C1-6 (stating that “[the] EPA believes that its analysis is likely to lead to potentially significant underestimates . . . of regulatory benefits”).

116. Final Phase II Existing Facilities Rule, *supra* note 12, at 41,660–61.

117. *Id.* The full passage stated:

Of the organisms which are anticipated to be protected by the section 316(b) Phase II rule, it is projected that approximately 1.8 percent will eventually be harvested by commercial and recreational fishers and therefore can be valued with direct use valuation techniques. The Agency’s direct use valuation does not account for the benefits from the remaining 98.2% of the age 1 equivalent aquatic organisms estimated to be protected nationally under today’s rule.

Once it had arrived at this point, with numbers that accounted for less than two percent of the fish and virtually none of the other organisms affected by the rule, the EPA might have simply stopped. With such a small percentage of overall benefits quantified, it might have made sense for the Agency to simply use an informal Ben Franklin-style CBA, as the Agency had done in Phase I. Such an analysis could have, for example, compared dollar costs to qualitatively described benefits and asked simply whether the costs seemed “wholly disproportionate” to the benefits. This was not the course the EPA chose, however.

Instead, the Agency pushed on ahead, tackling the difficult task of trying to attach a dollar figure to the two percent of benefited fish they anticipated would end up in a fisherman’s net under the rule. With respect to the fish that would be commercially caught, the EPA simply used the market price.¹¹⁸ But expressing the value of recreational fishing in monetary terms posed more of a challenge. The EPA ultimately used a controversial model that inferred fishermen’s “willingness-to-pay” for the pleasure of fishing based on their travel costs for visiting particular fishing sites and then used a mathematical model to estimate how that willingness to pay would likely increase in response to increased catch levels.¹¹⁹

3. *A Narrow Slice of a Narrow Slice of a Narrow Slice: Ecological Values Left Out*

Even putting aside the difficulties with this model (and putting aside that the EPA was only dealing with two percent of the fish, leaving out scores of other aquatic organisms), the EPA acknowledged that monetizing just the commercial and recreational value of these fish accounted for only a small slice of their overall value and failed to account for their ecological value altogether.¹²⁰ Initially, in the CBA accompanying its proposed rule, the EPA used several methods to attempt to monetize at least some of the missing values.¹²¹ These methods proved

Id. This estimation was, as the EPA acknowledged, grossly incomplete, since the fish that survive uncaught have obvious value, both to the aquatic ecosystem generally and to the fishermen. They will reproduce to sustain the population that will be fished on in future years; they will provide food for other fish; and they will undoubtedly play other important roles in the larger ecosystem as well. *See id.* at 41,657.

118. Final Phase II Existing Facilities Rule, *supra* note 12, at 41,659–60.

119. *Id.* at 41,657–58; EPA, REGIONAL ANALYSIS DOCUMENT—FINAL PHASE II RULE, *supra* note 114, at A11-1 to A11-13; *see* Philip E. Graves, *Benefit-Cost Analysis of Environmental Projects: A Plethora of Biases Understating Net Benefits*, J. BENEFIT-COST ANALYSIS, Aug. 2012, at 1, 18–19, available at http://works.bepress.com/cgi/viewcontent.cgi?article=1087&context=philip_graves (discussing criticisms of the travel cost method); Comments of Frank Ackerman & Elizabeth A. Stanton on Regulation of Cooling Water Intake Structures at Existing Facilities 7 (Aug. 18, 2011) (submitted to EPA, Docket ID No. EPA-HQ-OW-2008-0667-4133) (criticizing subsequent efforts by the EPA to monetize recreational fishing benefits).

120. EPA, REGIONAL ANALYSIS DOCUMENT—FINAL PHASE II RULE, *supra* note 114, at A9-1 (noting that ecological harms omitted from the EPA’s CBA included the fact that “[f]ish are essential for energy transfer in aquatic food webs, regulation of food web structure, nutrient cycling, maintenance of sediment processes, redistribution of bottom substrates, [and] the regulation of carbon fluxes”).

121. The EPA had no way of valuing most of these broader ecological impacts, both because

controversial, however, and after receiving considerable criticism in the comments to the proposed rule, the EPA finally threw up its hands and simply attached no dollar value at all to the vast majority of the ecological values, effectively zeroing them out.¹²² Thus, by the time it issued the final rule, the EPA's benefits estimate—grossly incomplete by its own admission to begin with—had shrunk by nearly tenfold.¹²³

they involve processes that are only dimly understood by science, and because they involve goods and services not traded in markets. The EPA initially used one of two methods to attempt to estimate the benefits of increased forage species survival, depending on the region. In most regions, it used “estimates of trophic transfer efficiency to relate foregone forage production to foregone commercial and recreational fishery yields.” Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,191. The EPA acknowledged that this method was highly incomplete in that it measured “only the small share of these losses . . . namely the contribution of the forage species to the increased biomass of landed recreational and commercial species.” *Id.* at 17,193. In a few regions, the EPA initially used a Habitat Replacement Cost Analysis instead, which used the projected costs of habitat replacement programs for various species suffering impingement and entrainment losses as a proxy for the value of forage species losses. *Id.* at 17,191. The EPA viewed this method as considerably more comprehensive, in part because of its “recognition that impingement and entrainment losses have impacts on all components of the aquatic ecosystem . . . beyond that estimated by reduced commercial and recreational fish catches.” *Id.* This method also posed problems, however. The EPA acknowledged that it did “not take into consideration ecological problems associated with introducing hatchery fish into wild populations.” *Id.* And it generated significant controversy.

122. In comments on the proposed rule, natural resource economist, Robert Stavins, Ph.D., of Harvard University, criticized the Habitat Replacement Cost method as “empirically invalid” and “fundamentally flawed.” Comments of Robert N. Stavins on EPA’s Notice of Data Availability for the Proposed 316(b) Phase II Rule (June 2, 2003) (submitted to EPA, Docket ID No. EPA-HQ-OW-2002-0049-0363). In the final rule, the EPA abandoned the Habitat Replacement Cost analysis altogether, using instead the far lower (and less complete) numbers generated by the trophic transfer model, noting that estimating the value of forage species is “challenging.” Final Phase II Existing Facilities Rule, *supra* note 12, at 41,657; see EPA, REGIONAL ANALYSIS DOCUMENT—FINAL PHASE II RULE, *supra* note 114, at A15-1. With respect to nonuse values, which are notoriously difficult and controversial to measure, the EPA initially applied a “rule of thumb” based on a 1977 study, which inferred that nonuse values associated with water-quality improvements are typically fifty percent of recreational use values. See *id.*; Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,149. As described above, the EPA’s estimate of recreational use values was itself based on shadow pricing methods that were far from precise. See *id.* at 17,193 (“Nonuse benefits are most likely understated using the 50 percent rule because the recreational values used are likely to be understated.”). Perhaps predictably, then, the EPA’s fifty percent rule of thumb came under considerable fire during the comment period. Economist Robert Stavins argued that the fifty percent rule was far too high. Stavins, *supra*. Economist Frank Ackerman, on the other hand, argued that it was too low and that based on more recent literature, nonuse value should be estimated at two-times use value. Comments of Frank Ackerman on Clean Water Act § 316(b)—Proposed Regulations for Cooling Water Intake Structures at Phase II Existing Facilities (Aug. 1, 2002) [hereinafter Comments of Ackerman] (on file with UC Irvine Law Review). Ultimately, when it came to the final rule, the EPA gave up and attached no monetary value to nonuse benefits at all. It explained in the preamble that while there was “evidence that non-use values could occur as a result of this rule, . . . [the] EPA was unable, by the time of publication . . . to estimate reliable valuations . . . [or] to fully develop and analyze . . . non-use benefit approaches.” Final Phase II Existing Facilities Rule, *supra* note 12, at 41,657; see also *id.* at 41,666 (the EPA believes omitted “non-use benefits may be significant”); *id.* at 41,662 (same).

123. While the total benefits estimate for the proposed rule was \$735 million, EPA, REGIONAL ANALYSIS DOCUMENT—FINAL PHASE II RULE, *supra* note 114, at D1-4, the benefits estimate associated with the final rule was just \$83 million, Final Phase II Existing Facilities Rule, *supra* note 12, at 41,662. But even the larger benefits estimate was, by the EPA’s own admission,

In the end, the EPA flatly acknowledged that the exercise had been a failure. Its benefits estimate was grossly incomplete, making a meaningful comparison with costs impossible: “[The] EPA notes that these analyses are based on a comparison of a partial measure of benefits with a complete measure of costs; therefore, the results must be interpreted with caution.”¹²⁴ Indeed, when it submitted its draft rule to OIRA, the EPA included an explicit warning about the serious limitations of its CBA: “[The] EPA cannot perform a complete benefit-cost comparison because not all of the benefits resulting from the proposed regulatory alternative can be valued in dollar terms.”¹²⁵

4. OIRA Review and a Weakened Rule

It is impossible to know exactly what transpired between the EPA and OIRA, since such records are not made public. But when the rule emerged from OIRA review sixty days later, it was drastically changed. Among other things, the closed-cycle cooling requirement for the fifty-nine most damaging plants had been removed from the preferred option, making those plants subject to the same weak standards that applied to the others.¹²⁶ And the only reason the EPA cited for the change was the numerical result of its CBA: the dollar costs of the rule—\$413 million—outweighed the dollar benefits of the rule—\$146 million.¹²⁷ Given how

vastly incomplete. The preamble to the proposed rule was peppered with literally dozens of such disclaimers. *See, e.g.*, Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,190 (“[T]he magnitude of impingement and entrainment is often underestimated.”); *id.* at 17,192 (“Secondary impacts . . . [like] effects on marinas, bait sales, property values, and so forth are not included, even though they may be significant . . .”); *id.* (“Current fishing mortality rates (and resulting estimates of yield) often reflect depleted fisheries, not what the fisheries should or could be if not adversely impacted by impingement and entrainment and other stressors.”); *id.* at 17,193 (“Forage losses are often valued at only a fraction of their potential full value . . .”); *id.* (“Impacts on threatened and endangered species are not fully captured.”). Indeed, references to the benefits being “underestimated” or “understated” appear fifteen times in the preamble. *See id.* at 17,190–203. Nowhere does it state that the benefits have been either overstated or overestimated. At one point, the EPA entertained that possibility. *See id.* at 17,192 (“the Agency’s benefits estimates could be either over- or under-estimated”), but then quickly dismissed it:

However, because of the many factors omitted from the analysis (typically because of data limitations) and the manner in which several key uncertainties were addressed, [the] EPA believes that its analysis is likely to lead to a potentially significant underestimate of baseline losses and, therefore lead to understated estimates of regulatory benefits.

Id. For an argument that by “arbitrarily limit[ing] its analysis to impingement and entrainment,” the EPA left out another whole set of benefits beyond those discussed here, see Olivia Odom Green, *Energy v. Water*, 37 *ECOLOGY L.Q.* 353, 364, 367–74 (2010).

124. Final Phase II Existing Facilities Rule, *supra* note 12, at 41,666; *see also* EPA, REGIONAL ANALYSIS DOCUMENT—FINAL PHASE II RULE, *supra* note 114, at D1-5 (“A comparison of complete costs and incomplete benefits does not provide an accurate picture of net benefits to society.”).

125. EPA, OMB REVIEW DRAFT—PROPOSED PHASE II RULE, *supra* note 106, at 211.

126. *See* ENVTL. PROT. AGENCY, SUMMARY OF MAJOR CHANGES DURING INTERAGENCY REVIEW 1 (2002) (Docket ID No. EPA-HQ-OW-2002-0049, DCN 4-4019); *see also* Harrington, *supra* note 22, at 162. Another change was the addition of the site-specific compliance alternative, allowing facilities to escape the national performance standards based on a site-specific CBA. *Id.*

127. We can surmise the rationale for the change by comparing the preamble to the proposed

vastly incomplete the benefits estimate was, the EPA's conclusion that the costs "significantly outweigh[ed]" the benefits was clearly nonsensical.¹²⁸ Indeed, one need only imagine that the monetized portion of the benefits represented a third or less of the benefits' full value to see that the balance could easily have tipped the other way—benefits outweighing costs.¹²⁹ Yet, despite the Agency's earlier repeated protestations that the benefits estimate was incomplete, at this point in the preamble to the proposed rule the EPA made no mention of the numerous nonquantifiable and underquantified benefits.¹³⁰ We can only assume that OIRA ignored the EPA's admonition to interpret the results of its CBA "with caution," and urged the EPA to do the same.¹³¹

Thus, the CBA that the EPA performed in crafting the cooling-water rule was nothing like the innocuous, informal weighing of nonmonetized costs and benefits to avoid extreme disparities that Justices Scalia and Breyer described in their opinions. This was a gross misuse of formal CBA—false formality at its worst. It had the trappings of formal CBA—a weighing of one single unadorned number against another—but it lacked the data to back it up. Despite an analysis that was far toward the informal end of the spectrum because of the large proportion of unquantifiable benefits, the EPA (presumably at the urging of OIRA) attempted, illogically, to apply a balancing test that was well toward the formal end of the spectrum—comparing the naked numbers to determine whether costs "outweighed" benefits. Indeed, the Agency rejected a more stringent rule on that basis even though the dollar benefits estimate clearly omitted many of the most important but unquantifiable benefits of the rule. As Doug Kysar put it: "Unable to measure what was important, the EPA instead chose to

rule ultimately published in the Federal Register with the preliminary draft the EPA submitted to OIRA. In the proposed rule as published, the closed-cycle cooling requirement was demoted from the preferred option to an alternative option. Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,156–58. In describing this option in the Federal Register, the EPA reiterated all the reasons it had recited in the preliminary draft for why it would be a good option, including its economic practicality. Compare *id.* at 17,158, with EPA, OMB REVIEW DRAFT—PROPOSED PHASE II RULE, *supra* note 106, at 74. The only rationale the EPA offered for why the closed-cycle cooling requirement was not part of the preferred option was an apparently formal CBA: "[The] EPA notes that the incremental costs of this option relative to the proposed option (\$413 million) significantly outweigh the incremental benefits (\$146 million)." Proposed Phase II Existing Facilities Rule, *supra* note 42, at 17,158. Although we can't know for sure, it's plausible to imagine that OIRA used this formal cost-benefit rationale to push the EPA to change the rule, since OIRA's mandate, after all, is to ensure implementation of the CBA requirement contained in Executive Orders 12,866 and 13,563, and the CBA contemplated by those orders is well toward the formal end of the spectrum. See *infra* note 141.

128. *Id.*

129. Natural resources economist Frank Ackerman, Ph.D., in comments submitted on the proposed rule, suggested that even just correcting for a few of the many inaccuracies in the EPA's benefits estimate would yield an estimate four to six times as high. Comments of Ackerman, *supra* note 122. This would yield benefits significantly higher than costs, in the range of \$584–\$876 million.

130. See *supra* notes 114–125 and accompanying text.

131. Final Phase II Existing Facilities Rule, *supra* note 12, at 41,666.

make important what it could measure.”¹³² The result was patently irrational—180 degrees from the reasonableness and common sense of Ben Franklin.

C. Irony Number Three: The EPA (and/or OIRA) Gets the Law Wrong

The third irony emerges when we examine the EPA’s response to the *Riverkeeper* opinion on remand.¹³³ While the Supreme Court arguably gave the EPA the discretion to use only an informal brand of CBA, in drafting the new rule the EPA moved even further toward the formal end of the CBA spectrum. The Agency did that in two ways: First, in order to prepare a nationwide CBA of the rule as a whole, the EPA expended substantial time and energy conducting a stated preference survey in what was ultimately a “futile” attempt to quantify and monetize the unquantifiable aspects of the ecological benefits.¹³⁴ Second, in crafting the rules for the site-specific CBA, the EPA—at the behest of OIRA—replaced the relatively informal balancing formulas (“wholly disproportionate” and then “significantly greater than”), which it had used previously and which had been endorsed by the Supreme Court, with the more formal requirement that the benefits must “justify” the costs.¹³⁵

The remand of the cooling water rule in 2009 essentially gave the Obama EPA a chance to have a second crack at a Bush-era rule. In taking that second crack, the EPA initially faced two choices: whether to use CBA in rewriting the rule, and, if so, what variety. The Supreme Court had upheld the use of CBA in the Bush EPA’s rule, but the Court had also made clear that while such use of CBA under Clean Water Act section 316(b) was *permissible*, it was not *required*.¹³⁶ After *Riverkeeper*, then, as a matter of statutory law, the EPA had discretion with respect to whether to use CBA. Once that statutory directive became discretionary, however, the EPA’s obligation to use CBA under Executive Orders 12,866 and 13,563 arguably became mandatory, at least as a matter of internal executive branch administration.¹³⁷ (The executive orders cannot be enforced in

132. Kysar, *supra* note 29, at 199.

133. Even though the Supreme Court upheld the EPA’s use of CBA in the rulemaking, the cooling-water rule was subsequently remanded because the Second Circuit had also invalidated it on other grounds not raised in the Supreme Court. *See* Entergy Corp. v. Riverkeeper, 556 U.S. 208, 226 (2009) (“We of course express no view on the remaining bases for the Second Circuit’s remand which did not depend on the permissibility of cost-benefit analysis.”).

134. *Id.* at 235 (Breyer, J., concurring in part and dissenting in part). *See generally* Memorandum from Erik Helm, Envtl. Prot. Agency, to the Section 316(b) Existing Facilities Rule Record (June 5, 2012).

135. *See Riverkeeper*, 556 U.S. at 225; National Pollutant Discharge Elimination System—Cooling Water Intake Structures at Existing Facilities and Phase I Facilities, 76 Fed. Reg. 22,174, 22,228 (proposed April 20, 2011) (to be codified at 40 C.F.R. pts. 122, 125) [hereinafter Proposed Existing Facilities Rule, Post-Remand].

136. *Riverkeeper*, 556 U.S. at 226.

137. The executive orders impose a mandatory obligation on agencies to use CBA in setting regulations, but only where they have the discretion to do so under “applicable statutory requirements.” Exec. Order No. 12,866, § 1(a), 3 C.F.R. 638, 639 (1994). Thus, had the Supreme Court ruled that the EPA was prohibited from using CBA under the Clean Water Act, the statutory

court.)¹³⁸ This, in any event, appears to be how the EPA analyzed the situation. In issuing its new proposed rule in April 2011, the EPA cited Executive Order 13,563's CBA mandate and announced that it had "taken costs and benefits into account in this proposal."¹³⁹

None of this is particularly surprising. What is surprising is the kind of CBA the EPA pursued following the remand. Despite the Court's apparent preference for informal CBA and expressions of skepticism about more formal varieties,¹⁴⁰ on remand the EPA embraced an even more formal CBA, both with respect to its evaluation of the national rule as a whole and with respect to its definition of the site-specific permitting standard. Yet a formal CBA is clearly not *required* by the Supreme Court's ruling and is arguably even prohibited.¹⁴¹

mandate would have trumped the executive orders. *See id.* ("[I]n choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits . . . unless a statute requires another regulatory approach."); *id.* at § 9, 649 ("Nothing in this order shall be construed as displacing the agencies' authority or responsibilities, as authorized by law."). But because the Supreme Court ruled that the EPA has discretion whether to use CBA or not, the executive orders now arguably control.

138. *See id.* at § 10, 649 ("This Executive order is intended only to improve the internal management of the Federal Government and does not create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.").

139. *See* Proposed Existing Facilities Rule, Post-Remand, *supra* note 135, at 22,196 ("[B]ecause the Supreme Court has concluded that [the] EPA may permissibly consider costs and benefits in its BTA determination and E.O. 13563 directs [the] EPA only to propose regulations based on a reasoned determination that the benefits justify the costs, [the] EPA has taken costs and benefits into account in this proposal. [The] EPA has concluded that the benefits of the proposed option justify its costs."). Nonetheless, in 2010, the Fifth Circuit upheld the EPA's decision to take the opposite tack in connection with another cooling-water rule. *See ConocoPhillips Co. v. EPA*, 612 F.3d 822 (5th Cir. 2010). In developing the portion of the Phase III cooling-water rule applicable to new offshore drilling rigs, the EPA decided *not* to use CBA. *Id.* at 829. The Fifth Circuit upheld that decision, citing the Supreme Court's holding in *Riverkeeper* that CBA is permitted but not required. *Id.* at 837–38. The Agency published the Phase III rule in 2006, well before the Supreme Court's decision. National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Phase III Facilities, 71 Fed. Reg. 35,006 (June 16, 2006) (codified at 40 C.F.R. pts 9, 122–125). But it is still unclear why the same logic the EPA applied in 2011 in connection with the remanded Phase II rule didn't apply to the earlier Phase III rule. When it issued the Phase III rule in 2006, the EPA apparently viewed itself as having discretion to either rely on CBA or not (just as the Supreme Court would later rule) because, though it decided not to use CBA in connection with the new facilities portion of the Phase III rule, it *did* rely on CBA in connection with the other portion of the rule (relating to existing facilities). *Id.* at 35,016–17, 35,034. So, under the logic the Agency appears to have applied in 2011, that discretion should have triggered the mandatory duty under the executive orders to base the regulation on CBA. Industry, of course, could not raise this argument in front of the Fifth Circuit because, as noted above, the executive orders are not enforceable in court. *See supra* note 138.

140. *See supra* notes 72–86 and accompanying text.

141. The Executive Orders themselves arguably do call for a more formal brand of CBA. *See, e.g.,* Exec. Order No. 13,563, § 1(c), 3 C.F.R. 215, 216 (2012) ("[E]ach agency is directed to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible."); *see also* Sinden, *supra* note 71. But even if they do, they cannot broaden the agency's discretion beyond the bounds that the high court has read into the statute, and the Supreme Court's

1. CBA of the Nationwide Rule

The EPA issued its new proposed rule in April 2011.¹⁴² The preamble described four options the EPA had considered.¹⁴³ All options would have required various improved screens and fish-return systems.¹⁴⁴ But the two more stringent options would have also required closed-cycle cooling—one on all existing facilities covered by the rule, the other on just those above a certain size.¹⁴⁵ The EPA's preferred option, however, was far more lenient (and, indeed, even more lenient than the original, Bush-era rule). It contained no closed-cycle cooling requirement for existing facilities at all.¹⁴⁶ Instead, it directed state permit writers to determine the meaning of “best technology available” on a case-by-case basis, based in part on a site-specific CBA.¹⁴⁷ A fourth, even more lenient option would have also employed the case-by-case permit requirement but would have exempted certain small facilities from the improved screening requirements.¹⁴⁸

As it had the first time around, the EPA conducted a CBA of the four options that was vastly incomplete with respect to the benefits. Indeed, in the original version of the proposed rule it sent to OIRA, the EPA had this to say about its CBA:

[The] EPA's calculation of reduced impingement and entrainment benefits of closed cycle cooling does not account for 97 percent of the direct use . . . of organisms entrained by cooling water intakes. Moreover, the monetized benefit values do not include the majority of the indirect use and nonuse value of the reductions in [impingement and entrainment] mortality, and completely exclude categories such as the non-commercial portion of impacts to threatened and endangered species, the thermal discharge impacts to water quality, and species composition. Under these circumstances, a complete national weighing of costs and benefits is not possible at this time.¹⁴⁹

reading of the statute in *Riverkeeper* arguably suggests that the Agency's discretion extends only to informal CBA.

142. Proposed Existing Facilities Rule, Post-Remand, *supra* note 135.

143. *Id.* at 22,204–206.

144. *Id.*

145. *Id.* at 22,206.

146. *Id.* at 22,204–205. This option did include an exception for new units at existing facilities above a certain size, requiring them to reduce flow commensurate with closed-cycle cooling and to achieve ninety percent of the reductions of fish mortality from entrainment that closed-cycle cooling would produce. *Id.* at 22,205.

147. *Id.* at 22,204.

148. *Id.* at 22,206.

149. ENVTL. PROT. AGENCY, DRAFT: NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM—PROPOSED REGULATIONS TO ESTABLISH REQUIREMENTS FOR COOLING WATER INTAKE STRUCTURES AT EXISTING FACILITIES AND AMEND REQUIREMENTS AT PHASE I FACILITIES 126–27 (2011) (Docket ID No. EPA-HQ-OW-2008-0667-1407, DCN 10-6625B) [hereinafter EPA, OMB REVIEW DRAFT—PROPOSED EXISTING FACILITIES RULE, POST-REMAND]. OIRA deleted this language and replaced it with the unexplained conclusion that “[b]ased on the record, [the] EPA has determined that the proposed [rule] will result in benefits that justify the costs.” Proposed Existing Facilities Rule, Post-Remand, *supra* note 135, at 22,207.

However, rather than simply leaving it at that and concluding that a formal quantified CBA was not possible, as it had done with the Phase I new facilities rule, the EPA promised to “characterize [the rule’s] benefits more fully through the use of a stated preference survey of the general population,” and to “consider the results of this survey . . . in development of the final rule.”¹⁵⁰

Indeed, the EPA had announced its intent to conduct a stated preference survey (SPS) nine months earlier in a notice published in the Federal Register.¹⁵¹ The EPA’s goals for the SPS were broad—to survey individuals throughout the continental U.S. in order to generate an “estimation of the total values . . . that individuals place on preventing losses of fish and other aquatic organisms caused by [cooling water intake structures,]” including both use and non-use values.¹⁵² The EPA promised to “follow standard practice in stated preference design, including the extensive use of focus groups and pretesting to develop survey questionnaires.”¹⁵³

A stated preference survey is an instrument used by economists to try to estimate dollar values for goods not traded in markets.¹⁵⁴ It is essentially a public opinion poll in which people are asked how much money they would be willing to pay for some nonmarket good, like restoring clean water in a stream or increasing

150. Proposed Existing Facilities Rule, Post-Remand, *supra* note 135, at 22,207. The EPA also included in the Environmental and Economic Benefits Analysis that accompanied the proposed rule what it called “an alternative benefits analysis.” *Id.* This “alternative analysis” used something called “Habitat Equivalency Analysis” (HEA) to try to generate a dollar figure for some of the ecological and nonuse values implicated by the rule. HEA first estimates the “approximate . . . area of habitat required to produce and support the[] organisms” that would be subject to impingement and entrainment in the absence of regulation and then, using existing contingent valuation studies, estimates the public’s willingness to pay for this type and amount of habitat. ENVTL. PROT. AGENCY, ENVIRONMENTAL AND ECONOMIC BENEFITS ANALYSIS FOR PROPOSED SECTION 316(b) EXISTING FACILITIES RULE, at 9-1 (2011) (Docket ID No. EPA-HQ-OW-2008-0667-1287, DCN 10-0003).

151. Proposed Collection: Willingness to Pay Survey, 75 Fed. Reg. 42,438, 42,439 (July 21, 2010). Ironically, this notice was issued just days before the Fifth Circuit issued an opinion reaffirming *Riverkeeper’s* holding that the EPA has discretion *not* to use CBA if it so chooses, and upholding the EPA’s decision not to use CBA in setting national performance standards for new offshore oil and gas extraction facilities under a portion of the Phase III rule. *ConocoPhillips Co. v. EPA*, 612 F.3d 822, 837 (5th Cir. 2010).

152. Proposed Collection: Willingness to Pay Survey, *supra* note 151, at 42,439; *see also* ENVTL. PROT. AGENCY, SUPPORTING STATEMENT FOR INFORMATION COLLECTION REQUEST FOR WILLINGNESS TO PAY SURVEY FOR §316(b) EXISTING FACILITIES COOLING WATER INTAKE STRUCTURES: INSTRUMENT, PRE-TEST AND IMPLEMENTATION 6–7 (2010) [hereinafter EPA, SUPPORTING STATEMENT] (Docket ID No. EPA-HQ-OW-2008-0667-2725, DCN 11-4708) (“[The] EPA’s proposed survey approach . . . would provide values for the full range of forage, recreational, and commercial species affected by 316(b) regulations, [unlike previous studies, which only] valu[ed] a few recreational species in one specific geographical area.”).

153. Proposed Collection: Willingness to Pay Survey, *supra* note 151, at 42,440.

154. Stated preference surveys are also referred to as “contingent valuation surveys” or, more generically, the “contingent valuation method” or “CVM.” *See* D.W. PEARCE & A. MARKANDYA, ENVIRONMENTAL POLICY BENEFITS: MONETARY VALUATION (1989); Thomas H. Stevens et al., *Measuring the Existence Value of Wildlife: What Do CVM Estimates Really Show?*, 67 LAND ECON. 390 (1991).

the population of an endangered species.¹⁵⁵ There is a substantial literature on this method and it's a tool that's been used fairly regularly for several decades now by federal agencies, particularly in the context of assessing natural resource damages in Superfund and oil spill cases.¹⁵⁶ But it has always generated considerable controversy,¹⁵⁷ and the EPA's use of it in this context was no exception.

The EPA's announcement immediately unleashed a firestorm of criticism from both industry and environmentalists. Industry groups maintained that the method was inherently unreliable¹⁵⁸ and would vastly overstate the benefits of the rule. They pointed to the well-known problem of "hypothetical bias"—the fact that when asked in a survey what they would hypothetically pay for some good, people tend to overestimate what they would be willing to pay if they were actually required to take money out of their wallets.¹⁵⁹ Environmental groups, meanwhile, warned that the SPS would understate the rule's benefits because it framed the question in terms of people's willingness to pay to obtain environmental values rather than their willingness to accept payment to give up environmental values—

155. See, e.g., John B. Loomis & Douglas S. White, *Economic Benefits of Rare and Endangered Species: Summary and Meta-Analysis*, 18 *ECOLOGICAL ECON.* 197, 199 tbl.1 (1996) (depicting the average American household willing to pay \$257 to prevent the extinction of bald eagles).

156. See *Ohio v. U.S. Dep't of Interior*, 880 F.2d 432, 474–78 (D.C. Cir. 1989) (upholding CERCLA regulations authorizing the use of the contingent valuation method in calculating natural resource damages); 15 C.F.R. § 990.53 (2014) (codifying use of contingent valuation methods under the Oil Pollution Act); 43 C.F.R. § 11.83 (2014) (codifying use of contingent valuation methods to calculate natural resource damages under CERCLA). Courts in personal injury cases, on the other hand, have been skeptical of attempts to proffer expert testimony from economists using hedonic and contingent valuation methods to put a dollar value on human life, excluding such testimony as unreliable and unhelpful to the jury. See, e.g., *Smith v. Ingersoll-Rand Co.*, 214 F.3d 1235, 1245 (10th Cir. 2000); *Hein v. Merck & Co.*, 868 F. Supp. 230, 231 (M.D. Tenn. 1994). In 1993, in the wake of controversy surrounding the assessment of damages for the Exxon-Valdez oil spill, the National Oceanic and Atmospheric Administration convened a blue ribbon panel to evaluate the contingent valuation method. In its report, issued in 2001, it concluded that CVM can produce reliable estimates of the lost value from natural resource damages as long as certain protocols and standards are adhered to in the design of the studies. See KENNETH ARROW ET AL., REPORT OF THE NOAA PANEL ON CONTINGENT VALUATION (2001), available at http://www.economia.unimib.it/DATA/moduli/7_6067/materiale/noaa%20report.pdf. OIRA has also specifically endorsed the use of stated preference surveys and provides specific guidelines for their use in its guidance to agencies on CBA. See OMB, CIRCULAR A-4, at 22–24 (2003), available at <http://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf>.

157. See, e.g., Graves, *supra* note 119 (critiquing CVM); Leonard Shabman & Kurt Stephenson, *Environmental Valuation and Its Economic Critics*, 126 *J. WATER RESOURCES PLANNING & MGMT.* 382, 382–84 (2000) (examining criticism of economic valuation in the context of environmental services).

158. See Comments of American Chemistry Council et al., on ICR for Willingness to Pay Survey for Section 316(b) Existing Facilities Cooling Water Intake Structures 17 (Sept. 20, 2010) (submitted to EPA, Docket ID No. EPA-HQ-OW-2010-0595-0020) (raising questions about “whether such values can be reliably measured”).

159. See *id.* at 3 (“The survey is vulnerable to hypothetical bias, and thus any benefit estimates developed from the survey would likely overstate what people would actually be willing to pay if faced with a real referendum with real money and real consequences associated with [the] EPA's future rule (for example, higher energy prices for little environmental benefit).”). The EPA responded to this concern by simply asking survey respondents if they were biased and taking their answer at face value. See EPA, SUPPORTING STATEMENT, *supra* note 152, at 9.

here fish and aquatic ecosystems that, “[l]ike the air and water themselves . . . are public trust resources belonging to the public at large.”¹⁶⁰

Preliminary numbers published in June 2012 suggested dramatic findings.¹⁶¹ The EPA provided figures on households’ willingness to pay for a one percentage point improvement in fish mortality levels¹⁶² but didn’t tally up its numbers to

160. See Comments of Super Law Group, LLC, on Proposed ICR for Stated Preference Survey for Section 316(b) Rulemaking 1 (Sept. 20, 2010) (submitted to EPA, Docket ID No. EPA-HQ-OW-2010-0595-0008) (on behalf of Waterkeeper Alliance et al.). For the EPA’s responses to these comments, see EPA, SUPPORTING STATEMENT, *supra* note 152, at 7–13.

The environmental groups’ criticism on this point references the well-known “offer/asking” problem (also referred to as “the endowment effect”). If an economist wants to figure out how much value a person attaches to a particular good, she might ask one of two possible questions: “How much are you willing to pay to obtain the good?” or “How much are you willing to accept to give up the good?” The two questions often elicit different answers. And indeed, repeated experiments have shown that the amount of money a person is willing to accept to give up something she already has is significantly higher than the amount of money she is willing to pay to acquire that same thing if she doesn’t already have it. See John K. Horowitz & Kenneth E. McConnell, *A Review of WTA/WTP Studies*, 44 J. ENVTL. ECON. & MGMT. 426, 426 (2002); J.L. Knetsch, *Environmental Policy Implications of Disparities Between Willingness to Pay and Compensation Demanded Measures of Values*, 18 J. ENVTL. ECON. & MGMT. 227, 227–28 (1990). But see Charles R. Plott & Kathryn Zeiler, *The Willingness to Pay—Willingness to Accept Gap, the “Endowment Effect,” Subject Misperceptions, and Experimental Procedures for Eliciting Valuations*, 95 AM. ECON. REV. 530, 536–44 (2005) (arguing that previous experiments demonstrating a gap between willingness to pay and willingness to accept were skewed by subject misconceptions, and reporting results of experiments controlling for all previously identified sources subject misconception that found no such gap). Yet economists have never been able to come up with a principled reason for choosing one of these measures of value over the other. Arguably, this is not surprising since the choice between the two turns on the distribution of goods in society, an issue about which economic theory is self-consciously agnostic. See, e.g., Nicholas Kaldor, *Welfare Propositions of Economics and Interpersonal Comparisons of Utility*, 49 ECON. J. 549, 550–51 (1939); Amartya Sen, *The Possibility of Social Choice*, 89 AM. ECON. REV. 349, 351–52 (1999). Nonetheless, the standard practice in designing surveys like these is to ask about people’s willingness to pay rather than willingness to accept. See EPA, SUPPORTING STATEMENT, *supra* note 152, at 9 (“[The] EPA follows standard practice in proposing a WTP format.”).

Another problem with stated preference surveys is that survey respondents often know very little about the natural resources they are being asked to value, and it is, of course, difficult for people to put values on things they do not know anything about. Most surveys try to remedy this by providing a certain amount of scientific information about the resource at the beginning of the survey. But the quantity, nature, and clarity of this information are an endless source of controversy. This case was no exception. Both sides raised numerous objections to the introductory information provided in the survey. Industry, for example, argued that the information provided overstated the extent to which stringent regulations could benefit fish populations, failed to provide sufficient information about alternative policy options, and “ha[d] the potential to unreasonably influence the respondent’s answers to valuation questions, thereby creating values rather than, as intended, discovering values.” See Comments of MidAmerican Energy Holdings Company on the U.S. Environmental Protection Agency’s Information Collection Request for the Willingness to Pay Survey for Clean Water Act Section 316(b) Existing Facilities Cooling Water Intake Structures 3 (Sept. 20, 2010) (submitted to EPA, Docket ID No. EPA-HQ-OW-2010-0595-0005).

161. National Pollutant Discharge Elimination System—Proposed Regulations To Establish Requirements for Cooling Water Intake Structures at Existing Facilities; Notice of Data Availability Related to EPA’s Stated Preference Survey, 77 Fed. Reg. 34,927, 34,929 col. 2 (June 12, 2012).

162. To be more precise, the EPA measured household willingness to pay for a one percentage point improvement in four attributes that they treated as separate independent outcomes: commercial fish populations, all fish populations, fish saved by a regulatory option, and aquatic

provide final dollar values for total national willingness to pay for each proposed option. Frank Ackerman, an economist hired by a set of environmental groups commenting on the rule, did the missing arithmetic and concluded that the survey would result in huge numbers, ranging from \$1.3 to \$7 billion per year.¹⁶³ These numbers produced total benefits for all four options that either substantially exceeded costs or—using a high seven percent discount rate—were below costs by such a slight amount as to be within the margin of error.¹⁶⁴

Industry economists appeared to agree with this assessment and hence, industry commenters urged the EPA to “abandon” its stated preference survey altogether,¹⁶⁵ calling it “ill-conceived from the outset”¹⁶⁶ and “deeply flawed,”¹⁶⁷ and complaining that the “benefit-cost calculations resulting from the survey [were] so far out of line with [the] EPA’s prior economic estimates as to be totally implausible.”¹⁶⁸ Environmentalists, on the other hand, identified errors in the EPA’s analysis that they argued skewed the results significantly downward.¹⁶⁹ If those errors were corrected, they argued, the benefits of the EPA’s most stringent closed-cycle cooling option would outweigh the costs by three to one.¹⁷⁰

After numerous delays, the EPA finally issued its final rule on May 19, 2014, adopting a somewhat watered-down version of its preferred option.¹⁷¹ By this time, however, after intensive lobbying by industry, the Agency had retreated from its effort to use its stated preference survey to monetize ecological benefits. The preamble gave little in the way of explanation for this decision, stating simply, “[the] EPA decided not to employ the survey results for purposes of decision-making and [the] EPA has not accounted for values estimated from the survey in the quantitative comparison of costs and benefits.”¹⁷²

ecosystem conditions. *See* ENVTL. PROT. AGENCY, SURVEY SUPPORT DOCUMENT IN SUPPORT OF SECTION 316(b) STATED PREFERENCE SURVEY NOTICE OF DATA AVAILABILITY 33–34 (2012) (Docket ID No. EPA-HQ-OW-2008-0667-2860, DCN 11-4524).

163. Comments of Frank Ackerman on EPA’s Section 316(b) Stated Preference Survey 11 (July 10, 2012) (submitted to EPA, Docket ID No. EPA-HQ-OW-2008-0667-3021).

164. *Id.*

165. Comments of the Utility Water Act Group and the Edison Electric Institute on the Notice of Data Availability Related to EPA’s Stated Preference Survey 6 (July 12, 2012) (submitted to EPA, Docket ID No. EPA-HQ-OW-2008-0667-3013).

166. *Id.* at 2.

167. *Id.* at 3.

168. *Id.* at 4.

169. Comments of Riverkeeper, Inc. et al., on the National Pollutant Discharge Elimination System—Proposed Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities; Notice of Data Availability Related to EPA’s Stated Preference Survey 5 (July 12, 2012) (submitted to EPA, Docket ID No. EPA-HQ-OW-2008-0667-3021).

170. *Id.*

171. National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities, 79 Fed. Reg. 48,300, 48,321–48,322 (Aug. 15, 2014) (to be codified at 40 C.F.R. pts. 122, 125) [hereinafter Final Existing Facilities Rule, Post-Remand].

172. *Id.* at 48,350; *see also id.* at 48,409. At one point, buried deep in the preamble, the EPA suggested obliquely that the stated preference survey might have played a role in informing their

Thus, the EPA ended up, as it had the first time around, with a monetized estimate of benefits (\$33 million annually) that was vastly incomplete and far below the annual cost estimate of \$275 million.¹⁷³ Once again, the EPA was upfront about the inadequacy of its monetary benefits estimate, noting that “[m]any of the benefits that will result from the rule are not monetized or quantified, and as a result the Agency’s monetized benefits analysis underestimates the totality of the rule’s benefits.”¹⁷⁴ But, to its credit, the Agency did not, as it had the first time, use the fact that the monetized benefits fell short of the costs as a justification for weakening the rule.¹⁷⁵ While the Agency was not explicit about the formula it used to conduct the balance, it ultimately gave significant weight to the unquantified benefits, concluding that the “benefits . . . justify the costs of the rule.”¹⁷⁶

Thus, while the EPA appears to have avoided engaging explicitly in the kind of false formality that characterized its first version of the rule, the strange thing here is the lengths to which the Agency went to pursue a more formal CBA, even in the face of a Supreme Court decision clearly encouraging the EPA to move in the opposite direction and perhaps even suggesting that a move toward formality might be out of bounds. The Agency’s first step after the high Court opinion came down was to devote countless hours and resources to conducting a stated preference survey. This elaborate effort to monetize non-market ecological values represented a dramatic shift in the direction of formality. And, of course, the EPA’s eventual abandonment of the survey when it came to the final rule makes Justice Breyer’s warning that “attempts at comprehensive monetization” will ultimately prove “futile,” seem perhaps prescient.¹⁷⁷

qualitative estimate of the magnitude of the benefits: “While preliminary and not yet reviewed by [the] EPA’s Science Advisory Board, the preliminary results of [the] EPA’s stated preference survey . . . suggest that [the unquantified benefits] have the potential to be significantly different from zero.” *Id.* at 48,415. But the Agency subsequently hurried to reassure its audience that the “EPA did not rely on the results of its stated preference survey in estimating the benefits of today’s rule.” *Id.*

173. *Id.* at 212.

174. *Id.* at 210.

175. Although it had, as noted above, weakened the rule significantly as compared to the original Bush-era rule.

176. *Id.* at 48,349.

177. *Entergy Corp. v. Riverkeeper*, 556 U.S. 208, 235 (2009). While the EPA gave little explanation in the preamble for its decision to abandon the Stated Preference Survey (SPS), it did at certain points seem to suggest that the SPS might be an ongoing effort that could conceivably be used in future rulemakings. See *Final Existing Facilities Rule, Post-Remand*, *supra* note 171, at 48,407 (“[The] EPA presents preliminary benefits estimates based on the stated preference survey in the [Benefits Assessment] to demonstrate progress in this effort.”). But the EPA’s experience so far with the SPS simply illustrates the degree to which efforts to use highly controversial, contestable, and manipulable methods to monetize nonmarket goods ultimately shift agency decision making into a highly politicized realm. See Amy Sinden, *In Defense of Absolutes: Combating the Politics of Power in Environmental Law*, 90 IOWA L. REV. 1405, 1452–59 (2005).

2. CBA in the Site-Specific Permitting Standard

The EPA also moved toward formality with respect to the CBA employed by state-permit writers in making site-specific permitting decisions. Recall that in the original rule, a facility could obtain a variance from the national performance standards if it could demonstrate that its compliance costs would be “significantly greater than the benefits of complying” with those national standards.¹⁷⁸ The Supreme Court upheld this variance provision, including the fairly informal “significantly greater than” balancing formula,¹⁷⁹ though Justice Breyer in his concurring opinion questioned why the EPA had moved away from the even more informal “wholly disproportionate” formulation the Agency had used under its pre-existing case-by-case permitting procedure and would have remanded to the EPA for an explanation of the change.¹⁸⁰

Under the new rule, as described above, all facilities are subject to a case-by-case permitting process employing CBA.¹⁸¹ But this time, perhaps in the hopes of avoiding the need to provide Justice Breyer with an explanation should the rule go up to the Supreme Court again, the EPA initially shifted from the “significantly greater than” standard it had employed in the original rule to the slightly less formal “wholly disproportionate” standard it had applied back in the 1970’s. Thus, in the draft proposed rule it submitted to OIRA for review, the EPA characterized the CBA that state permit writers were to conduct under its preferred option as follows:

[I]t is important that the Director recognize that even at [sic] when dealing with only a single site assessment the quantified and monetized estimates of benefits are more uncertain and less comprehensive than the estimates of costs. Important benefit effect categories will very likely not be able to be quantified and monetized As a result, benefit estimates are likely to underestimate the value that would accrue to society

The results of the social cost-benefit analysis should be interpreted in the following way: The Director may not reject an otherwise available technology as BTA [best technology available] for entrainment mortality requirements *unless the social costs of compliance are wholly disproportionate to the social benefits*.¹⁸²

Thus, due to the inevitable difficulties in quantifying the benefits of saving fish, the EPA’s draft rule directed state permit writers to conduct an informal CBA employing the very informal “wholly disproportionate” balancing formula that the Agency had used in the original case-by-case permitting process in the 1970s. OIRA, however, pushed the EPA back toward the formal end of the

178. See *supra* note 43 and accompanying text.

179. *Riverkeeper*, 556 U.S. at 225.

180. *Id.* at 236 (Breyer, J., concurring in part and dissenting in part).

181. Final Existing Facilities Rule, Post-Remand, *supra* note 171, at 48,438..

182. EPA, OMB REVIEW DRAFT—PROPOSED EXISTING FACILITIES RULE, POST-REMAND, *supra* note 149, at 292–93 (emphasis added).

spectrum—and not just to the “significantly greater” formulation that the Supreme Court had upheld as part of the original rule, but even further. When the rule emerged from OIRA review, the EPA’s reference to the difficulties of quantification and monetization had been removed and the “wholly disproportionate” test had been replaced with language that tracks the CBA executive orders, requiring benefits to “justify” costs.¹⁸³ Thus, the proposed rule that was ultimately published after OIRA review gave state permit writers the authority to “reject an otherwise available entrainment technology as BTA . . . if the social costs of compliance are not justified by the social benefits,” and this language remained substantially the same in the final rule.¹⁸⁴

It is not entirely clear where exactly on the spectrum of formality a formula requiring benefits to “justify” costs falls. Arguably, it calls for a less precise balancing than a benefits-outweigh-costs formula.¹⁸⁵ And the proposed rule does specify that the site-specific CBA should include consideration of “qualitative social benefits and social costs.”¹⁸⁶ On the other hand, the fact that this language so closely tracks the language of Executive Orders 12,866 and 13,563 suggests that it describes the same kind of CBA called for there, which is relatively formal.¹⁸⁷ In any event, it clearly requires more precision than the “wholly disproportionate” standard or even the “significantly greater” standard. Thus, OIRA appears to have pushed the EPA to adopt a brand of CBA that is significantly more formal than what the EPA first proposed or what the Supreme Court endorsed.

In sum, while the Supreme Court got the facts wrong—assuming that the EPA had used informal CBA when in fact it had used formal CBA—it appears that the EPA got the law wrong—moving toward an even more formal CBA,

183. See Exec. Order No. 12,866, § 1(b)(6), 3 C.F.R. 638, 639 (1994) (“Each agency shall . . . propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.”); Exec. Order. 13,563, § 1(b), 3 C.F.R. 215, 215 (2012) (“[E]ach agency must . . . propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs . . .”).

184. Proposed Existing Facilities Rule, Post-Remand, *supra* note 135, at 22,288; Final Existing Facilities Rule, Post-Remand, *supra* note 171, at 48,438.

185. The original executive order requiring CBA of major regulations was signed by President Reagan in 1981 and used the “outweigh” formulation. See Exec. Order No. 12,291, § 2(b), 3 C.F.R. 127, 128 (1982) (“Regulatory action shall not be undertaken unless the potential benefits to society for the regulation outweigh the potential costs to society[.]”). In 1993, President Clinton withdrew that order and replaced it with Executive Order 12,866, still in place today, which continues the CBA requirement but uses the “justify” formulation instead. See Exec. Order No. 12,866, § 1(b)(6), 3 C.F.R. 638, 639 (1994) (requiring agencies to propose or adopt regulations “only upon a reasoned determination that the benefits of the intended regulation justify its costs”). Most observers view Clinton’s “justify” formulation as less rigid and formal than Reagan’s “outweigh” formulation. See, e.g., Graham, *supra* note 70, at 433. This view is strengthened by the fact that the “justify” language in the Clinton Executive Order is preceded by another reference to the difficulty of quantifying benefits: “Each agency shall . . . recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits . . . justify its costs.” Exec. Order No. 12,866, § 1(b)(6), 3 C.F.R. 638, 639 (1994) (emphasis added).

186. Proposed Existing Facilities Rule, Post-Remand, *supra* note 135, at 22,288.

187. See Sinden, *supra* note 71, at 84; *supra* note 141.

despite the Supreme Court's apparent preference for informal CBA and the majority's warning that more "rigorous form[s] of cost-benefit analysis" might be "preclude[d]."¹⁸⁸

Accordingly, in this case anyway, it appears that CBA skeptics were not setting up a straw man. The CBA the EPA relied on in setting the original rule, and the CBA the Agency pursued on remand, had many of the hallmarks of formality and were certainly a far cry from Ben Franklin's list of pros and cons. Yet, confusion and sloppiness about the distinction between formal and informal CBA allowed proponents to inappropriately use Ben Franklin as a shield, even though the CBA they were defending turned out to be the opposite of the rationality and common sense we associate with him. That same confusion also led to false formality in the EPA's original rule and to "lengthy" resource-intensive and ultimately "futile attempts at comprehensive monetization" on remand.¹⁸⁹

IV. LESSONS FOR THE LARGER DEBATE

Beyond the intricacies of the EPA's rulemaking for cooling-water intake structures, this case study contains important lessons for the broader debate about the role of CBA in agency rulemaking and the importance of distinguishing between formal and informal forms of CBA.¹⁹⁰ The first lesson is about doctrine. If we view CBA as a monolith, we risk misinterpreting the holding of the *Riverkeeper* case as simply a clear win for the proponents of CBA. But that's a highly misleading reading of the case. The second lesson is about the broader debate. Failing to carefully distinguish between formal and informal forms of CBA gives the proponents of CBA the ability to facilely use Ben Franklin as a shield in a way that muddies the debate and deflects attention from the pitfalls and challenges of formality. The third lesson is about analytic integrity. Carefully distinguishing among different forms of CBA helps to avoid the intellectual sloppiness and false formality that can occur when the CBA analyst is not clear about where on the formality spectrum her analysis lies. And the fourth lesson reiterates Justice Breyer's warning that formality may sometimes prove "futile."¹⁹¹ Agencies may be drawn toward formality in the hopes that hard numbers will help to silence their critics, but in some instances, the move toward formality may incite rather than dampen controversy.

Doctrine. If we're not careful to define terms and we lump all forms of CBA together into one category, then *Riverkeeper* will inevitably be read the way that the EPA appears to be reading it now—as endorsing agency use of all forms of CBA,

188. *Entergy v. Riverkeeper Inc.*, 556 U.S. 208, 223 (2009).

189. *Id.* at 235.

190. The case study also raises an interesting question: Why in the aftermath of the Supreme Court's opinion in *Riverkeeper* did the EPA continue to move toward more formal techniques of CBA when the Court's opinion had clearly seemed to offer a nudge in the opposite direction? While I have no answers to that question, I offer some thoughts on it in Sinden, *supra* note 71.

191. *Riverkeeper*, 556 U.S. at 235.

including highly formal versions. But that's a highly inaccurate reading of the case. As detailed above, Justice Scalia's majority opinion endorsed an explicitly non-"rigorous" form of CBA that falls well toward the informal side of the formality-informality spectrum.¹⁹² And Justice Breyer's opinion emphasized this aspect of the majority opinion, specifically warning the Agency against "lengthy formal cost-benefit proceedings and futile attempts at comprehensive monetization."¹⁹³ Accordingly, a far more plausible reading of the Supreme Court's opinion views it as giving the EPA discretion to employ only an informal brand of CBA, while expressing considerable skepticism about more formal versions.

Debate. Treating CBA as a monolith also allows proponents of CBA to use Ben Franklin as a shield—that is, to equate all forms of CBA with rationality and reasonableness and common sense.¹⁹⁴ Yet, agencies, in some instances at least, seem to pursue more formal varieties of CBA. And formal CBA has very little in common with informal, Ben Franklin-style CBA. For one thing, Ben Franklin CBA involves no conversion of nonmarket values into monetary terms, which is the source of the vast majority of the controversy that surrounds CBA. Additionally, these two forms of CBA perform very different functions in decision making. Informal Ben Franklin CBA is a secondary check or litmus test applied after a particular regulatory option has already been chosen by other means. Formal economic CBA, on the other hand, is a decision-making standard that selects the optimal regulatory alternative from a whole range of options.¹⁹⁵ While there may be compelling arguments in favor of formal economic CBA as a decision-making tool, they do not include appeals to Ben Franklin and simple home-spun common sense. Rather they require complex explications of economic theory (or broader theories of welfare and well-being¹⁹⁶). If participants on both sides of the debate are more careful about recognizing the distinctions between formal and informal varieties of CBA, then facile but ultimately unhelpful allusions to Ben Franklin can be taken off the table.

Analytic Integrity. Confusion or sloppiness about where on the formality spectrum a particular CBA lies leads to intellectual incoherence. An example is the false formality of the EPA's CBA of its Cooling Water Intake Rule in the lead-up to the Supreme Court's opinion in *Riverkeeper*. The EPA's CBA monetized most costs, but only a small portion of benefits, leaving most benefits excluded from the analysis. This, of course, necessitated applying only a rough apples-to-oranges or other informal balancing test. Instead, though, when it came to balancing, the EPA treated the analysis as though it were formal, performing a precise

192. See *id.* at 222–23.

193. *Id.* at 235 (Breyer, J., concurring in part and dissenting in part).

194. See Cannon, *supra* note 70, at 453 (criticizing Stevens's dissent in *Riverkeeper* on converse grounds "because the dissent focuses on the strong form of CBA and assumes that the weak form is objectionable on the same grounds, it does not fully engage the cultural debate underlying the case").

195. See *supra* notes 72–73 and accompanying text.

196. See generally ADLER & POSNER, *supra* note 67.

comparison of two single numbers, without mentioning the fact that the lower number was vastly incomplete.¹⁹⁷ This was, of course, nonsensical—the direct opposite of the rationality and common sense invoked by CBA’s supporters. And it arose from a failure to pay close attention to where the CBA fell on the formality-informality spectrum.

Formality and Futility. Finally, agencies may do well to heed Justice Breyer’s warning about the potential “futility” of formality. In this case, the EPA’s reach toward formality on remand, even in the face of a Supreme Court opinion clearly pointing in the opposite direction, presents a bit of a puzzle. It is perhaps explainable by—to borrow a phrase from Doug Kysar—“the cognitive lure” of formal CBA.¹⁹⁸ Agencies may view formality as a way to quell their critics and “insulate the agency from inevitable legal and political attack.”¹⁹⁹ Numbers, after all, convey an aura of scientific accuracy and objectivity that qualitative descriptions can’t match.²⁰⁰ But, in this instance, the EPA’s tack toward formality seemed only to incite rather than quiet its critics. Ultimately, the stated preference survey provoked such controversy that the EPA, after investing considerable time and resources, dropped it altogether. Perhaps this case serves as an object lesson in the pitfalls and dangers that may come with formality.

CONCLUSION

Cost-benefit analysis is not a monolith. The term encompasses a broad range of decision-making practices, from highly formal modes of economic analysis to Ben Franklin’s informal weighing of pros and cons. Examining the Supreme Court’s opinion in *Entergy v. Riverkeeper*, as well as the EPA rulemakings that preceded and followed it has, I hope, been helpful in revealing some of the dangers that arise from failing to distinguish between formal and informal modes of CBA. Treating CBA as a monolith represents a kind of intellectual sloppiness that muddies the debate and the law and leads to false formality—a CBA with the trappings of formality that actually misuses formality so as to produce a result diametrically opposed to the Ben Franklin-style rationality and common sense to

197. The EPA’s Guidelines facilitate this kind of false formality by requiring the analyst to calculate a number for net benefits even where important benefits cannot be quantified. See ENVTL. PROT. AGENCY, GUIDELINES FOR PREPARING ECONOMIC ANALYSES, at 11-3 (2010) (Docket ID No. EPA-HQ-OAR-2013-0291-0056) (“Quantifiable benefits and costs, properly discounted, should be compared to determine a regulation’s net benefits, even if important benefits or costs cannot be monetized.”).

198. Douglas A. Kysar, *Fish Tales*, in REFORMING REGULATORY IMPACT ANALYSIS, *supra* note 22, at 190, 197.

199. See Wendy Wagner, *The CAIR RLA: Advocacy Dressed up as Policy Analysis*, in REFORMING REGULATORY IMPACT ANALYSIS, *supra* note 22, at 56, 57.

200. Cf. Charles Gowan et al., *The Role of Ecosystem Valuation in Environmental Decision Making: Hydropower Relicensing and Dam Removal on the Elwha River*, 56 ECOLOGICAL ECON. 508 (2006) (describing an empirical study of a dam-removal decision and suggesting that in that context decision makers and stakeholders prefer qualitative projections as the basis for negotiation and decision making and tend to ignore monetized valuations).

which the CBA's proponents often lay claim. An awareness of the multiple varieties of CBA may also help agencies to more soberly assess whether the pursuit of formality is likely to be fruitful or futile.