RATIONAL CONTRACT DESIGN

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In contracts, the choice between vague standards and precise rules is central to both theory and practice. According to traditional contract theory, parties make this choice by balancing "front-end" transaction costs against "back-end" enforcement costs, apparently through a joint cost-benefit analysis. Despite longstanding and undisputed acceptance in academia, this conception of contract design is virtually unknown among practicing lawyers. Bridging that gap, this Article is the first to analyze this paradigm critically, improve it significantly, and propose practical ways to implement it.

Though intuitive and insightful, the prevailing theory ignores typical negotiation dynamics, impeding its real-world applicability. Portraying transactional practice more accurately, this Article refines this model to reflect that parties strategically withhold information and prioritize their individual costs, not their collective costs. Even with these improvements, however, any comprehensive cost-benefit analysis of contract terms is impossible and wasteful under human cognitive constraints, so just attempting it is irrational.

Toward a truly rational approach to contract design, deliberate heuristics—planned decision-making strategies that simplify complex judgments—promise greater efficacy in the profoundly uncertain environment of business transactions. Applying recent developments in behavioral science, this Article formulates and demonstrates a decision tree for choosing between vague and precise provisions. Compared with the cost-benefit analysis suggested by legal scholarship, this strategy identifies efficient language more consistently and quickly, finally enabling drafters to implement contract theory's normative insights in practice. Based on this effective approach, future heuristics could also facilitate rational judgments in other central aspects of contract design.

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INTRODUCTION

Why do contracts contain the language that they do? How do drafters choose the words in each provision? When should they use vague or general standards rather than precise rules or detailed lists?[1]

For example, when should an employment agreement permit the company to terminate an executive's employment for "gross misconduct," and when should it instead refer to specific types of conduct, like a sexual relationship with a coworker? When should a distribution agreement obligate a distributor to use "commercially reasonable efforts" to maximize sales volume, and when should it instead require specific marketing activities? When should a seller represent in an acquisition agreement that the target complies with all "material" contracts, and when should the provision instead include a proxy for materiality, like the amount of annual expenditure under each contract?

In contract design,[2] this question of whether to use vague or precise language "is widely understood to be the central decision that drafters must

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[1] A contract term is vague to the extent that one must provide its content when interpreting it. It is precise to the extent that one provides that content when drafting it in the first place. These definitions, which are scalar rather than binary, adapt for the contractual context the longstanding concepts of standards and rules in public law scholarship. *E.g.,* Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557, 560 (1992) (adopting "a definition, in which the only distinction between rules and standards is the extent to which efforts to give content to the law are undertaken before or after individuals act" (emphasis removed)).

[2] Though ubiquitous in contract theory scholarship, the phrase *contract design* is almost never defined or even explained. *E.g.,* sources cited *infra* notes 3, 4, 8, 29, 82. One article, however, clarifies that "[c]ontract design is different from contract formation—offer,

make."[3] In contract theory, the prevailing and—until now—undisputed answer to this question is essentially that parties conduct a cost-benefit analysis rooted in orthodox conceptions of economic rationality.

Inspired by earlier accounts of rules and standards in public law,[4] this answer is based on two broad generalizations. First, vague standards involve lower "front-end" transaction costs than precise rules do, because the former are easier to draft and negotiate. But vagueness also involves higher "back-end" enforcement costs, because it is more likely to create misunderstandings during performance and interpretive disputes during litigation.

According to conventional contract theory, parties choose between precise and vague language by "investing in the front end or back end of the contracting process,"[5] respectively. When considering alternate terms that would yield the same "contractual incentives," parties can optimize their contracting costs by choosing vague options over precise ones when the savings in expected front-end costs outweigh the extra costs expected at the back end.[6] Otherwise, the parties should "invest" in a precise rule.

This conception of contract formation, which this Article dubs the *cost optimization model*, is intended to explain "why contracts in practice have a mix of vague and precise provisions."[7] However, contracts scholars also acknowledge that lawyers generally draft contracts with little attention to back-end costs, contrary to this model's descriptions and prescriptions.[8] This

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acceptance, and consideration"—because "[r]ather than being about when a contract is formed, contract design theory is largely concerned with how to design contracts, substantively and structurally, in order to make the deal more efficient." Cathy Hwang, *Value Creation by Transactional Associates*, 88 FORDHAM L. REV. 1649, 1655 n.44 (2020).

[3] Cathy Hwang & Matthew Jennejohn, *Deal Structure*, 113 NW U. L. REV. 279, 285 (2018); *accord* Albert Choi & George Triantis, *Strategic Vagueness in Contract Design: The Case of Corporate Acquisitions*, 119 YALE L.J. 848, 924 (2010) ("A significant challenge in contract design is the optimal mix of precise and vague provisions."). Related considerations in contract design include contract concepts, completeness, and structure. *See generally* TINA L. STARK, DRAFTING CONTRACTS: HOW AND WHY LAWYERS DO WHAT THEY DO 9–43 (2d ed. 2014) (classifying seven different "contract concepts" as the "building blocks" that must be "properly assembled" to form a contract); Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 YALE L.J. 87, 92 n.29 (1989) (distinguishing "two basic reasons for incompleteness" in contracts); Hwang & Jennejohn, *supra,* at 279, 299–321 (explaining "structural complexity in modern contracting," including modularity).

[4] Robert E. Scott & George G. Triantis, *Anticipating Litigation in Contract Design*, 115 YALE L.J. 814, 820 (2006) (acknowledging "an intellectual debt to the work of legal scholars who have analyzed the choice between rules and standards in legislation and administrative regulation"); Choi & Triantis (2010), *supra* note 3, at 883 (placing the cost-based explanation in "the same family as the conventional wisdom about the choice between standards and rules in the drafting of statutes or regulations."). For the corresponding analysis in the context of public law, see generally Kaplow, *supra* note 1.

[5] Scott & Triantis, *supra* note 4, at 817.

[6] *Id.*

[7] *Id.* at 814.

[8] Richard A. Posner, *The Law and Economics of Contract Interpretation*, 83 TEX. L. REV. 1581, 1613 (2005) (noting that "many contract lawyers seem to give little thought to the

divergence is most commonly construed as an agency problem endemic to the legal profession, in which attorneys incompetently draft contracts without attention to their clients' interests.[9] For whatever reason, the "gap between theory and practice" [10] that the cost optimization model was supposed to close remains open.

   Although many practitioners apparently disregard this model's lessons, scholars have adopted it, virtually without dispute, as the definitive account of vagueness and precision in contracts. [11] Surprisingly, despite its prevalence in academic literature, this paradigm has not yet been subject to a thorough, critical analysis or incorporated into practical guidance for drafting contracts. [12] This Article is the first to offer not only significant

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possibility of litigation"); MITU GULATI & ROBERT E. SCOTT, THE THREE AND A HALF MINUTE TRANSACTION: BOILERPLATE AND THE LIMITS OF CONTRACT DESIGN 105 (2013) (proposing that law firm attorneys responding to a survey "have a different model of contracting than the assumptions of rational contract design"); *id.* at 164 (observing that "the link between contract design and litigation" (i.e., the basis of the cost optimization model) "seems underappreciated in practice, other than in a handful of specialized fields"); George G. Triantis, *Improving Contract Quality: Modularity, Technology, and Innovation in Contract Design*, 18 STAN. J.L. BUS. & FIN. 177, 184 (2013) (finding it "surprising how little even prominent transactional lawyers anticipate midstream and back-end consequences when negotiating and drafting contract documents"). For an alternative explanation, see Barak Richman, *Contracts Meet Henry Ford*, 40 HOFSTRA L. REV. 77 (2011) (claiming that apparently irrational contract provisions are a natural consequence of mass production processes at large law firms, rather than agency costs).

   [9] George G. Triantis, *The Efficiency of Vague Contract Terms: A Response To The Schwartz-Scott Theory Of U.C.C. Article 2*, 62 LA. L. REV. 1065, 1067 (2002) ("Several explanations of vague contract terms . . . attribute the vagueness we see in practice to . . . agency problems in bargaining."); GULATI & SCOTT, *supra* note 8, at 159–168 (exploring agency costs in the context of sovereign bonds); Stephen J. Choi et al., *Are M&A Lawyers Really Better?* (Duke L. Sch. Pub. L. & Legal Theory Series, Working Paper No. 2020-57, 2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3653463.

   [10] Scott & Triantis, *supra* note 4, at 817.

   [11] Julian Nyarko, *Stickiness and Incomplete Contracts*, 88 U. CHI. L. REV. 1, 15 (2021) ("Traditional contract theory assumes that sophisticated actors routinely write optimized agreements, and that the presence or absence of a clause is primarily driven by the costs and benefits conferred upon the parties, a view that is also held by the courts.").

   [12] Some of the most common contract drafting texts address the distinction between vagueness and precision, but none recommends that parties balance front-end and back-end contracting costs. Instead, many of these texts advise drafters to aim for precision in all cases. *E.g.,* GEORGE W. KUNEY, THE ELEMENTS OF CONTRACT DRAFTING 3 (5th ed. 2020) ("The goal of the drafting process is to produce precise documents that are understandable to the legal and lay audience involved in the project and interpreted exactly the same way by all readers."). Alternatively, they may recognize some value in vagueness without advising readers when to employ it. *E.g.,* BRYAN A. GARNER, GARNER'S GUIDELINES FOR DRAFTING AND EDITING CONTRACTS 14 (2019) ("Although vagueness is sometimes purposeful and desirable . . . , you should sharpen the wording when you can."). Another text implicitly acknowledges the differential front-end and back-end costs of vagueness and precision without advising a tradeoff between them. KENNETH A. ADAMS, A MANUAL OF STYLE FOR CONTRACT DRAFTING 191 (4th ed. 2017) ("[W]ith vagueness comes the possibility of a dispute . . . Vagueness might also be expedient if addressing an issue precisely would make negotiations longer or more contentious than one or both parties want."). Finally, the most popular contract drafting textbook recommends a choice between vague and precise language based on possible

improvements to the cost optimization model but also realistic proposals for applying its valuable insights to contract design. With these developments, the "gap between theory and practice"[13] identified by legal scholars is now narrower than ever.[14]

Contextualizing these contributions, Part I of this Article examines the cost optimization model in detail. It elaborates and deconstructs the cost-benefit analysis at its heart, itemizing the information and calculations that parties would have to obtain and perform to implement the model as the academic literature suggests.

Next, Part II identifies conceptual flaws in this theory and substantially improves the model to address them. The original formulation assumes that symmetrically informed contracting parties would collaboratively optimize their combined contracting costs; in other words, they would conduct the cost-benefit analysis together, not separately. But in negotiated business transactions, even under relatively cooperative approaches to bargaining, parties prioritize their own interests over those of the collective and, to that end, often deliberately withhold information from each other. As a result, each party may consider different language to be cost-optimal for itself, in part because vagueness can provide a strategic advantage to one party over the other in a potential dispute. To reflect these facts, Part II revises the cost-benefit analysis to enable each party to identify the language that would optimize its own costs, not all parties' combined costs. Compared with the original model, this updated version's design and outcomes correspond more closely to general transactional practice.

With or without these improvements, Part III explains that any comprehensive cost-benefit analysis demands a series of operations that are practically impossible for contracting parties and their representatives. These include quantifying qualitative benefits and predicting future disputes, their probabilities, their dates, and the volatile expenses associated with resolving them, all at the point of contract formation. For decades, behavioral science has demonstrated that expected-utility calculations of far less complexity exceed the limits of humans' bounded rationality. Yet somehow, mainstream contract theory remains rooted in outmoded, discredited conceptions of decision-making. As a long-overdue update, Part III extends the lessons of behavioral science to contract design, establishing that back-end contracting costs are a matter of "unmeasurable" or "radical" uncertainty, not

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strategic advantages depending on which party one represents, but it does not address front-end or back-end costs. STARK, *supra* note 3, at 296 ("Vagueness is neither inherently good nor bad. It depends on what concept best expresses the parties' agreement and on what best protects your client or advances his interests.").

[13] Scott & Triantis, *supra* note 4, at 817.

[14] On the value to contract theory of bridging this gap, see Nyarko, *supra* note 11, at 73 ("As researchers, we need to be mindful of, and clearly distinguish between, the normative and positive aspects of contract theory. Trying to understand why there is a gap between expectation and reality, rather than theorizing it away, could significantly improve our understanding of contractual design.").

"measurable risk."[15] Unable to measure those costs, parties cannot make reliable decisions based on them. Moreover, to the extent that one could even approximate a cost-benefit analysis, this process would not only produce inaccurate results but also entail prohibitive investigation expenditures, substantially increasing front-end transaction costs. Faced with such an unreliable and expensive process, rational contracting parties should not even attempt cost optimization in the first place. Indeed, they do not, and these obstacles explain that omission more cogently than the typical account based on agency costs.[16]

If it is irrational to engage in a cost-benefit analysis per the cost optimization model, despite its apparent grounding in rationality, then what is a truly rational approach to choosing contract language?[17] In other words, how can parties consistently and efficiently identify terms that tend to maximize benefits and minimize costs at both ends of the contracting process, when faced with bounded rationality and intractable uncertainty?

Part IV begins to answer these questions by drawing on recent developments in behavioral science regarding heuristics. Essentially, heuristics are simplified decision-making strategies that come in two discrete forms. First, *intuitive* heuristics comprise various innate processes that operate "automatically and quickly, with little or no effort and no sense of voluntary control."[18] Though "highly economical and usually effective," these processes arguably introduce corresponding biases, "lead[ing] to systematic and predictable errors."[19] Indeed, heuristics of this nature could cause parties to err in assessing costs and benefits during contract design.[20] In contrast to the intuitive variety, *deliberate* heuristics are more elaborate decision-making strategies that people employ intentionally, not instinctively.[21] These techniques typically substitute a relatively easy process for a more difficult one, by focusing on a few key pieces of information and ignoring the rest, in contrast to optimization methods that purport to obtain, weigh, and compute all relevant information. Amid uncertainty, deliberate heuristics are not only faster but also—contrary to traditional assumptions—often more accurate than the complex calculations

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[15] FRANK H. KNIGHT, RISK, UNCERTAINTY AND PROFIT 20 (1921); JOHN KAY & MERVYN KING, RADICAL UNCERTAINTY: DECISION-MAKING BEYOND THE NUMBERS 15 (2020). *See infra* notes 144–151 and accompanying text.

[16] *See supra* notes 8–10 and accompanying text.

[17] Regarding conceptions of rationality, see *infra* text accompanying notes 102–119.

[18] DANIEL KAHNEMAN, THINKING, FAST AND SLOW 20 (2011).

[19] Amos Tversky & Daniel Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, 185 SCIENCE 1124, 1131 (1974). *But see* KAY & KING, *supra* note __, at 146 (doubting whether deviations from "axiomatic" rationality due to these "biases" should really be considered "errors").

[20] *See infra* Section III.D.3.

[21] *See infra* text accompanying notes 208–213.

that they replace.[22] These advantages are especially valuable when decisions need to be made quickly and repeatedly.

Contract drafting involves judgments of precisely this nature. When parties enter a contract, litigation may not arise for several years, if ever, and back-end costs are profoundly uncertain. In addition, drafters need to choose language many times in every contract, often under time and cost pressure. Therefore, a deliberate heuristic is probably the most rational approach to drafting. Among the alternatives, an attempt at true cost optimization is usually futile and wasteful. At the other end of the spectrum, general disregard for litigation risks often yields excessive vagueness or precision. In contrast, a properly designed heuristic could strike an ideal balance, with efficiency of both process and outcomes.[23] But unlike professionals in other fields who regularly employ established decision aids to overcome complexity and uncertainty,[24] lawyers do not yet have a systematic tool for one of their most common and crucial tasks: drafting contracts.

Accordingly, Part IV proceeds to develop a deliberate heuristic for choosing among vague and precise alternatives to a provision—namely, a "fast and frugal" decision tree [25]—incorporating lessons from the cost optimization model, other academic literature on precision and vagueness, and this Article's own observations on negotiation dynamics. In hypothetical demonstrations, this tool quickly and accurately identifies rational drafting choices for several common contract provisions, even accounting for recent developments like the #MeToo movement against sexual harassment. Despite omitting much of the unknowable information required by an optimization method, this heuristic can achieve more efficient language more often, with far less time and effort in each instance. With this principled and pragmatic method, drafters can finally harness traditional contract theory's normative insights while avoiding its prescriptive limitations.[26] Beyond this immediately useful resource, this Article's theoretical advances and application of deliberate heuristics establish a foundation for future work, both scholarly and practical, to explain and enhance efficiency in contract design.

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[22] Peter M. Todd & Gerd Gigerenzer, *What is Ecological Rationality?*, *in* ECOLOGICAL RATIONALITY: INTELLIGENCE IN THE WORLD 16 (Peter M. Todd & Gerd Gigerenzer eds., 2012); KAY & KING, *supra* note 15, at 152–53.

[23] *See* Florian Artinger et al., *Heuristics as adaptive decision strategies in management*, 36 J. ORG. BEHAV. S33, S36 (2015) ("Typically, the relation between effort and accuracy is U-shaped: Too little or too much effort is detrimental.").

[24] *See infra* text accompanying note 242.

[25] For details regarding fast and frugal trees, see *infra* text accompanying note 249.

[26] Regarding the distinction between normative and prescriptive claims, see David E. Bell et al., *Descriptive, Normative, and Prescriptive Interactions in Decision Making, in* DECISION MAKING 9–30 (David E. Bell et al. eds., 1988) (explaining that descriptive claims state that something is the case in the real world, prescriptive claims state that something could or should be the case in the real world, and normative claims state that something should be the case in an ideal world devoid of human limitations).

I.   Cost Optimization in Contract Design

A.   *Overview*

Because the choice between vague and precise language is so central to contract theory and practice,[27] the academic literature offers several principled reasons for choosing one option over the other. Many are based on potential drawbacks to precise language, such as the difficulty of identifying and addressing future contingencies,[28] the risk of errors and omissions,[29] the potential to convey private information and negative signals,[30] and opportunities for circumvention.[31] But the most prominent idea draws instead on the potential economic efficiencies of vagueness.

Despite its ubiquity, this idea has not yet been formally named, so for convenience, this Article calls it the *cost optimization model* of contract formation. This account focuses on the comparative costs and benefits of precise and vague terms, during both the front-end stage of negotiation and drafting and the back-end stage of performance and enforcement.[32] In general, precise terms offer greater certainty of performance and lower enforcement costs at the back end, because parties clearly understand their obligations, they can more easily resolve disputes without litigation, and, when litigation does arise, courts can apply facts to contract terms without extensive interpretation. At the front end, however, a precise term costs

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[27] *See supra* note 3 and accompanying text.

[28] Steven Shavell, *On the Writing and the Interpretation of Contracts*, 22 J.L. Econ. & Org. 289, 289 (2006) ("To explain why parties write such incomplete contracts, it is frequently suggested that many eventualities are hard to anticipate or describe in advance and that leaving out details saves time and effort.").

[29] Ronald J. Gilson et al., *Text and Context: Contract Interpretation as Contract Design*, 100 Cornell L. Rev. 23, 56 (2014) ("[The contracting parties] can choose specific rules covering possible outcomes, but in the face of uncertainty this approach comes at the cost of an increased likelihood that the ex ante–specified state contingencies will turn out to be incomplete or simply wrong ex post. With this level of uncertainty, the parties may be better served by using a standard-based measure of performance—commercial reasonableness, for example—rather than detailed but incomplete or erroneous state-contingent rules."); Choi & Triantis (2010), *supra* note 3, at 883 ("Vague terms . . . reduce the risk of errors of over- and under-inclusiveness stemming from precise terms, due to bounded rationality.").

[30] Choi & Triantis (2010), *supra* note 3, at 886 (describing "adverse signaling" as inadvertently revealing one's "private information about the economic prospects of the deal" or "greater litigiousness"); Russell Korobkin, Negotiation: Theory and Strategy 131 (3d ed. 2014) ("It is not always in parties' individual or joint interests to explicitly negotiate all the obligations each will undertake in any contingent state of the world, even when the direct transaction costs of doing so are low. Sometimes, suggesting that a term be added to an agreement sends a signal that could undermine the relationship by implying pessimism in the project or distrust of the other party.").

[31] Scott & Triantis, *supra* note 4, at 845 (proposing that vagueness "might help to reduce the incentives of promisors to game precise rules once an adverse risk has materialized").

[32] One article sensibly distinguishes between the "midstream" performance stage and the "back-end" enforcement stage. Triantis (2013), *supra* note 8, at 183. For concision and consistency, however, this Article follows most of the literature in referring to the entire period after signing as the "back end."

more, as parties take time to formulate and negotiate specific language.[33] By comparison, vague terms are less expensive at the front end, as they typically follow standard language from templates and precedents and require less original drafting. Because they are subject to different interpretations, however, vague terms may result in less predictable performance and more frequent disputes, with more costly litigation and a greater risk of judicial error in each case.[34]

Under the cost optimization model, contracting parties choose between vague and precise alternatives to a term's language by "trading off" between the front-end and back-end costs associated with each option.[35] In assessing back-end costs, they must not only estimate the costs but also calculate the probability that they will arise under each alternative and discount them accordingly.[36] Having completed this comparison, the parties draft a vague

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[33] Scott & Triantis, *supra* note 4, at 840 ("A precise term . . . entails larger front-end transaction costs, but lower back-end enforcement costs than a vague term that leaves the court with a broader space."); Choi & Triantis (2010), *supra* note 3, at 852 ("[P]recise contract provisions raise contracting costs on the front end, but reduce enforcement costs at the back end."); Hwang & Jennejohn, *supra* note 3, at 287–88 ("[U]sing a rule—which costs more to draft up front—reduces enforcement costs down the line, because rules reduce the probability of misunderstanding, dispute, and the time spent on litigation when disputes do arise."). One might expect the potential drawbacks of precise terms—errors and omissions, "adverse signaling," and incentives to "game" rules—also to belong among the associated front-end or back-end costs. *See supra* notes 28–31 and accompanying text. However, formulations of the cost optimization model do not include those potential drawbacks among the relevant costs of precise terms, perhaps because they do not readily reduce to monetary figures. Therefore, this model is essentially separate from those drawbacks as an explanation for vagueness and precision.

[34] Scott & Triantis, *supra* note 4, at 838 ("If the parties agree to a vague term (standard), they accept higher expected back-end (enforcement) costs in return for lower front-end costs."); *id.* at 844–45 ("The prospect of legal error is compounded when a court enforces a vague term instead of a precise provision because the court's task is broader: It must choose proxies as well as the evidentiary bits that support each proxy."); Choi & Triantis (2010), *supra* note 3, at 882 ("Vague contract provisions increase the resources expended in litigation and the uncertainty of judicial outcomes."); Richard A. Posner, *supra* note 8, at 1584 ("The likelihood and consequences of judicial error are influenced by the parties' and the court's investment in the litigation but also by the parties' investment in making the contract as clear as possible, which will facilitate an accurate and expeditious judicial decision should a dispute over the contract's meaning arise and be brought to court."); Hwang & Jennejohn, *supra* note 3, at 288 ("[D]rafting a standard is relatively low-cost ex ante, but opens the door to misunderstanding and expensive litigation ex post. Standards also open the door to greater judicial error costs.").

[35] Scott & Triantis, *supra* note 4, at 836 ("The resolution of this tradeoff [between front-end and back-end costs] in each contracting instance determines the parties' optimal choice between precise and vague terms."); Gilson et al. (2014), *supra* note 29, at 55 ("In general, legally sophisticated parties designing bespoke contracts choose between text and context by trading off the front-end (or drafting) costs of contracting and the back-end (or enforcement) costs.").

[36] Richard A. Posner, *supra* note 8, at 1584 ("All the costs in the second stage must be discounted, that is multiplied, by the probability of a legal dispute, which is lower the more the parties invested at the first stage to make the contract as clear as possible."); Choi & Triantis (2010), *supra* note 3, at 852 ("If a provision matters only in remote contingencies, for instance, then the back-end costs should be discounted by that remote probability, and it may

provision if they anticipate the savings in front-end transaction costs to exceed the premium in expected back-end enforcement costs.[37] Otherwise, they pursue precision.[38] By drafting each provision through this balancing process, the parties can create a contract that optimizes their current costs and expected future costs while establishing the desired level of benefits.[39]

B.   Process

Despite the abundance of scholarship proposing and citing the cost optimization model, none of it explicates how contracting parties would balance front-end and back-end costs in practice. However, the literature's plain language of "tradeoffs" and "discounting" implies a cost-benefit analysis of each contract term.[40] Accordingly, this Section deconstructs the requisite analysis into the separate functions that parties must perform to optimize costs per this model.

To identify optimal language for a contractual provision, the parties or their representatives must perform the following steps:

1. Identify alternative terms that would provide the same benefits to the parties.[41]
2. For each alternative, calculate the associated front-end transaction costs, which include, without limitation, all parties' time and expense involved in
    a. "foreseeing possible future contingencies,
    b. determining the efficient obligations that should be enforced in each contingency,
    c. bargaining over the share of the contracting surplus, and

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be correspondingly efficient to save front-end costs by using a standard (or a vague term) rather than a rule.").

[37] Choi & Triantis (2010), *supra* note 3, at 854 ("The conventional analysis posits that vague terms are justified only when the expected larger litigation costs are outweighed by savings on the front end, in lower drafting costs.").

[38] *Id.* This analysis addresses only situations in which the parties draft any provisions at all. If a contingency is sufficiently remote, however, the parties may find that the expected overall costs of addressing it even with vague language outweigh the expected benefits, leading them to omit a relevant provision from the contract altogether.

[39] Scott & Triantis, *supra* note 4, at 817 ("[T]he mix of precise and vague terms that characterize the typical commercial contract can be framed as the product of a tradeoff that the parties have made in investing in the front end or back end of the contracting process, based on their particular circumstances. By reaching the optimal combination of front-end and back-end costs, parties can minimize the aggregate contracting costs of achieving a particular gain in contractual incentives. Conversely, for any given expenditure of contracting costs, the parties can reach the highest possible incentive gains by optimizing the allocation of their investment between the front and back ends.").

[40] *See* sources cited *supra* notes 35–37.

[41] The benefits of contract terms are "incentives in [the parties'] relationship, particularly the incentive to perform when it is efficient to do so and the incentive to make efficient investments that enhance the value of their exchange." Scott & Triantis, *supra* note 4, at 823.

      d. drafting the contract language that communicates their intent to courts."[42]
3. For each alternative, calculate the associated back-end enforcement costs, which are a function of various factors, including, without limitation,[43]
      a. the probability that a dispute will arise with respect to the contract term,
      b. all parties' time and expense involved in resolving each dispute without litigation,[44]
      c. the probability that each dispute will result in litigation,
      d. all parties' time and expense involved in preparing for and engaging in litigation,
      e. the probability that a judicial error[45] will result in an asymmetrical[46] transfer[47] of money between the parties,
      f. the amount of any such asymmetry,
      g. the date when each of the preceding losses will occur, and

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[42] *Id*. Steps 1.a and b may be unduly narrow, as they seem to account only for covenants and conditions but not for representations, warranties, acknowledgements, rights, or declarations. These other contract concepts may involve separate considerations instead of steps 1.a and b. For instance, representations apply at or before the contract's date, so "future contingencies" and "obligations" are irrelevant to the degree of precision with which they are drafted. However, the parties could indeed add to the front-end costs by negotiating and determining, for example, a precise representation that refers to a dollar threshold rather than a vague term that simply refers to "materiality." *See* ADAMS, *supra* note 12, at 218. In this context, the parties must consider present facts rather than future contingencies.

[43] Among the literature promoting the cost optimization model, no article explicates all the elements of the back-end enforcement costs in the level of detail provided here. Judge Posner's formula comes closest but does not itemize all the factors constituting each element. *See* Richard A. Posner, *supra* note 8, at 1583 (equating "the social transaction costs of a contract" to "$x + p(x) [y + z + e(x,y,z)]$, where x is the negotiation and drafting cost, p the probability of litigation, y the parties' litigation costs, z the cost of litigation to the judiciary, and e judicial error costs that reduce both the private and social value of contracts as a method of allocating resources"). Therefore, these details are derived from various sources within that literature.

[44] *See id.* at 1614 ("When a dispute over the contract's meaning arises, the parties will first try to resolve it themselves.").

[45] A "judicial error" occurs when a court misinterprets the contract in a way that departs from the parties' agreement. In contrast, a correct judgment does not contribute to back-end costs, which are measured against the parties' agreement, because by definition, such a judgment upholds that agreement. For example, just as the timely payment of a contractually owed amount does not constitute a back-end cost, neither does an award of that amount against a party that has breached its payment obligation.

[46] An "asymmetrical" transfer "impose[s] greater costs on one party than the benefits conferred on the other." Richard A. Posner, *supra* note 8, at 1609. In contrast, if judicial error causes a *symmetrical* transfer (i.e., one that does not impose any *net* cost to the parties), then that transfer can be disregarded from this calculation, which focuses on the parties' *collective* contracting costs.

[47] An erroneous "transfer" includes not only an undeserved award of compensation, but also a *failure* to award *deserved* compensation. Measured against the parties' agreement, either of those judicial errors creates a loss for one party and a gain for the other, equivalent to a transfer from the first to the second.

      h.   a discount rate to apply to each future loss.[48]

4. For each alternative, add the front-end and back-end costs calculated in steps 2 and 3.

5. Choose the alternative with the lowest sum calculated in step 4.

This is the cost-benefit analysis suggested by traditional contract theory, fully explicated for the first time. The next Part contributes further to this literature by adapting this theoretical model to better reflect contracting parties' typical incentives and interests in practice.

II.   AN IMPROVED MODEL OF COST OPTIMIZATION

A.   *Contract Negotiation Dynamics*

Consistent with orthodox contract theory,[49] the literature promoting and adopting the cost optimization model contemplates that parties choose contract terms together in a coordinated effort to maximize their *collective* utility. [50] Accordingly, it assumes "that the parties are symmetrically informed,"[51] consistent with the idea of parties freely sharing knowledge while collaborating toward a mutual goal. To anyone who has bargained over a business agreement's terms, however, this apparent presumption of symbiosis and open exchange may seem improbably noble. Given this discrepancy, we should consider how contracts are negotiated, both in theory and in practice, and how these dynamics may impact the cost optimization model.

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[48] The literature explaining the cost optimization model does not expressly mention discount rates for future costs. However, discounting is universally considered necessary to compare costs and benefits that occur at different times. *See infra* Section III.D.4.

[49] Alan Schwartz & Robert Scott, *Contract Theory and the Limits of Contract Law*, 113 YALE L.J. 541, 554 (2003) ("Parties *jointly* choose the contract terms so as to maximize the surplus, which the price may then divide unequally.") (emphasis added).

[50] *E.g.,* Scott & Triantis, *supra* note 4, at 817 ("[T]he mix of precise and vague terms that characterize the typical commercial contract can be framed as the product of a tradeoff that *the parties* have made in investing in the front end or back end of the contracting process.") (emphasis added); *Id.* at 820 (expressing "confiden[ce] that *the parties* will agree to an efficient mix of rules and standards in their contract") (emphasis added); *Id.* at 836 ("The resolution of this tradeoff in each contracting instance determines *the parties'* optimal choice between precise and vague terms.") (emphasis added); *Id.* at 839 ("explor[ing] how *parties choose* their mix of precise and vague contract terms") (emphasis added); Ronald J. Gilson et al., *Braiding: The Interaction of Formal and Informal Contracting in Theory, Practice, and Doctrine*, 110 COLUM. L. REV. 1377, 1390 (2010) ("In practice, . . . *parties* to formal contracts routinely aim to structure their relations to economize on the expected costs of verification.") (emphasis added); Gilson et al. (2014), *supra* note 29, at 55 ("In general, legally sophisticated *parties* designing bespoke contracts choose between text and context by trading off the front-end (or drafting) costs of contracting and the back-end (or enforcement) costs.") (emphasis added); *Id.* at 57 ("This tradeoff [between front-end and back-end costs] directly influences how *the parties* design their contracts so as to optimize the front-end and the back-end costs of contracting.") (emphasis added). Regarding utility maximization, see *infra* notes 102–103 and accompanying text.

[51] Scott & Triantis, *supra* note 4, at 824. *But see* Choi & Triantis (2010), *supra* note 3, at 856 (acknowledging "information asymmetry" in contract design).

Legal scholars commonly distinguish between "distributive" and "integrative" approaches to negotiation.[52] According to this dichotomy, distributive tactics are intended to "claim value" by obtaining for oneself as much as possible of the agreement's benefits (or surplus), as in a zero-sum contest.[53] In contrast, integrative tactics are meant to "create value" by focusing on the parties' common and divergent interests and discovering options that increase everyone's net benefits without reducing anyone's.[54] In other words, distributive bargaining divides a "pie" of a fixed size between the parties, whereas integrative bargaining increases the pie's size.[55] At first glance, the cost optimization model's assumptions of symmetric information and collective utility maximization may seem consistent with an integrative approach to bargaining. However, this apparent connection is tenuous, and that approach's real-world application is itself limited.

For several decades, integrative bargaining has been "the centerpiece of normative negotiation scholarship and negotiation teaching,"[56] promoted by countless books as the key to success in both personal and professional contexts.[57] But integrative approaches are not possible in all situations. Even in theory, opportunities for this approach to negotiation "exist within a narrower range of circumstances than sometimes has been claimed"; moreover, even within that range, one "must almost always engage in distributive bargaining as well."[58] Despite the efforts of scholars, teachers,

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[52] Russell Korobkin, *A Positive Theory of Legal Negotiation*, 88 GEO. L.J. 1789, 1790 (2000). Integrative bargaining is also known by many other names, notably "problem solving." Carrie Menkel-Meadow, *Toward Another View of Legal Negotiation: The Structure of Problem Solving*, 31 UCLA L. REV. 754, 794 (1984) ("Problem solving is an orientation to negotiation which focuses on finding solutions to the parties' sets of underlying needs and objectives. The problem-solving conception subordinates strategies and tactics to the process of identifying possible solutions and therefore allows a broader range of outcomes to negotiation problems.") (footnote omitted).

[53] Korobkin (2000), *supra* note 52, at 1790; *accord* Menkel-Meadow, *supra* note 52, at 764–65 ("This [adversarial] approach is based on the assumption that the parties desire the same goals, items, or values. It is assumed that the parties must be in conflict and since they are presumed to be bargaining for the same 'scarce' items, negotiators assume that any solution is predicated upon division of the goods. In the language of game theorists, economists, and psychologists, such negotiations become 'zero-sum' or 'constant-sum' games and the bargaining engaged in is 'distributive' bargaining.") (footnotes omitted).

[54] Korobkin (2000), *supra* note 52, at 1790; DAVID A. LAX & JAMES K. SEBENIUS, THE MANAGER AS NEGOTIATOR: BARGAINING FOR COOPERATION AND COMPETITIVE GAIN 106–07 (1986).

[55] Gerald B. Wetlaufer, *The Limits of Integrative Bargaining*, 85 GEO. L.J. 369, 370 (1996).

[56] Russell Korobkin, *Against Integrative Bargaining*, 58 CASE W. RES. L. REV. 1323, 1323 (2008).

[57] *E.g.,* ROGER FISHER, WILLIAM URY & BRUCE PATTON, GETTING TO YES: NEGOTIATING AGREEMENT WITHOUT GIVING IN (3d ed. 2011); ROBERT H. MNOOKIN, SCOTT R. PEPPET & ANDREW S. TULUMELLO, BEYOND WINNING: NEGOTIATING TO CREATE VALUE IN DEALS AND DISPUTES (2000); ALICIA ALVAREZ & PAUL R. TREMBLAY, INTRODUCTION TO TRANSACTIONAL LAWYERING PRACTICE 152–59 (2013).

[58] Wetlaufer, *supra* note 55, at 390 (rejecting claims of the wide availability of opportunities for integrative bargaining, by showing that differences between parties create

and best-selling authors to promote integrative bargaining, distributive tactics remain universal. Indeed, they are necessary in any negotiation in which the parties have even slightly different reservation points (i.e., minimum requirements to complete the deal),[59] which describes any issue that requires discussion. Contrary to popular perceptions, "distributive and integrative bargaining are complementary rather than mutually exclusive approaches."[60]

Accordingly, even when integrative bargaining does apply, this model does not call for a party to maximize both parties' collective welfare without prioritizing one's own interests. Instead, an integrative negotiator seeks to expand the options available to the parties.[61] This is not a selfless pursuit but a means to obtain a better deal for oneself than distributive tactics alone would produce. Moreover, contrary to the cost optimization model's assumption of symmetrical information, even an integrative "bargainer's self-interest is never promoted by disclosure for its own sake . . . Rather, . . . the best possible position is to secure perfect information about the other side's position while disclosing nothing at all about one's own."[62] More generally, "a lawyer who wants to approach negotiation as a problem-solver" (i.e., as an integrative bargainer) should still aim "to protect the client from opportunism [and] to tailor a negotiated agreement to [the] client's interests in light of the legal opportunities and risks."[63] Indeed, these goals are not merely advisable but required by a lawyer's ethical duty to "act with commitment and dedication to the interests of the client and with zeal in advocacy upon the client's behalf."[64]

Therefore, regardless of whether one uses integrative or distributive tactics and whether the contract is for a one-time transaction or a long-term relationship,[65] a rational negotiator would still prioritize one's own interests

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such opportunities only under certain conditions and with important qualifications); *accord* Korobkin (2008), *supra* note 56, at 1339 (attributing the limited opportunities for integrative bargaining in transactional contexts to (a) the two-stage nature of negotiations, in which parties reach a business deal before involving their lawyers, creating a large bargaining zone that increases the importance of distributive tactics in the second stage, and (b) the reliance on institutional memory and industry custom in negotiating deal terms).

[59] KOROBKIN (2014), *supra* note 30, at 137 ("[D]istributive bargaining is necessary in any bargaining situation in which the bargaining zone [(i.e., the distance between the parties' reservation points)] is wider than a single deal point.").

[60] *Id.* at 318.

[61] Korobkin (2000), *supra* note 52, at 1812 ("Tactics that enable negotiators to define a larger bargaining zone than would otherwise exist are collectively termed 'integrative' bargaining.").

[62] Wetlaufer, *supra* note 55, at 391; *accord* Korobkin (2000), *supra* note 52, at 1804–07 (exploring the importance of information seeking in both distributive and integrative bargaining).

[63] MNOOKIN ET AL., *supra* note 57, at 174.

[64] MODEL RULES OF PRO. CONDUCT r. 1.3 cmt. 1 (AM. BAR ASS'N 2013) [hereinafter MRPC].

[65] *See* Scott Baker & Albert Choi, *Contract's Role in Relational Contract*, 101 VA. L. REV. 559, 562 (2015) (noting that parties to "relational contracts" "haggle over terms and procedures," "hire lawyers," and "send multiple drafts back and forth").

and seek to maximize one's own utility, not that of both parties collectively. As a welcome side effect, successful integrative bargaining increases collective welfare,[66] but it does not necessarily maximize it.

This has a subtle yet profound implication for the cost optimization model. If each party seeks to maximize its own utility, then a party interested in optimizing contracting costs would first seek to minimize, for a given level of benefits, not both parties' combined costs, but that party's own costs. If a party employs integrative bargaining techniques, it may discover ways to reduce collective costs while also reducing its own. With respect to many terms, a solution that is cost-optimal for that party may happen to be so for all.[67] But imagine a choice between (a) a deal in which one's own costs are minimized but collective costs are not and (b) a deal in which one's own costs are slightly higher but collective costs are minimized. If all else is equal, then even an integrative bargainer would prefer the first option. The cost optimization model, in contrast, would have the parties together choose the second option, contrary to any reasonable expectation of self-prioritizing people's behavior.

This inaccuracy may reflect the model's origin as an adaptation of the explanation of rules and standards in public law.[68] In that context, legislators could—at least notionally—share the goal of a socially optimal statute. In business transactions, however, even when negotiators genuinely consider their counterparts' interests, they clearly put their own interests first. Contract theory should reflect this reality.

B.   *Individualized Cost Optimization*

The recognition that cost-optimizing parties would seek to minimize their own contracting costs, rather than those of the collective, calls for an evolution of the model of contract design promoted by existing scholarship. Specifically, to better reflect actual practice, the cost optimization process described in Section I.B should be revised and restated from each party's individual perspective.

1.   *Revised Process*

The following description copies the previous one (omitting quotation marks and footnotes) and uses underlines and strikethroughs to indicate additions and deletions that adapt the process to an individualized model.

To identify optimal language for a contractual provision, ~~the parties~~ a party or ~~their~~ its representatives must perform the following steps:

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[66] *See supra* text accompanying note 54.

[67] This reasoning applies not only to contracting costs but also to a transaction's economic benefits more generally. *See* Richard A. Posner, *supra* note 8, at 1581 ("Each party wants to maximize his gain from the transaction, and that is usually best done by agreeing to terms that maximize the surplus created by the transaction—the excess of benefits over costs, the excess being divided between the parties. Of course, each party will be concerned not with the total surplus as such, but only with the absolute size of his share of it. But he will be more likely . . . to maximize his share if there is enough surplus for the other party to do well also.").

[68] *See supra* note 4 and accompanying text.

1. Identify alternative terms that would provide the same benefits to ~~the parties~~ that party.
2. For each alternative, calculate ~~the~~ that party's associated front-end transaction costs, which include, without limitation, ~~all parties'~~ that party's time and expense involved in
    a. foreseeing possible future contingencies,
    b. determining the efficient obligations that should be enforced in each contingency,
    c. bargaining over the share of the contracting surplus, and
    d. drafting the contract language that communicates ~~their~~ the parties' intent to courts.
3. For each alternative, calculate ~~the~~ that party's associated back-end enforcement costs, which are a function of various factors, including, without limitation,
    a. the probability that a dispute will arise with respect to the contract term,
    b. ~~all parties'~~ that party's time and expense involved in resolving each dispute without litigation,
    c. the probability that each dispute will result in litigation,
    d. ~~all parties'~~ that party's time and expense involved in preparing for and engaging in litigation,
    e. the probability that a judicial error will result in ~~an asymmetrical~~ a transfer of money between the parties,
    f. the amount of any such ~~asymmetry~~ transfer by that party,
    g. the amount of any such transfer to that party,
    h. the date when each of the preceding gains or losses will occur, and
    i. a discount rate to apply to each future gain or loss.
4. For each alternative, add the front-end and back-end costs calculated in steps 2 and 3.
5. ~~Choose~~ Aspire to the alternative with the lowest sum calculated in step 4.[69]

2.   *Divergent Aspirations*

For any contract provision, if the cost optimization model's assumption of symmetrical information remains,[70] the sum of both parties' calculations in step 4 of this revised process should equal the amount calculated for both parties in step 4 of the original process. Despite this mathematical relationship, this individual analysis may yield different optimal choices for

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[69] *See* KOROBKIN (2014), *supra* note 30, at 260 (using "aspiration" to refer to "[t]he term or terms of an agreement that the negotiator hopes to achieve").

[70] *See supra* text accompanying note 51.

each party, and each of those choices may differ from the parties' optimal collective choice based on the original analysis. Various factors could contribute to these discrepancies.

Most obviously, each party now considers only its own costs and benefits when choosing a term to pursue. This could lead to divergent assessments of both front-end and back-end costs. For instance, on the front end, if one party's legal department negotiates the contract and the other engages an outside law firm that charges high hourly fees, the first party may have much lower front-end transaction costs (even considering the opportunity costs of its employees' time). This could lead it to prefer more precise language than the second party would, because the first could afford to devote more time to identifying and addressing specific contingencies. The second party, in contrast, may be warier of spending time on less important provisions and may prefer a higher proportion of vague terms. On the back end, similar considerations and differing litigation strategies may lead each party to expect to incur different dispute resolution expenses,[71] leading to disparate assessments of each option's costs and different language preferences.

In addition, the initial process ignores symmetrical transfers between the parties arising from judicial error, because a loss for one (e.g., damages that should have been awarded for breach of a payment obligation) accompanied by an equal gain for the other (e.g., relief from that payment obligation) does not affect the parties' *collective* wealth.[72] That process considers one party's loss or gain only to the extent that it exceeds the other's corresponding gain or loss. But if losses and gains are equal, as in a typical damages award, then back-end costs are limited to expenses like fees for attorneys and expert witnesses.

When each party seeks to optimize its *own* costs, however, that party should also consider the expected amounts of any erroneously ordered transfers to or from that party, as reflected in the changes to steps 3.e–i of the process enumerated in Section II.B.1. In other words, parties should care about not just litigation expenses but also litigation outcomes.

For instance, imagine that a consultant promises to use "commercially reasonable efforts" to provide a service to a client,[73] that the service fee is equal to both the service's value to the client and its cost to the consultant, and that the client pays the fee to the consultant in advance. The consultant makes no effort to provide the service, the client sues for breach of covenant seeking to recover the fee, and the court erroneously finds that there was no breach. With the parties' agreement as a baseline, the consultant has gained an amount equal to the fee (the avoided cost of providing the service), and

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[71] For a list of variables that could affect litigation expenses, see *infra* text accompanying note 141. Many of these variables would be different for each client, resulting in disparate back-end costs.

[72] *See supra* notes 45–47 and accompanying text.

[73] This is a common, vague standard in commercial contracts. Regarding its possible uses and interpretations, see ADAMS, *supra* note 12, at 195–98.

the client has lost the same amount (the value of the foregone service).[74] Alternatively, if the consultant takes actions that should amount to commercially reasonable efforts but does not succeed in providing the service, and the client makes the same claim as in the previous example, then a court may erroneously find that a breach has occurred. In this case, the consultant would lose, and the client would gain, an amount equal to the fee.

According to the cost optimization model, the parties would not consider either of these offsetting gains or losses in their calculation of collective back-end costs, because they constitute symmetrical transfers; instead, they would consider only their litigation expenses, like attorneys' fees. [75] However, under the revised process, each party's own cost-benefit analysis must consider any erroneous gain or loss, whether symmetrical or not. The calculation would be complicated, as each party assesses whether it is likelier to lose or to gain from an error and by how much in each case. At first glance, one might guess that the expected gains and losses often offset one another and can be ignored. But for gains and losses of equal magnitude, that guess would be correct only when a party has an even chance of gaining or losing from an error. In many situations, the likelihood of each outcome could diverge.

For example, if the consultant is very busy and plans to devote limited resources to providing the services, then it should estimate that an erroneous interpretation of the efforts standard is likelier to benefit the consultant than the client. Without making sufficient efforts, the consultant may benefit from an incorrect judgment that it has nonetheless performed the covenant, leading to an erroneous gain. But given the consultant's plans to cut corners, it is unlikely to experience an erroneous loss (i.e., to be incorrectly ordered to pay damages after fulfilling its obligation). Therefore, the net expected gain from a judicial error in the consultant's favor should be subtracted from that party's expected back-end costs associated with the vague efforts standard, like litigation expenses.[76] Depending on the other language under consideration, this may lead the consultant to prefer vagueness.

Of course, that erroneous gain for the consultant would result in an equal loss to the client. Knowing the consultant's plans under the cost optimization model's assumption of symmetrical information,[77] the client would add the amount of the consultant's net expected gain as a net expected loss to its own back-end costs. This assessment may lead it to prefer a precise term that

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[74] In contrast, if the court had *correctly* ordered the consultant to pay damages equal to the fee, then neither party would have gained or lost anything with respect to that contractual baseline.

[75] *See supra* note 46.

[76] Rather than be subtracted from the costs as this passage suggests, that gain could be added to the provision's benefits. This may appear more natural, but it would make this term have greater benefits than the alternative terms under consideration. That would not meet step 1's requirement that all those terms "provide the same benefits." Therefore, subtracting the gain from the back-end costs, though perhaps convoluted at first glance, may better enable one to compare multiple alternatives' net expected benefits.

[77] *See supra* text accompanying note 51.

spells out exactly which tasks the consultant must perform, thereby lowering the risk of an unfavorable judicial error while perhaps increasing the likelihood of performance.[78]

Consequently, each party may consider different contract language to be cost-optimal for itself. Because this conflict arises from different expected gains or losses from judicial error at the back end, similar disparities should arise more often when back-end costs are diminished less by probability and discount rates, thus constituting a greater proportion of a term's overall costs.[79] In other words, when a term seems relatively likely to result in litigation relatively soon, parties are likelier to diverge in their conceptions of the ideal language to use.

When parties prefer different language, they must negotiate to find a term that is acceptable to both by "bargaining over the share of the contracting surplus."[80] Through "surplus allocation," the parties may employ various methods and procedures to resolve their differences.[81] The term on which they ultimately agree may depend largely on each party's relative bargaining power,[82] with the result falling closer to the more dominant party's cost-optimal preference.[83] In negotiating a complete agreement, parties may make alternating concessions based on their individual priorities, an exchange called "logrolling,"[84] which could result in certain terms that are cost-optimal for one of the parties. Occasionally, a term's final language may happen to be cost-optimal for both parties, but this coincidence would not necessarily occur.

These theoretical findings comport with practical guidance and real-world observations regarding contract drafting and negotiation. If a provision seems likelier than others to be the subject of litigation, then to the extent of each party's bargaining power, it should argue for a version that would not only prevent that litigation but also enhance that party's likelihood of success in any litigation that does arise.[85] Accordingly, among nonprice terms, the most common points of disagreement in transactional negotiations

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[78] *See supra* note 33 and accompanying text.

[79] *See infra* Sections III.D.3 & III.D.4.

[80] Scott & Triantis, *supra* note 4, at 823.

[81] Korobkin (2000), *supra* note 52, at 1817–18.

[82] *See* Albert Choi & George Triantis, *The Effect of Bargaining Power on Contract Design*, 98 VA. L. REV. 1665 (2012) (exploring how contracting parties' bargaining power can affect nonprice terms, contrary to previous assertions in law-and-economics scholarship that this power affects only price).

[83] *See* AM. BAR ASS'N MERGERS & ACQUISITIONS COMM. ON NEGOTIATED ACQUISITIONS, MODEL STOCK PURCHASE AGREEMENT WITH COMMENTARY, at xii (2d ed. 2010) (attributing the choice of a stock purchase agreement's final language to three factors, including "the relative negotiating positions of the parties").

[84] Korobkin (2000), *supra* note 52, at 1813.

[85] KUNEY, *supra* note 12, at 4 (advising contract drafters to "minimize the potential for litigation, or at least the risk of loss in litigation, caused by a court adopting a different interpretation").

relate, rightly or wrongly, to "risk allocation" and contract "failure."[86] These observations depart from the original cost optimization model, which, by ignoring symmetrical transfers, presumes that the parties would focus only on litigation expenses rather than litigation outcomes. In contrast, the revised model reflects that each party may in fact *prioritize* those outcomes.

3.   Descriptive Implications

The individualized analysis could provide exceptions to the generalization that vague terms have lower front-end costs than precise terms do,[87] which underlies the cost optimization model's characterization of the choice between these options as a tradeoff between front-end and back-end costs.[88] The relative front-end costs of contract terms depend on the time and expense that each party devotes to identifying and addressing contingencies, bargaining, and drafting.[89] By their nature, precise terms generally do require more effort in identifying and addressing contingencies, which vague terms tend to omit. In a typical negotiation, however, the extent of bargaining over a term's language depends not just on the contingencies that parties must discuss, but also on the disparity between and intensity of the parties' aspirations. If those aspirations are sufficiently strong and different, with one party insisting on a vague term, then the front-end costs associated with bargaining could outweigh those associated with addressing contingencies in a precise alternative.

Continuing the previous example, imagine that the consultant determines a vague "commercially reasonable efforts" standard to be cost-optimal, and the client determines a precise set of obligations to be so. To achieve its aspiration, the consultant must convince the client to accept the vague standard. If the consultant insists on that term, and the client initially resists but eventually relents, then protracted negotiation could result in high transaction costs but vague final language. Alternatively, the consultant, perceiving the potential conflict under the assumption of symmetrical information, may decide at the outset to accede quickly to a precise rule rather than to press for the vague alternative. Assume that this particular rule does not require much additional effort in determining future contingencies or obligations, because the client can adapt fitting language from a precedent. In that case, the choice could be between (a) a vague term with higher front-end costs due to extended bargaining and (b) a precise term with lower front-

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[86] WORLD COM. & CONTRACTING, MOST NEGOTIATED TERMS 2020, at 4–6 (2020), https://www.worldcc.com/Portals/IACCM/Resources/9934_0_Most%20Negotiated%20Terms%202020.pdf (reporting the results of a global survey of contract negotiators regarding the most negotiated, important, and disputed types of terms).

[87] *See supra* notes 33–34 and accompanying text.

[88] Scott & Triantis, *supra* note 4, at 817, 836.

[89] *See supra* text accompanying note 42.

end costs due to minimal bargaining.[90] This would contradict the canonical assertion that vagueness entails lower front-end costs than precision does.

Given this possibility, when parties seek to optimize their own costs, the reasons for vagueness and precision in contracts cannot always be reduced to collective costs alone, per the original model.[91] Instead, these properties may emerge from a negotiation process in which each party prefers different language, based on expected litigation outcomes that could disparately impact their respective back-end costs.

4. *Informational Asymmetries*

So far, all of this Section II.B's findings regarding the individualized cost optimization process have been based on the original model's assumption of symmetrical information between the parties.[92] In typical contract negotiations, however, the parties do not disclose all relevant information to each other.[93] Lifting the assumption of symmetrical information to reflect this reality may change each party's analysis and decisions in various ways.[94]

Without knowing the other party's preferences in advance, each party would have to guess how much time is involved in "bargaining over the share of the contracting surplus" with respect to each alternative. If a party expects the other to strongly oppose a given approach to drafting a term, then that party may ascribe higher front-end costs to that language because it may entail a prolonged negotiation. If these expectations are based on guesses or generalizations (e.g., that this kind of actor in this sector in this market tends to prefer this kind of provision) rather than specific information, then parties will sometimes make calculation errors and propose terms that are not cost-optimal for anyone.

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[90] In contract law scholarship, perhaps the most widely discussed example of an extensively negotiated term that is nonetheless drafted vaguely is the definition of *material adverse change* in M&A contracts. *E.g.,* Choi & Triantis (2010), *supra* note 3, at 853 ("Vague clauses, such as MAC conditions, are among the most heavily negotiated nonprice terms.").

[91] *See supra* notes 35–39 and accompanying text.

[92] *See supra* text accompanying note 51.

[93] Ronald J. Gilson, *Value Creation by Business Lawyers: Legal Skills and Asset Pricing*, 94 YALE L.J. 239, 267 (1984) (noting "the failure of the costless information assumption"); Choi & Triantis (2010), *supra* note 3, at 856 ("The challenge of contract design is largely the management of information problems. In particular, each party has some private information that is not known by the other (the problem of *observability*). Each party knows its vulnerability to the information advantage of the other, and this impedes efficient exchange.") (emphasis in original). *See also supra* text accompanying note 62.

[94] Indeed, before the cost optimization model was promulgated, scholars had established that information asymmetry could lead to inefficient terms for several other reasons. *E.g.*, Ayres & Gertner, *supra* note 3, at 101–02 (exploring how the withholding of information can result in inefficient risk allocations between contracting parties). In addition, much legal and economic literature has explored how each party may engage in inefficient screening or signaling behavior "to conceal its own information and extract the private information of its counterpart." Choi & Triantis (2012), *supra* note 82, at 1688.

A party may learn of certain errors of this kind after speaking with their counterpart and learning their preferences, but its ability to then correct these errors may depend on the nature of the negotiation. Because negotiators often become "locked in" to their initial positions in adversarial processes,[95] they may find it difficult to change course even after learning new information. This would be especially challenging if their initial miscalculation had been in the counterparty's favor; in that case, to correct the error, they would have to revise a relatively agreeable request to a relatively demanding one. This maneuver could engender discontent and delays in the negotiation process, inefficiently increasing front-end costs.

More often, given parties' incentives to safeguard certain private information,[96] asymmetrically informed parties will not learn of errors in their cost calculation processes at all, even after speaking with their counterparts. In our previous example, a consultant who intends to devote limited resources to the project would probably not reveal that intention. Therefore, before signing the agreement, the client will not learn of the exact degree of effort that the consultant will use. Without that information, the client may underestimate the probabilities that a dispute would arise and that a court would incorrectly interpret a vague obligation in the consultant's favor.[97] Consequently, by undervaluing that term's back-end costs, the client would arrive at a suboptimal aspiration on which to base its negotiation strategy. Namely, it would more likely agree to a vague standard that the consultant may then exploit, when in fact a precise set of obligations would be cost-optimal for the client.

Accordingly, when parties lack relevant facts, calculation errors could impede cost optimization. To prescribe truly optimal strategies for each party, a robust conception of contract design must account for the informational asymmetries endemic to negotiations. Unlike the original model's idealized joint optimization process, the individualized model can better reflect transactional practice by eliminating the fanciful assumption that parties openly exchange all their knowledge.

C.   *Theoretical Advances*

Overall, adjusting the cost optimization model so that each party economizes its own costs, not those of the collective, generates predictions that align more closely with observations of real-world contract negotiations. This holds even when informational symmetry remains assumed, per the original model, but relaxing this assumption increases the portrayal's accuracy further. Either way, this updated model bridges the "gap between theory and practice"[98] more closely than the existing account does.

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[95] Menkel-Meadow, *supra* note 52, at 778. This tendency exemplifies "status quo bias"—that is, the tendency to prefer the present situation by "doing nothing or maintaining one's current or previous decision." William Samuelson & Richard Zeckhauser, *Status quo bias in decision making*, 1 J. RISK & UNCERTAINTY 7, 8 (1988).

[96] *See supra* text accompanying note 62.

[97] *See supra* text accompanying note 77.

[98] Scott & Triantis, *supra* note 4, at 817.

Accordingly, the revised model provides a sounder basis on which to prescribe bargaining and drafting strategies. Most fundamentally, when considering back-end contracting costs under different language choices, attorneys should focus not on the parties' collective litigation expenses but on their clients' expenses and, often more importantly, their clients' potential liability.

Despite its heightened accuracy and utility, the individualized cost optimization model may not provide an elegant explanation for "the mix of vague and precise terms that characterize the typical commercial contract,"[99] as the original account purports to do. Under the revised model, that mix cannot simply "be framed as the product of a tradeoff that the parties have made in investing in the front end or back end of the contracting process,"[100] because a term's front-end costs depend not only on vagueness or precision but also on the extent of negotiation.[101] Given the many factors that affect bargaining activities—like imperfect information, human relationships, and negotiation strategies—any accurate explanation for contract language's nuances should reflect those intricacies, not gloss over them.

Notwithstanding this Part's improvements, the next Part describes the practical obstacles facing any optimization method, no matter how theoretically robust, in the complex and uncertain environment of negotiated business contracts.

III. OBSTACLES TO COST OPTIMIZATION

A. *Rationality in Decision-Making*

Whether in its original form or the improved one presented in Part II, the cost optimization model is firmly rooted in rational choice theory, "the heart of modern microeconomic theory."[102] Specifically, it depends on the "expected utility" version of this theory, in which "decision makers conduct an explicit or implicit cost-benefit analysis of competing options and select the optimal method of achieving their goals (i.e., the method that maximizes net expected benefits), subject to external constraints."[103]

Although this conception of "axiomatic rationality . . . has come to dominate economics,"[104] it has received extensive criticism in recent decades, most famously by the behavioral scientists Amos Tversky and

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[99] *Id.*

[100] *Id.*

[101] *See supra* Section II.B.3.

[102] Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CALIF. L. REV. 1051, 1060 (2000).

[103] *Id.* at 1063; *accord* Melvin Aron Eisenberg, *The Limits of Cognition and the Limits of Contract*, 47 STAN. L. REV. 211, 213 (1995) ("According to the standard economic model of choice, an actor who must make a choice in the face of uncertainty will rationally select the option that maximizes his subjective expected utility. Rationality requires, among other things, that when consequences are uncertain, their likelihood is evaluated without violating the basic rules of probability theory.").

[104] KAY & KING, *supra* note 15, at 133.

Daniel Kahneman. They stated that the expected utility model "was conceived as a normative model of an idealized decision maker, not as a description of the behavior of real people."[105] In their many experiments, actual behavior deviated widely, systematically, and fundamentally from that model.[106]

Much of this deviation arises from "bounded rationality," which "captures the insight that actors often take shortcuts in making decisions that frequently result in choices that fail to satisfy the utility-maximization prediction." [107] Instead, people often engage in "satisficing"—that is, choosing an alternative that is merely "good enough" for a given purpose rather than one that truly maximizes utility.[108] For many decisions, people rely on intuitive heuristics (as opposed to deliberate heuristics), which arguably introduce corresponding biases and errors.[109] Another aspect of bounded rationality is "that actors will not process information perfectly even if they wish to do so, because human ability to calculate consequences, understand implications, and make comparative judgments on complex alternatives is limited." [110] These limitations affect all groups of people, including those involved in drafting commercial contracts, like business executives and their advisors. [111] Given these cognitive constraints, "real people" do not even attempt to "[optimize], calculate subjective probabilities and [maximize] expected utilities."[112]

Despite its deep influence in academia, axiomatic rationality describes only "the small worlds created for the purposes of economic modelling and experimental psychology,"[113] "in which rational [behavior] can be reduced to a mathematical calculation in the context of a well-defined problem and complete knowledge of the environment."[114] Axiomatic rationality is not "relevant to large worlds, in which problems have no well-defined solutions" and "of which [humans] can only ever have imperfect knowledge." [115]

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[105] Amos Tversky & Daniel Kahneman, *Rational Choice and the Framing of Decisions*, 59 J. Bus. S251, S251 (1986).

[106] *Id.* at S252; Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 Stan. L. Rev. 1471, 1478 (1998) (arguing that "expected utility theory is not a good description of actual decisionmaking").

[107] Korobkin & Ulen, *supra* note 102, at 1075.

[108] Herbert A. Simon, *Invariants of Human Behavior*, 41 Ann. Rev. Psychol. 1, 17 (1990). Despite its departure from utility maximization, satisficing "in practice can deliver superior outcomes to actions selected by [optimizing behavior]." Kay & King, *supra* note 15, at 150.

[109] *See supra* text accompanying notes 18–20.

[110] Eisenberg, *supra* note 103, at 216.

[111] *See* Dan Lovallo & Daniel Kahneman, *Delusions of Success: How Optimism Undermines Executives' Decisions*, Harv. Bus. Rev., Jul. 2003, at 56–63; Clayton P. Gillette, *Commercial Relationships and the Selection of Default Rules for Remote Risks*, 19 J. Leg. Stud. 535 (1990).

[112] Kay & King, *supra* note 15, at 152.

[113] *Id.* at 155.

[114] *Id.* at 170.

[115] *Id.* at 146–48.

Outside "elementary games of chance,"[116] humans generally inhabit these large worlds, in which a different conception of rationality is needed to describe and prescribe realistic decision-making strategies.

To this end, many economists and psychologists have presented "*evolutionary* or *ecological* rationality" as a better measure of such a strategy's fitness for a particular purpose, "more relevant to the large worlds in which we all function."[117] In Herbert Simon's famous metaphor, "[h]uman rational behavior . . . is shaped by a scissors whose two blades are the structure of task environments and the computational capabilities of the actor." [118] Accordingly, in contrast to axiomatic rationality's focus on absolute utility maximization, a strategy's ecological rationality depends on its success in its applicable environment when performed by real people.[119] By accounting for human abilities and limitations, ecological rationality has proven more accurate and effective than axiomatic rationality.[120]

Consistent with these rejections of rational choice theory in general, this Part explains how humans' cognitive constraints could prevent contracting parties and their representatives from choosing optimal language through the rigorous cost-benefit analysis suggested by traditional contract theory. It thereby extends the longstanding critiques of axiomatic rationality to one of its most pervasive manifestations in legal scholarship: the cost optimization model. This analysis applies equally to that model's original formulation described in Part I and to the improved version developed in Part II.

B.   *Benefit Calculations*

As delineated in Sections I.B and II.B.1, the first step in cost optimization is to identify alternative terms that provide equal benefits, so that the term with the lowest overall costs maximizes utility. Alternatively, one could arrive at the same outcome by comparing both costs and benefits of each identified term and choosing the one with the highest net expected benefits. Either way, to find the optimal term, one must precisely quantify the monetary benefits arising from each alternative to permit comparisons with other alternatives and with the same alternative's expected costs.[121]

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[116] *Id.* at 109.

[117] *Id*. at 172; *accord* Todd & Gigerenzer, *supra* note 22; Vernon L. Smith, *Prize Lecture: Constructivist and Ecological Rationality in Economics* (Dec. 8, 2002), https://www.nobelprize.org/prizes/economic-sciences/2002/smith/lecture.

[118] Simon, *supra* note 108, at 7.

[119] Todd & Gigerenzer, *supra* note 22, at 5, 14.

[120] KAY & KING, *supra* note 15, at 153.

[121] Korobkin & Ulen, *supra* note 102, at 1064 (identifying "commensurability" (i.e., that "actors should be able to compare the utility consequences of all alternatives to each other") as one of several "necessary (but not sufficient) conditions of rational behavior under the expected utility model," without which one "cannot be making decisions consistent with [that] model"); Richard Layard & Stephen Glaister, *Introduction* to COST-BENEFIT ANALYSIS 1, 2 (Richard Layard & Stephen Glaister eds., 2d ed. 1994) (explaining that cost-benefit analysis requires one "to assign numerical values to costs and benefits").

Unfortunately, the "wording of contractual language" involves "a space with virtually infinite alternatives,"[122] so one could easily omit the truly optimal term from consideration. In that case, even when performing the rest of the cost-benefit analysis perfectly, one would identify not the most efficient possible language, but just the best of the options that one happens to contemplate.

Once alternatives are identified, their benefits must be calculated. In general, the benefits of a contract provision take the form of the parties' resulting incentives.[123] In some cases, these incentives may be more easily reducible to monetary values. For example, an obligation by a creditworthy party to pay $1 million today would have an expected value to the recipient of close to $1 million. If that obligation were conditioned upon an event with a 50 percent probability of occurrence, then the value would decrease to an amount closer to $500,000.

For the nonmonetary provisions that comprise the bulk of business contracts, however, it may be more difficult to reduce the associated incentives to precise monetary values. For instance, an employment agreement could permit the company to terminate an executive's employment for "gross misconduct" (a vague standard) or could instead refer to specific types of conduct, like a sexual relationship with a coworker (a precise rule). A termination right has value both in granting desired authority to the company and in deterring the undesired behavior that triggers the right. Therefore, each provision's benefit to the company should equal (a) the value that the company places on avoiding each type of misconduct, multiplied by the probability that the provision would deter that misconduct, *plus* (b) the value that the company places on the right to terminate an executive who engages in that misconduct, multiplied by the probability that the misconduct would occur despite the provision. Theoretically, these values could be reduced to monetary amounts, perhaps based on the company's willingness to compensate the executive for each provision. In practice, however, contracting parties would find it profoundly difficult and expensive to valuate nonmonetary provisions accurately or consistently.[124]

Without precise, commensurable assessments of each alternative's benefits, parties cannot reliably compare them to other alternatives' benefits or to the same alternative's expected costs. Even when these calculations and comparisons are feasible, the terms under consideration would rarely have exactly equal benefits, because in themselves, precision and vagueness can each yield various benefits to one or both parties.[125] These practical limitations would undermine an optimization process from the start.

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[122] Nyarko, *supra* note 11, at 28.

[123] *See supra* note 41.

[124] *See* Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1553, 1569 (2002) (explaining the difficulty and cost involved in "creat[ing] artificial prices for environmental values" in the context of environmental regulation).

[125] *See supra* notes 28–31 and accompanying text.

C. *Front-End Cost Calculations*

If parties manage to identify alternative terms with identical benefits despite these obstacles, the second step is to calculate each term's front-end costs. Given their immediacy, these costs should be easier to determine than the more remote back-end costs. However, even this seemingly straightforward assessment is not free of cognitive challenges.

In particular, "foreseeing possible future contingencies" and "determining the efficient obligations that should be enforced in each contingency" could confound many contracting parties.[126] Indeed, this is the essence of a common explanation for vagueness in contracts: people sometimes find it too difficult to predict the contingencies needed to draft a precise term without errors and omissions.[127] Even some of the cost optimization model's foundational articles acknowledge "bounded rationality" as one reason why parties would opt for vagueness.[128] Therefore, it is puzzling that those articles do not seem to recognize that the same human limitation could prevent parties from calculating each option's front-end costs, not to mention its even more distant back-end costs. This is ironic because the concept of bounded rationality emerged as a criticism of utility maximization frameworks of the cost optimization model's very nature.[129]

When cognitive constraints prevent contracting parties from accurately predicting and addressing future contingencies in the manner needed to draft a precise term, how can we expect the same people to calculate the costs involved in performing those tasks so that they can decide whether to attempt to draft that term?[130] Instead, when parties cannot foresee and account for future contingencies, perhaps a precise term is not a realistic option and should not be considered in an optimization process.

However, even when precision does appear feasible, parties may find it exceedingly difficult to estimate the associated transaction costs before actually incurring them. At a deal's outset, one can rarely predict how long it will take to bargain over and formulate a given contract provision, even under the cost optimization model's idealistic assumption of symmetrical information.[131] In the more realistic situation of informational asymmetries,

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[126] *See supra* text accompanying note 42.

[127] *See supra* note 29.

[128] Scott & Triantis, *supra* note 4, at 846 ("A retrospective determination of performance [of a vaguely worded obligation] can economize on having to specify state-contingent performance measures and compensate for the parties' bounded rationality."); Choi & Triantis (2010), *supra* note 3, at 883 ("Vague terms . . . reduce the risk of errors of over- and under-inclusiveness stemming from precise terms, due to bounded rationality.").

[129] *See supra* text accompanying note 107.

[130] This question echoes a critique by Eric Posner that a separate law-and-economics "model simultaneously assumes that individuals can foresee remote events and make complex calculations . . . and cannot engage in a perfect cognitive response . . . The assumptions are jointly implausible." Eric A. Posner, *Economic Analysis of Contract Law after Three Decades: Success or Failure*, 112 YALE L.J. 829, 867 (2003).

[131] *See supra* note 51 and accompanying text.

one must guess how the counterparty will negotiate, [132] making these predictions even more difficult. The time required to negotiate a provision depends on several volatile factors, including the difference between the parties' initial bargaining positions, the approaches and personalities of their representatives, and the interaction between that term and others under discussion. [133] Often, these factors' impacts do not become clear until the negotiation is well underway, when the parties have already incurred much of a particular term's transaction costs.

Therefore, in many cases, advance calculation of front-end costs may be either impossible or unreliable enough to undermine the comparison. Unlike back-end costs, front-end costs are not discounted, such that any errors appear undiluted when all costs are aggregated at the end. [134] Accordingly, though it should generally be easier to estimate proximate transaction costs than to predict distant enforcement costs, accuracy at the front end is more essential to the overall calculation.

D.   *Back-End Cost Calculations*

As the litany of factors listed under step 3 in Sections I.B and II.B.1 suggests, the back-end costs associated with different contract terms present even greater cognitive challenges than do the more readily ascertainable front-end costs.

1.   *Predicting Disputes*

To take the first step of determining the probability of a future dispute, the parties must imagine the kinds of disagreements that could arise under each alternative contract term under consideration. However, their ability to do even this, before the complex mathematical operations of assessing costs and assigning probabilities, is often questionable under the constraint of bounded rationality. [135]

Instead, parties at the time of contracting tend to consider only obvious possibilities, disregarding many other risks to their relationship or transaction, even substantial ones. [136] Moreover, they frequently "ignore low probability events, regardless of the losses they generate should they

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[132] *See supra* Section II.B.4.

[133] Regarding negotiation dynamics, see *supra* Section II.A.

[134] *See supra* note 36 and accompanying text.

[135] Eisenberg, *supra* note 103, at 227 (noting, in the context of liquidated damages clauses, that "at the time the contract is made it is often impracticable, if not impossible, to imagine all the scenarios of breach.").

[136] Gillette, *supra* note 111, at 552–53 ("Bounded rationality models suggest individuals will not consider all risks that threaten their commercial relationships or all events expected value sufficient to justify consideration. Instead, individuals will consider only events or outcomes sufficiently salient to be brought readily to mind; they will resolve issues sequentially rather than comprehensively. Given bounded rationality, complete contracting is impossible, even with respect to events with expected values sufficiently high to warrant negotiation.").

arise,"[137] such that these events would not even figure into their optimization processes. Even when certain disputes are envisioned, the subjects of actual litigation are "often so different from what anyone negotiating the contract anticipated." [138] With these limitations, many contracting parties would stumble on the back-end cost calculation's very first step and compromise the remaining computations, which critically depend on the identification of possible disputes.

2. *Assessing Dispute Resolution Costs*

If a party does succeed in predicting certain kinds of disputes, then it must calculate the time and expense involved in resolving each dispute either with or without litigation. To facilitate a choice among alternative contract terms, the assessment must be accurate enough to permit distinctions among the back-end costs that would arise under each alternative. According to the cost optimization model, a vague standard would generally involve greater litigation costs than a precise rule, as the parties submit to a court competing evidence regarding the standard's proper interpretation.[139] But this general observation does not enable parties to assign probabilities and discount rates to arrive at a meaningful estimate of overall back-end contracting costs, which can then be added to the calculation of front-end costs. For this essential step in an optimization process, one needs actual numbers.

In assessing litigation costs, informational limitations may be even more critical than cognitive ones. Even a perfect specimen of *homo economicus* would often find it difficult to obtain and process the data needed to predict litigation costs within a usable degree of accuracy.[140] The variables that contribute to a litigation's overall costs are probably countless. At a minimum, they include the forum (including possible removal from state to federal court), the judge, the presence or absence of a jury, the extent of discovery, the number and complexity of the documents and other records to be used as evidence, the cost of obtaining that evidence, the number of expert witnesses, the fees charged by each witness, the law firm representing each party, the attorneys within each firm assigned to the case, fees charged for each of those attorneys' work, the extent of collaboration between each party's litigation teams, the opportunity cost of participation by each party's personnel in litigation activities, each party's strategies in preparing for and conducting the litigation, whether either party appeals the decision, and the

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[137] *Id.* at 558; *accord* Eisenberg, *supra* note 103, at 228 (citing studies of disaster insurance to illustrate that "empirical evidence shows that people often not only underestimate but ignore low-probability risks."). In contrast to outright ignorance, when people happen to recognize a substantial but low-probability risk, they often make the opposite mistake by assigning excessive weight to it, through a tendency called "probability neglect." *See infra* notes 168–171 and accompanying text.

[138] Steven L. Schwarcz, *Explaining the Value of Transactional Lawyering*, 12 STAN. J.L. BUS. & FIN. 486, 496 (2007).

[139] Choi & Triantis (2010), *supra* note 3, at 882.

[140] Richard A. Posner, *supra* note 8, at 1613 (acknowledging "the difficulty of predicting expected litigation costs" and "profound uncertainty" in the context of contract design).

extent to which insurance covers each party's costs.[141] To an extent, some of these factors may be controllable or predictable upon contract formation, but most are neither.

Even at litigation's onset, "it is nearly impossible to predict . . . how long litigation may last, or how costly it may be. This inevitable uncertainty is due in part to the complex and unpredictable nature of litigation, the many variables involved, and the inability to measure certain risks."[142] If those predictions are "nearly impossible" on a lawsuit's eve, then they must be absolutely impossible several years earlier, when parties may draft the agreement from which the dispute eventually arises. At that stage, the possible outcomes are not identifiably stationary but unforeseeably dynamic, because they depend on the parties' future behavior as well as exogenous events.[143]

A century ago, the economist Frank Knight distinguished between "measurable risk" and "unmeasurable uncertainty,"[144] a dichotomy that John Maynard Keynes later echoed.[145] Although rational choice theory ignored this distinction, [146] the rise of behavioral science demonstrated its importance,[147] and it is now considered a basic, uncontroversial principle of economics.[148] According to this dichotomy, "[i]n a situation of risk, the exhaustive and mutually exclusive set of future states are known and their consequences and probability distribution can be foreseen with certainty,"[149] as in a "small-world" game of chance. In contrast, uncertainty is "defined by the absence of perfect foresight, where the full set of states, their consequences, or the probabilities are not known or knowable."[150] Amid uncertainty, "[o]ptimization is by definition impossible."[151]

In these terms, upon contract formation, future dispute resolution costs are clearly a matter of uncertainty, not risk. They depend on so many

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[141] *Id.* at 1612; Choi & Triantis (2010), *supra* note 3, at 882; Paula Hannaford-Agor, *Measuring the cost of civil litigation: Findings from a survey of trial lawyers*, VOIR DIRE, Spring 2013, at 22; AM. BAR ASS'N, SECTION LITIG., MEMBER SURVEY ON CIVIL PRACTICE: DETAILED REPORT (Dec. 11, 2009); *Litigation Budget Template*, THOMSON REUTERS PRAC. L., https://us.practicallaw.thomsonreuters.com/7-525-8883 (last visited February 1, 2022).

[142] Marcellus A. McRae & Kahn A. Scolnick, *Case Assessment and Evaluation*, THOMSON REUTERS PRAC. L., https://us.practicallaw.thomsonreuters.com/4-525-8907 (last visited February 1, 2022).

[143] Regarding "non-stationarity," see KAY & KING, *supra* note 15, at 349.

[144] KNIGHT, *supra* note 15, at 20.

[145] JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY 213–14 (1936).

[146] KAY & KING, *supra* note 15, at 12–16.

[147] Tim Rakow, *Risk, uncertainty and prophet: The psychological insights of Frank H. Knight*, 5 JUDGMENT & DECISION MAKING 458–66 (2010).

[148] *See, e.g.,* ROBERT S. PINDYCK & DAIEL L. RUBINFELD, MICROECONOMICS 179–185 (9th ed. 2018).

[149] Shenghua Luan et al., *Ecological Rationality: Fast-and-Frugal Heuristics for Managerial Decision Making under Uncertainty*, 62 ACAD. MGMT. J. 1735, 1738 (2019).

[150] *Id.*

[151] *Id.*; *accord* KAY & KING, *supra* note 15, at 320 ("Radical uncertainty precludes optimising behaviour.").

unknowable factors that nobody could estimate them with any useable degree of accuracy. As a result, parties cannot optimize these immeasurably uncertain costs through a cost-benefit analysis.

Moreover, if contracting parties ignored this impossibility and attempted to estimate dispute resolution costs anyway, they would need not only divine clairvoyance but also expertise in civil litigation, which the transactional lawyers who draft contracts typically lack.[152] In a large firm, these attorneys could seek advice from their colleagues in the litigation department, but such intrafirm knowledge transfer, though advisable, rarely happens in practice.[153] Even when it does, litigators are unequipped to estimate litigation costs at the drafting stage, due to those amounts' inherent uncertainty and to the same cognitive limitations that affect everyone else, including overconfidence.[154] Therefore, if a client were to request such an estimate based only on contract language choices, a careful and ethical attorney would hesitate to provide a highly speculative answer, instead giving an extremely broad range or simply explaining why the question is unanswerable.[155]

The involvement of additional attorneys, perhaps performing research and writing memoranda, would typically add to the client's bill. This introduces another problem with predicting litigation costs: the cost of prediction itself. In an optimization process, any such investigation expenses should be added to the front-end transaction costs.[156] Beyond a certain threshold, these further expenditures may outstrip cost optimization's potential benefits, which, at a maximum, equal the difference in total (i.e., front-end and back-end) contracting costs between the most and least expensive alternatives under consideration. Those investigation expenses would deter cost-sensitive parties from even attempting cost optimization in

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[152] *See* GULATI & SCOTT, *supra* note 8, at 150 (finding that, in large law firms, knowledge of "the risk of using one form of clause over another . . . is not systematically transferred to the transactional lawyers who are drafting new contracts.").

[153] *Id.* at 4 (noting "little evidence of interaction among transactional lawyers and litigators" during interviews with attorneys in law firms over several years).

[154] Robert J. Rhee, *A Price Theory of Legal Bargaining: An Inquiry into the Selection of Settlement and Litigation under Uncertainty*, 56 EMORY L.J. 619, 642 (2006) ("Most attorneys and their clients lack sufficient trial experience to assess the probability of how a deliberative body would decide."); Jane Goodman-Delahunty et al., *Insightful or Wishful: Lawyers' Ability to Predict Case Outcomes*, 16 PSYCH. PUB. POL'Y & L. 133, 149 (2010) (finding, through a "study of the ability of lawyers to predict the outcome of their cases," that "[l]awyers frequently made substantial judgmental errors, showing a proclivity to overoptimism."). Regarding the bias of overconfidence, see *infra* text accompanying notes 172–179.

[155] Speculative, unsubstantiated predictions of litigation costs could violate a lawyer's ethical duty to provide honest advice. *See* MRPC, *supra* note 64, at r. 2.1 cmt. 1.

[156] *See* Eisenberg, *supra* note 103, at 216 ("An actor's total utility from a decision depends not only on the substantive merits of the decision, but also on the costs of the decisionmaking procedure."). *But see* KAY & KING, *supra* note 15, at 150–51 ("The implications of bounded rationality are not represented by adding computational costs to an optimisation problem. Bounded rationality as proposed by [Herbert] Simon reflects the challenges of making decisions governed by reason and logic under radical uncertainty in which no computable solution is available.").

the first place.[157] Instead, unless a vague standard would provide a potential advantage other than front-end cost savings,[158] their money may be better spent on just formulating a precise rule than on the staggering task of calculating each option's back-end costs.[159] Given these costs' systemic uncertainty and the additional expenditures required even to estimate them, any such assessment upon contract formation would be both futile and wasteful.

3.   *Assigning Probabilities*

If somehow the parties manage to arrive at predictions of dispute resolution costs nonetheless, their challenges will compound, and their estimates will become less accurate, when they proceed to assign probabilities to unknown future events that would affect those costs. In general, if a decision maker "can neither estimate the likelihood of [an adverse future event] nor obtain information that would allow him to do so, it becomes impossible for him to make the type of optimizing decision that rational choice theory predicts."[160] Frustrating this goal are various intuitive

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[157] *See* Korobkin & Ulen, *supra* note 102, at 1078 ("Decision researchers have identified the complexity of a decision as a leading cause of departures from the type of complete cost-benefit analysis of decision options predicted by expected utility theory. Acting consistently with expected utility theory requires a substantial amount of cognitive effort. As the problem becomes more complex, either because there are more options from which to select or because each option has more attributes associated with it, actors might attempt to minimize effort by adopting simplified strategies, thus violating the procedural predictions of rational choice theory.").

[158] Regarding vagueness's other potential advantages, see *supra* notes 28–31, 76, and accompanying text.

[159] These considerations of investigation costs echo Eric Posner's criticism of the cost optimization model's analogous precursor in the public law realm, which addresses the choice between precise rules and vague standards in laws and regulations. *See supra* note 4 and accompanying text. According to Professor Posner, the total cost of a legal system "is a function both of the content of the law and of the *process* by which it is created (rule or standard)." Eric Posner, *Standards, Rules, and Social Norms*, 21 HARV. J. L. & PUB. POL'Y 101, 104 (1997). A legislature could determine that cost "by using rough, intuitive guesses of the value of the variables in [the relevant expected utility] model" or by "sponsoring hearings and studies for the purpose of obtaining more precise estimates." *Id.* To choose between these two options, however, the legislature may need to "sponsor a study to determine the most efficient method for determining the method used to determine which process to use to create the law." *Id.* This would ultimately lead to an "infinite regress" or at least a string of inquiries with no predictable end. *Id.* at 105. Although Professor Posner does not consider this problem to afflict all cost-benefit analyses in the law, he finds it "hard to ignore in discussions about how laws allow legislatures, courts, and other agencies to economize on their lawmaking costs." *Id.* at 106. Regarding a similar concern in decision-making more generally, see Giovanni Dosi et al., *Rational Heuristics? Expectations and Behaviors in Evolving Economies with Heterogeneous Interacting Agents* 3 n.5 (NBER Working Paper No. 26922, Apr. 2020) ("Even if individuals were to have sufficient information on the basis of which to make such a decision 'rationally,' the question would arise how do they make a decision about the allocation of effort to obtain the information necessary to make that decision. Somewhere in this infinite regression, the assumption of rationality has to break down.").

[160] Korobkin & Ulen, *supra* note 102, at 1083.

heuristics (as opposed to deliberate heuristics)[161] and corresponding biases that can each cause "systematic errors" in probability assessments.[162]

According to the availability heuristic, a person estimates the likelihood of an event "by the ease with which instances or associations come to mind"—that is, based on the most easily remembered or imagined comparable data and situations, rather than on objective frequency.[163] This tendency could skew contracting parties' probability calculations in various ways. First, it could lead one "to give undue weight to his present intention to perform, which is vivid and concrete, as compared with the abstract possibility that future circumstances may compel him to breach."[164] Parties may thereby underestimate the probability that their own acts or omissions will cause a dispute. Second, the opposite effect could occur if a party has learned of "remote risks that have materialized in transactions to which they were not parties."[165] In that case, the availability heuristic may cause them "to overestimate [those risks'] likelihood and assign them excess expected values, which in turn result in a specific allocation of the risk not warranted by the objective probability of its occurrence."[166]

Another impediment to accurate probability assessments is "loss aversion," the widespread tendency to value losses more highly than gains of the same value. People seem to find "the aggravation . . . in losing a sum of money . . . to be greater than the pleasure associated with gaining the same amount." [167] Accordingly, in contract formation, parties considering the prospect of a substantial loss—perhaps in the form of an expensive litigation arising from a dispute over the meaning of a vague term—"may elevate their concerns about [that] loss over their calculations of expected value and thus avoid risk of substantial loss regardless of probability." [168] Statistically, compared with the number of business contracts that are formed, "significant" disputes are very uncommon, litigation is extremely so, and trials are "vanishingly rare."[169] Therefore, when calculating back-end costs

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[161] *See supra* text accompanying notes 18–20.

[162] Korobkin & Ulen, *supra* note 102, at 1085 ("Often, systematic errors arise from the use of decision-making heuristics that simplify decision-making tasks, thus significantly reducing the costs of information processing and decision making, thereby rendering it possible to operate in an increasingly complex world. In some cases, systematic decision-making errors might be the result of perceptual biases that may be, on balance, evolutionarily adaptive. But whether or not the well-documented collection of heuristics and biases are rational adaptations in a global sense, they have the consequence of causing actors to make decisions that violate the predictions of rational choice theory in individual circumstances.").

[163] Amos Tversky & Daniel Kahneman, *Availability: A Heuristic for Judging Frequency and Probability, in* 5 Cognitive Psychol. 207, 208 (1973).

[164] Eisenberg, *supra* note 103, at 228.

[165] Gillette, *supra* note 111, at 553.

[166] *Id*. at 553–54.

[167] Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision under Risk*, 47 Econometrica 263, 279 (1979).

[168] Gillette, *supra* note 111, at 555.

[169] John H. Langbein, *The Disappearance of Civil Trial in the United States*, 122 Yale L.J. 522, 524 (2012); Schwarcz, *supra* note 138, at 496 (reporting that, in a survey of 75

associated with different contract terms, a party may commit "a form of probability neglect"[170] by assigning an irrationally high probability to a significant loss associated with one drafting approach, even if the loss is unlikely to occur and would do so, if at all, only in the distant future.[171] This misperception could deter a party from that approach even when it would maximize utility.

In contrast to loss aversion, the bias of overoptimism or overconfidence can have opposite effects. "By a number of metrics and across a variety of domains, people have been found to assign higher probabilities to their attainment of desirable outcomes than either objective criteria or logical analysis warrants."[172] Notably, this bias is exacerbated "under conditions of greater uncertainty,"[173] "when the outcome of [people's] predictions will not be revealed for some time,"[174] or when a negative event is perceived as within an actor's control.[175] All of these circumstances would typically attend a person who, before agreeing to a contract, attempts to predict the likelihood of a contractual dispute. After all, with respect to a given agreement, disputes are statistically rare, temporally distant, undesired, and often within one or more parties' control.[176]

As a result, overoptimistic contracting parties would underestimate the probability of disputes and overestimate the probability of their painless resolution.[177] These estimates may be especially unreliable in relationships that are "personally intensive, broad in scope, and potentially long-lasting."[178] In those cases, "each party is likely to be unduly optimistic about the relationship's long-term prospects and the willingness of the other party

lawyers and 17 clients, both groups "said that only about two percent of contracts actually end up in litigation"); Tim Cummins, *Are you in an adversarial industry? Insights for contract negotiators and managers*, INT'L ASS'N FOR CONT. & COM. MGMT. (Apr. 23, 2014), https://blog.iaccm.com/commitment-matters-tim-cummins-blog/2014/04/23/are-you-in-an-adversarial-industry-insights-for-contr (reporting that, according to a global survey of 1,786 organizations, "approximately 9% of contracts experience a significant claim or dispute," and "formal disputes" appear to arise in less than 0.1% of contracts).

[170] Cass R. Sunstein, *Probability Neglect: Emotions, Worst Cases, and Law*, 112 YALE L.J. 61, 65 (2002) (explaining that people give "excessive weight to low-probability outcomes when the stakes are high").

[171] Regarding the impact of a loss's timing, see *infra* note 188 and accompanying text.

[172] David A. Armor & Shelley E. Taylor, *When Predictions Fail: The Dilemma of Unrealistic Optimism, in* HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT 334 (Thomas Gilovich et al. eds., 2002); *accord* Jolls et. al., *supra* note 106, at 1524. *But see* KAY & KING, *supra* note 15, at 167 (doubting whether optimism should be characterized as a "bias" that leads to "errors in calculations of subjective expected utility").

[173] Armor & Taylor, *supra* note 172, at 338.

[174] *Id.* at 339.

[175] Neil D. Weinstein, *Unrealistic Optimism About Future Life Events*, 39 J. PERSONALITY & SOC. PSYCHOL. 806, 814 (1980).

[176] *See supra* note 169 and accompanying text.

[177] Eisenberg, *supra* note 103, at 227 ("Because actors tend to be unrealistically optimistic, a contracting party will probably believe that his performance is more likely, and his breach less likely, than is actually the case.").

[178] *Id.* at 251.

to avoid opportunistic behavior or unfair manipulation of the relevant contractual rules as the relationship unfolds."[179]

Together, these various biases could skew contracting parties' probability assessments in different directions under different circumstances. There is no reason to expect conflicting tendencies to cancel one another out and leave a cost-effective result. Instead, multiple cognitive impediments could simply reinforce one another in undermining the back-end cost calculation, ultimately frustrating the larger optimization effort.

To overcome these obstacles and estimate probabilities more accurately, parties may need to engage yet more experts. Just as litigators may be necessary to estimate litigation costs, actuaries trained in assessing insurance risks may be best equipped to assign probabilities to those costs.[180] Once again, the additional expense of hiring these experts would have to be added to front-end transaction costs and would deter cost-sensitive parties from any serious effort to calculate back-end costs.[181] Moreover, even if parties did incur this expense, the inherent uncertainty of litigation would prevent accurate probability assessments even by unbiased actuaries, who could not conceivably obtain all the information required by their models.[182] Like any attempt upon contract formation to estimate unweighted dispute resolution costs, any concerted effort to determine those costs' probabilities would not only waste time and money but also fail to produce useful results.

4.   *Predicting Dates and Applying Discount Rates*

The cost optimization model proposes a form of intertemporal choice—that is, a decision "in which the timing of costs and benefits are spread out over time." [183] With respect to the time when parties choose contract language, they incur front-end transaction costs in the present or the immediate future, and any back-end enforcement costs typically lie in the more distant future.

A future cost or benefit must be discounted by a certain rate to permit comparison with a present cost or benefit.[184] Discounting provides the future event's net present value,[185] essentially converting future dollars into present dollars, thereby permitting comparison of costs and benefits that arise at

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[179] *Id.* at 251–52.

[180] Regarding the role of actuaries in risk assessment, see EDWARD FREES ET AL., PREDICTIVE MODELING APPLICATIONS IN ACTUARIAL SCIENCE: VOL. 1, at 1–8 (2014).

[181] *See supra* notes 156–158 and accompanying text.

[182] *See* KAY & KING, *supra* note 15, at 312 (explaining that, when making projections amid uncertainty, actuaries sometimes simply "invent all the numbers" needed for their computations). Regarding the information necessary for this assessment, see *supra* text accompanying note 141.

[183] George Lowenstein & Richard H. Thaler, *Anomalies: Intertemporal Choice*, 3 J. ECON. PERSP. 181, 181 (1989).

[184] PINDYCK & RUBINFELD, *supra* note 148, at 561.

[185] *Id.*

different times. As a result, discount rates are routinely used in many legal and business contexts, from regulatory review to asset valuation.[186]

In optimizing contracting costs, parties who predict expenditures relating to a future dispute must not only assign a probability to each expenditure, but also identify its date and apply a discount rate to it. Only then can these results be properly compared or aggregated with the corresponding front-end costs to determine each potential contract term's net expected benefits. Through this series of calculations, the selection of a discount rate can significantly affect the assessment of back-end costs and thus the parties' choice among alternative contract terms. Unfortunately, the need to choose a date and discount rate for each anticipated loss presents substantial obstacles to cost optimization.

First, though it may seem feasible to estimate the date of a dispute relating to a one-time transaction, this task becomes significantly harder in the context of a long-term relationship, when parties could sue each other at any point over many years. Moreover, the same aspects of bounded rationality that lead parties to ignore or underestimate litigation's probability, notably the overoptimism bias, would also create expectations that it will occur only in the distant future, if at all.[187] A discount rate's impact increases in proportion to the delay that the parties expect before a dispute arises; the farther in the future litigation occurs, the less important the associated costs are in today's dollars.[188] Therefore, a tendency to underestimate the proximity of disputes would lead parties to excessively discount the costs of resolving them.

Second, parties have wide latitude in choosing a discount rate, and it is rarely clear exactly which rate they should apply. Although financial professionals apply different conventions for different valuations,[189] no such convention exists in the context of contracting costs. Insurance policies, in seeking to estimate the present value of large but unlikely future losses, may constitute the closest analog to business contracts. Depending on the circumstances, however, insurers may apply various techniques for determining the appropriate discount rate for each policy, none of which is appropriate in all circumstances.[190]

To apply the insurance industry's best practices to choices of contract language may again require actuarial expertise and additional time

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[186] Edward R. Morrison, *Judicial Review of Discount Rates Used in Regulatory Cost-Benefit Analysis*, 65 U. CHI. L. REV. 1333 (1998); STEPHEN A. ROSS ET AL., CORPORATE FINANCE 396–401 (11th ed. 2016).

[187] *See supra* text accompanying notes 172–179.

[188] For example, if litigation expenses are anticipated with 100 percent certainty to be $100,000 and the discount rate is five percent, then the discounted amount is $95,238.10 if the expenses arise in one year, $82,270.25 if in five years, and $61,391.33 if in ten years.

[189] ROSS ET AL., *supra* note 186, at 400, 413 (explaining that the risk-free rate of return is appropriate for treasury bonds and the weighted average cost of capital is appropriate for projects financed by both debt and equity).

[190] ERNST & YOUNG GLOBAL INS. CTR., DISCOUNT RATES: ONE SIZE DOES NOT FIT ALL (2011).

commitment.[191] This would add to the parties' front-end costs as they engage specialists. Even then, a principled rate would hardly be infallible, as market volatility over long periods frequently leads to a mismatch between the appropriate rate and the chosen one.[192] In these ways, discounting provides yet another source of uncertainty, expense, and error in back-end cost assessments.

E. *Theoretical Implications*

As this Part has explained, contracting parties cannot realistically choose cost-optimal contract terms through a cost-benefit analysis, because cognitive and informational limitations would impede any calculations of contracting costs based on language choices alone. In general, back-end enforcement costs are much less calculable than front-end transaction costs are, though the latter are often challenging to predict too, especially when parties seek to optimize their own costs rather than collective costs and withhold private information.[193] Facing this systemic uncertainty, parties cannot confidently make utility-maximizing choices. Moreover, the measures needed to increase certainty, like extensively consulting litigators and actuaries, would substantially increase front-end costs, contrary to the intentions of parties who are supposedly seeking efficiency.

Given these inaccuracies and impracticalities, it is not surprising that, in practice, contracting parties do not engage in the kind of cost-benefit analysis suggested by traditional contract theory.[194] Even if they did, they would not reliably choose cost-optimal terms. In this light, the most obvious explanation for the acknowledged "gap between theory and practice"[195] is this implementation's sheer impossibility, rather than the typical account based only on agency costs.[196] After all, even without agency costs—that is, if parties drafted contracts without lawyers or through lawyers with perfectly aligned incentives—nobody could reasonably expect anybody to perform a cost-benefit analysis that is beyond everybody's abilities.

This discrepancy between the academy and the profession is not unique to law. Medical doctors often take decades to adopt "major treatment discoveries" for most patients; "the reason for the delay is not usually laziness or unwillingness" but "more often that the necessary knowledge has not been translated into a simple, usable, and systematic form."[197] Until now, the cost optimization model, framed as a hopelessly complex cost-benefit analysis, has remained susceptible to the same criticism.

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[191] *See supra* note 180 and accompanying text.

[192] ERNST & YOUNG GLOBAL INS. CTR., *supra* note 190, at 8.

[193] *See supra* text accompanying note 132.

[194] *See supra* notes 8–10 and accompanying text.

[195] Scott & Triantis, *supra* note 4, at 817.

[196] *See supra* note 9 and accompanying text.

[197] ATUL GAWANDE, THE CHECKLIST MANIFESTO: HOW TO GET THINGS RIGHT 133 (2010).

From a theoretical perspective, these observations illuminate not only this model's limitations but also its contributions. Unfeasible in practice, this predominant account of contract design cannot be descriptive or prescriptive; that is, it cannot state how parties would or should draft contracts in the real world.[198] It must instead be understood only as normative, stating what "imaginary, idealized, super-rational people without psyches" should do in some imaginary world devoid of human limitations.[199] Indeed, this interpretation coheres with behavioralist assessments that earlier expected utility models were just normative frameworks.[200] In this capacity, the cost optimization model still contributes to our understanding of contracts by providing a benchmark against which real-world agreements could be measured, but which they could never be expected to reach. However, this model must then be recognized for its idealism, not taken as evidence of how contracts are, or could be, drafted in practice. The many scholars who continue to rely on this model for descriptive or prescriptive claims should take note and adjust their arguments accordingly.[201]

While normative, this model is not devoid of prescriptive potential in the real world. Although the proposed cost-benefit analysis is grounded in conceptions of axiomatic rationality,[202] an optimizing strategy like this is rational only if it maximizes expected utility in each applicable situation.[203] When it does not, due to uncertainty or otherwise,[204] then a rational actor should find a better problem-solving method for that situation.[205] This is the essence of ecological, rather than axiomatic, rationality.[206] In reality, when experts cannot quickly and accurately calculate the costs and benefits

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[198] *See* KAY & KING, *supra* note 15, at 400 ("[S]ince there is no compelling reason to accept axiomatic rationality as definitive of rational [behavior] in large worlds, such reasoning fails to provide either guidance as to how individuals should behave or insight as to how they do behave in large worlds.").

[199] Bell et al., *supra* note 26, at 9.

[200] *See supra* text accompanying note 105.

[201] *See supra* note 11 and accompanying text.

[202] *See supra* Section III.A.

[203] *See* Simon, *supra* note 108, at 6 ("[T]he rational economic actor will behave in whatever way is appropriate to maximize utility in that environment.").

[204] Todd & Gigerenzer, *supra* note 22, at 24–25 ("In general, optimization can only lead to optimal outcomes if it can estimate parameters with no or minimal error, which requires environments with low uncertainty and large sample size, among other factors.").

[205] Simon, *supra* note 108, at 6 ("Since we can rarely solve our problems exactly, the optimizing strategy suggested by rational analysis is seldom available. We must find techniques for solving our problems approximately, and we arrive at different solutions depending on what approximations we hit upon."); Christopher B. Bingham & Kathleen M. Eisenhardt, *Rational Heuristics: The 'Simple Rules' That Strategists Learn from Process Experience*, 32 STRAT. MGMT. J. 1437, 1461 (2011) (finding that, in the management context, "'simple rules' heuristics may be a more 'rational' strategy than analytically complex and information-intensive approaches in unpredictable markets").

[206] *See supra* text accompanying notes 117–120.

involved in frequent decisions, they often rely on deliberate heuristics instead.[207]

In this case, the extreme complexity and profound uncertainty associated with contracting costs would usually render a cost-benefit analysis wasteful and inaccurate. Therefore, it is generally irrational to use this method to draft contracts. To implement the cost optimization model's normative insights despite its practical obstacles, the next Part proceeds to explore heuristics in search of a more efficient, accurate, and rational strategy for choosing contract language.

IV.   Heuristics for Contract Design

A.   *Deliberate Heuristics*

The term *heuristic* is used in at least two distinct ways. The most popular conception is associated with the pioneering behavioral scientists Amos Tversky and Daniel Kahneman, who for decades "used the term to refer to intuitively used mental shortcuts resulting in judgments that often violate laws of logic, probability, or other benchmarks of rational choice."[208] But heuristics "are not necessarily intuitive or subjective."[209] Kahneman later distinguished the instinctive processes that he and Tversky had researched— "consequence[s] of the mental shotgun, the imprecise control we have over targeting our responses to questions"—from another category of heuristics, consisting of "strategic procedures that are deliberately implemented."[210] This second category has separately been subject to thorough economic and psychological research, principally in the study of ecological rationality.[211] This literature often refers to these processes as "fast and frugal heuristics,"[212] but this Article adopts the term *deliberate heuristics* to differentiate them more clearly from the *intuitive heuristics* studied by Kahneman and Tversky.[213]

In contrast to their famous research program, which often showed how intuitive heuristics lead to errors even in simple situations,[214] the study of

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[207] Simon, *supra* note 108, at 17 ("A major strategy for achieving intelligent adaptation with bounded rationality is to store knowledge and search heuristics in a richly indexed long-term memory in order to reduce the computational requirements of problems. Experts use recognition processes, based on this stored, indexed knowledge, to handle their everyday tasks."); Todd & Gigerenzer, supra note 22, at 16–17 ("[A] principal way to cope with the rampant uncertainty we face is to simplify, that is, to ignore much of the available information and use fast and frugal heuristics.").

[208] Artinger et al., *supra* note 23, at S34.

[209] Luan et al., *supra* note 149, at 1752.

[210] Kahneman (2011), *supra* note 18, at 98.

[211] *See supra* text accompanying notes 117–120.

[212] Todd & Gigerenzer, *supra* note 22, at 17.

[213] In Kahneman's nomenclature, intuitive heuristics are an operation of "System 1," and deliberate heuristics result from "System 2." Kahneman (2011), *supra* note 18, at 20–24, 98. *But see* Kay & King, *supra* note 15, at 171 ("Modern neuropsychology largely rejects these theories of duality.").

[214] *See supra* text accompanying note 19.

deliberate heuristics "focuses on decision making in ill-structured problems that give rise to uncertainty."[215] Essentially, a deliberate heuristic "is a strategy that ignores available information [and] focuses on just a few key pieces of data to make a decision,"[216] thereby "simplifying cognitive processes."[217] To succeed, it should ignore "the less important information";[218] "the more uncertain and the more redundant the information, the more of it should be ignored."[219] Unlike the intuitive variety, deliberate heuristics are typically composed of "multiple building blocks," like "search rules, stopping rules, and decision rules," though they remain far less complex than optimization methods like cost-benefit analyses.[220]

Given their willful ignorance and simplicity relative to those methods, heuristics are often "suspected of leading to second-best outcomes."[221] This suspicion is based on "the effort-accuracy hypothesis," "the intuition that more effort is always better (or at least, cannot hurt) but also has increasing costs, so there is an optimal trade-off point at which it is no longer worth putting in more effort."[222] But this hypothesis "has proven wrong as a general rule"; in many studies, deliberate heuristics are both more efficient and more accurate than optimization and statistical strategies, eliminating the need for any such tradeoff.[223] Across these findings' diverse settings, from business management to medicine, the unifying feature is uncertainty, as opposed to risk.[224] This makes sense. Although optimization may work "[i]n an entirely

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[215] Artinger et al., *supra* note 23, at S34.

[216] Todd & Gigerenzer, *supra* note 22, at 7.

[217] Bingham & Eisenhardt, *supra* note 205, at 1449.

[218] Luan et al., *supra* note 149, at 1736.

[219] Odette Wegwarth et al., *Smart strategies for doctors and doctors-in-training: heuristics in medicine*, 43 MED. EDUC. 721, 726 (2009); *accord* KAY & KING, *supra* note 15, at 423 ("Good strategies for a radically uncertain world avoid the pretence of knowledge – the models and bogus quantification which require users to make up things they do not know and could not know.").

[220] Todd & Gigerenzer, *supra* note 22, at 8.

[221] Wegwarth et al., *supra* note 219, at 725.

[222] Henry Brighton & Gerd Gigerenzer, *How Heuristics Handle Uncertainty*, *in* ECOLOGICAL RATIONALITY: INTELLIGENCE IN THE WORLD, *supra* note 22, at 33.

[223] *Id.* at 33–34; *accord* DANIEL KAHNEMAN ET AL., NOISE: A FLAW IN HUMAN JUDGMENT 122 (2021) ("The appeal of frugal rules is that they are transparent and easy to apply. Moreover, these advantages are obtained at relatively little cost in accuracy relative to more complex models."); KAY & KING, *supra* note 15, at 152–53 (summarizing the advantages of fast and frugal heuristics over optimization methods).

[224] Luan et al., *supra* note 149, at 1736 ("[S]ome of the conditions typical of managerial decisions match well with those under which heuristics tend to be particularly effective, including fundamental uncertainty (rather than risk)") (citation omitted); Wegwarth et al., *supra* note 219, at 725 ("[W]hen uncertainty is high, as it is in numerous medical situations, the decision maker needs to ignore part of the available information in order to make robust predictions."); Artinger et al., *supra* note 23, at S38 ("[S]imple heuristics tend to be superior to complex algorithms under these conditions: greater predictive uncertainty, relatively small sample size, and less stable environment."). Regarding the distinction between uncertainty and risk, see *supra* notes 144–151 and accompanying text.

certain world that can be observed fully"[225] (i.e., a "small world"), it is impossible when "the full set of states, their consequences, or the probabilities are not known or knowable"[226] (i.e., in a "large world"). In such "an uncertain world, less can be more,"[227] as deliberate heuristics enable decision-makers "to ignore noisy information in order to make robust predictions."[228] Moreover, this noise-reduction advantage is not limited to human cognition; "for tasks of high uncertainty, even top-of-the-line machine-learning algorithms may not outperform [deliberate] heuristics."[229]

These techniques provide these benefits in extremely varied situations. In investment management, a simple strategy of this sort is the "1/N rule: invest equally in each of the N alternatives."[230] In a study, over a dozen optimization methods that incorporated 10 years of historical data could not consistently outperform this basic approach.[231] The heuristic's success reflects the high uncertainty of future investment returns and the noisiness of past performance. In a completely different context, a baseball player does not catch a fly ball by calculating its trajectory through a complex algorithm and running at full speed to the predicted landing site,[232] as a high school physics student (who is not on the baseball team) might expect. Instead, they use the "[g]aze heuristic: Fixate your gaze on the ball, start running, and adjust your running speed so that the angle of gaze remains constant."[233] In this case, the heuristic compensates not for Knightian uncertainty per se, but for the observational, cognitive, and temporal constraints that would prohibit a computational approach in mere split-seconds. The medical field also offers many examples of advantageous heuristics. For instance, in deciding whether to send a heart disease patient to a hospital's coronary care unit, a "fast and frugal decision tree"[234] with just three questions produced more accurate diagnoses than both doctors' intuitions and an industry-standard chart of probabilities based on logistic regression.[235] In business management, a heuristic called "Δ-inference," also reducible to a decision

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[225] Brighton & Gigerenzer, *supra* note 222, at 60.

[226] Luan et al., *supra* note 149, at 1738.

[227] Artinger et al., *supra* note 23, at S35.

[228] Shenghua Luan & Jochen Reb, *Fast-and-frugal trees as noncompensatory models of performance-based personnel decisions*, 141 ORG. BEHAV. & HUM. DECISION PROCESSES 29, 31 (2017).

[229] Luan et al., *supra* note 149, at 1742 n.2.

[230] Todd & Gigerenzer, *supra* note 22, at 4.

[231] *Id.*

[232] *Id.* at 5.

[233] *Id.* at 6. Some might contend that the gaze heuristic is intuitive rather than deliberate, and indeed, this may be true for people with a natural gift for intercepting flying objects, which may describe many baseball players. Other people, however, could improve their performance in this task by learning and implementing this heuristic deliberately, so it is relevant to this Section nonetheless.

[234] Regarding fast and frugal trees, see *infra* text accompanying note 234.

[235] Wegwarth et al., *supra* note 219, at 722–24.

tree, facilitates personnel selection by predicting job applicants' future performance more accurately than logistic regression.[236]

All these examples involve successful heuristics that are specific to the environment in which they are used, demonstrating the importance of the "fit" between a strategy and a task,[237] as between the scissor blades of Herbert Simon's famous metaphor.[238] Although properly designed heuristics are most obviously advantageous "in an uncertain environment with limited information and time constraints,"[239] they also "may yield more effective strategic actions than information-intensive, analytically complex approaches even when time, computational capability, and information *are* available."[240] Given deliberate heuristics' accessibility and performance across so many sectors, researchers have called for their use in education and training in various professions.[241] Indeed, tools like decision trees and checklists are already routine in many jobs that involve high stakes, complexity, and uncertainty, including military operations, surgery, aircraft piloting, and skyscraper construction.[242]

Despite their utility in all these professions, no such decision aids appear common in legal education or practice. Their absence is particularly notable in this Article's area of focus, because contract design entails all the circumstances in which deliberate heuristics tend to prevail: high costs, time pressure, limited information, and profound uncertainty.[243] To meet this need, the next Section proceeds to develop and demonstrate a deliberate heuristic for drafting contracts.

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[236] Luan et al., *supra* note 149, at 1739–42.

[237] *Id.* at 1736.

[238] *See supra* text accompanying note 118.

[239] Artinger et al., *supra* note 23, at S47.

[240] Bingham & Eisenhardt, *supra* note 205, at 1459 (emphasis added).

[241] *See, e.g.,* Luan et al., *supra* note 149, at 1753–54 ("[T]raining programs should focus on helping managers develop their repertoire of heuristic and analytical decision strategies and apply them in an adaptive manner, informed by the decision context and purpose. Programs along these lines could include the explicit teaching of heuristics and their specific search, stopping, and decision rules, such as those in Δ-inference and fast-and-frugal trees, with the help of visualization programs. An advantage of learning heuristics over relying on intuition is that the rules of fast-and-frugal heuristics can be formulated and are transparent, whereas intuitive processes by definition are unconscious and thus lack transparency.") (citations omitted); Wegwarth et al., *supra* note 219, at 727 ("Systematic training of doctors to use rules of thumb would allow them to make empirically sound, quick and transparent diagnostic decisions... After the basics have been delivered, a clinical teacher might continue, for instance, by introducing students to the various methods of constructing fast and frugal trees.").

[242] Niklas Keller & Konstantinos V. Katsikopoulos, *On the role of psychological heuristics in operational research; and a demonstration in military stability operations*, 249 EUR. J. OPERATIONAL RSCH. 1063, 1070 (2016) (explaining the use of decision trees to detect unexploded munitions); GAWANDE, *supra* note 197, at 34, 61, 156 (surveying the use of checklists as decision aids in various professions).

[243] *See supra* Section III.E.

B. *A Decision Tree for Vagueness and Precision*

1. *Formulation*

When deciding between vague and precise alternatives to a contract term, parties are engaging in a "paired comparison," "in which one chooses between two options on the basis of multiple relevant cues."[244] Many deliberate heuristics can facilitate these comparisons, depending on the applicable environment. Some of them, like "take-the-best,"[245] "tallying,"[246] and "elimination by aspects,"[247] may succeed when one can readily and directly compare multiple, distinct attributes (each constituting a "cue") of the two options under consideration. Alternatively, when each cue could more naturally be framed as a question to be answered rather than an attribute to be compared, a decision tree is a more appropriate heuristic. Though decision trees can be extremely complex,[248] the heuristics literature focuses on the simplest kind, known as a "fast and frugal tree" (or "FFT"), in which at least one answer to every question (or "cue") leads to a decision (or "exit").[249] Rather than the network of branches typical of complex decision trees, a FFT tends to resemble a single stem with several consecutive leaves.

The cost-effectiveness of contract language depends on various attributes. Some, like each option's resulting incentives to perform and front-end transaction costs, could occasionally be distilled and compared with reasonable confidence.[250] The various components of expected back-end enforcement costs, however, can almost never be estimated precisely enough to facilitate a reliable comparison.[251] Therefore, heuristics that directly compare each option's attributes, like "take-the-best," are unsuitable for choosing efficiently between vagueness and precision. A more promising route is to pose the most determinative considerations as questions in a decision tree, preferably a FFT.

Any heuristic, whether intuitive or deliberate, functions essentially by substituting an easier question for a more difficult one.[252] To help contract drafters identify efficient language, a decision tree should present questions

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[244] Luan et al., *supra* note 149, at 1739.

[245] Todd & Gigerenzer, *supra* note 22, at 9 (summarizing this heuristic as follows: "To infer which of two alternatives has the higher value: (a) search through cues in order of validity; (b) stop search as soon as a cue discriminates; (c) choose the alternative this cue favors.").

[246] *Id.* (summarizing this heuristic as follows: "To estimate a criterion, do not estimate weights but simply count the number of positive cues.").

[247] Korobkin & Ulen, *supra* note 102, at 1079 ("This approach calls for the actor to examine how alternatives rate on the most important attribute and eliminate from consideration all alternatives that do not meet a threshold level of value on that attribute.").

[248] Laura F. Martignon et al., *Naïve, Fast, and Frugal Trees for Classification*, *in* ECOLOGICAL RATIONALITY: INTELLIGENCE IN THE WORLD, *supra* note 22, at 360.

[249] *Id.* at 360–61; Artinger et al., *supra* note 23, at S46; Luan & Reb, *supra* note 228, at 30–31.

[250] *See supra* Sections III.B & III.C.

[251] *See supra* Section III.D.

[252] KAHNEMAN (2011), *supra* note 18, at 97–99.

that are more easily answerable than the corresponding elements of the cost-benefit analysis suggested by the cost optimization model. That analysis is full of factors that are exceedingly difficult or even impossible to estimate. Accordingly, if a factor is significant, estimable, and variable enough that it should affect a party's decision, then an efficient tree should replace that factor with one or more easier questions. If, however, a factor is sufficiently immaterial, uncertain, or constant that its value should rarely impact that decision, then the tree should not ask a direct question about that factor but should either integrate it into the exits or simply omit it.[253] These two principles determine whether and how each of the cost-benefit analysis's items should be incorporated into a practical decision tree.

This Section proceeds to develop such a heuristic based on the improved, individualized cost-benefit analysis proposed in Section II.B.1. However, the resulting decision tree could easily be simplified to apply to the original model described in Section I.B, for the rare situation in which each party truly seeks to optimize collective contracting costs instead of just its own.[254]

Either way, the first step in the analysis is to identify alternative terms that would each provide the same benefits, so that the term with the lowest overall costs maximizes net expected benefits. In practice, it would often be impossible to identify two provisions with identical benefits, because the advantages of nonmonetary provisions are difficult to quantify.[255] In addition, vagueness and precision often carry their own inherent advantages, thereby upending any perceived equivalence between alternatives.[256] Fortunately, a heuristic approach does not demand this exactitude if it otherwise incorporates factors that tend to make one choice more efficient than another.

Consider first the relative benefits of vagueness. Often, vague language provides one party with a strategic advantage in a potential dispute, by allowing a favorable interpretive argument that a precise rule would preclude.[257] In that case, the advantaged party should generally aspire to the vague language over a precise alternative, because the former could provide benefits at both ends of the contracting process by reducing transaction costs and promoting success in a dispute.

Even without a strategic advantage, vagueness can benefit a party by avoiding certain problems with precision. Before drafting a precise rule, one should ask whether it would, in any material respect,[258] convey confidential

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[253] *See supra* text accompanying notes 218–219.

[254] *See infra* note 276.

[255] *See supra* note 124 and accompanying text.

[256] *Id.*

[257] *See supra* notes 72–85 and accompanying text.

[258] In this context, *material* means "[o]f such a nature that knowledge of the item would affect a person's decision-making." *Material*, BLACK'S LAW DICTIONARY (11th ed. 2019). In qualifying these drawbacks of precision, *materiality* excludes issues that are not important enough to independently preclude precise language. For example, even if a precise rule would convey confidential information, one may draft it anyway because (a) it is not so sensitive that the counterparty should not learn it and (b) the agreement obligates the counterparty not

information or negative signals, entail errors or omissions, or enable one's counterparty to circumvent rules. [259] Though exact quantifications are impossible, these relatively immediate and knowable drawbacks to precision would usually outweigh any accompanying savings in relatively distant and uncertain back-end costs, especially because the latter would have to be discounted according to the probability and timing of disputes.[260] Therefore, if a precise rule would entail any of those material drawbacks, then a party should generally seek to draft a vague standard instead. When doing this to avoid potential errors, omissions, or circumvention opportunities, one should also consider the common practice of adding precise illustrations with the standard serving as a "catch-all." [261] But first, because formulating and negotiating those illustrations would add front-end costs, one should confirm whether the decision tree's remaining cues justify those extra expenditures. If they do not, then those added costs would likely outweigh any expected benefits.

Despite these disadvantages, precision often provides better incentives to perform specific obligations. [262] This advantage is most likely to materialize when the provision is central to the parties' intended actions and relatively certain to arise (like payment of a service provider's fees), rather than ancillary (like reimbursement of travel expenses) or contingent (like an indemnity against third-party lawsuits). In the latter situations, the lower importance or probability of performance may not warrant precision's extra front-end costs. However, if a provision is indeed central to the parties' intended performance, one should generally aim for precision, unless vagueness would impart a strategic advantage or precision would introduce a material problem.

In a cost-benefit analysis, the next step after ascertaining each alternative's benefits would be to calculate its front-end transaction costs. The cost optimization model is based on the generalization that precise terms are more expensive to draft than vague terms, [263] though negotiation dynamics sometimes provide exceptions to this rule.[264] It is often difficult, however, to reliably estimate the difference in two terms' transaction costs before actually drafting them.[265] Therefore, to apply to all situations without

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to disclose its terms. In that situation, the conveyance of confidential information may be immaterial.

[259] *See supra* notes 28–31 and accompanying text. "Errors and omissions" could result from, among other things, difficulties in "foreseeing possible future contingencies" and "determining the efficient obligations that should be enforced in each contingency." Scott & Triantis, *supra* note 4, at 823.

[260] *See supra* Sections III.D.3 & III.D.4.

[261] *See* Scott & Triantis, *supra* note 4, at 848–56 (explaining and illustrating how parties commonly combine rules and standards and how canons of construction can affect a court's interpretation of these combinations).

[262] *See supra* note 33 and accompanying text.

[263] *See supra* notes 33–34 and accompanying text.

[264] *See supra* Section II.B.3.

[265] *See supra* Section III.C.

demanding excessive effort in each one, a heuristic should eschew those estimates by holding as a constant that precise rules have higher front-end costs than vague standards do, while accommodating obvious exceptions. Accordingly, the decision tree should lead to a precise term only when the back-end savings would likely justify any higher front-end outlays or when, exceptionally, that term would clearly *not* involve materially higher transaction costs than a vague alternative would.

The third step in a cost-benefit analysis is to calculate back-end costs for each term under consideration. This process would constitute by far the most complex, uncertain, and unreliable part of any attempt at cost optimization.[266] Accordingly, a heuristic's advantages over an optimization method should be greatest here.[267] Back-end costs are a function of several factors that deserve separate attention.

Two factors are the probabilities that a dispute will arise with respect to the contract term and that it will result in litigation. Precise rules offer benefits in reducing both the probability of disputes (by promoting performance) and the costs of resolving them (by avoiding interpretive arguments).[268] However, these benefits would justify precision's additional front-end costs only in provisions that are especially likely to result in expensive disputes. For less contentious terms, a vague standard's lower front-end costs generally make it, all else equal, the more efficient choice. Although accurate assessments of disputes' probability are typically impossible, at least without actuarial expertise,[269] general categorizations of their likelihood should be more feasible for dutiful lawyers in a typical transactional setting.

To determine this issue, the decision tree should encourage two inquiries. First, is this type of provision in this type of contract often subject to disputes? Second, do the circumstances suggest that a dispute regarding this provision is especially likely under this contract? If, on balance, the answers to these questions indicate that this provision is relatively likely to result in a dispute, then one should aim to draft a precise rule to promote performance and facilitate dispute resolution. For attorneys who know the relevant practice area well, the answer to the first question may be easy, but others may need to perform legal and industry research, possibly consulting colleagues in the litigation department.[270] In contrast, the second question calls for careful consideration of deal-specific details, like the parties' mutual relationship, their past litigiousness, the contemplated transaction's details, and the potential involvement of government authorities and third parties.

Admittedly, answers to both questions could be skewed by the same cognitive biases that would thwart efforts to assign exact probabilities in a cost-benefit analysis, like loss aversion and overconfidence.[271] In most cases,

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[266] *See* Section III.D.
[267] *See supra* notes 225–228 and accompanying text.
[268] *See supra* note 33 and accompanying text.
[269] *See supra* note 180 and accompanying text.
[270] *See supra* notes 152–156 and accompanying text.
[271] *See supra* Section III.D.3.

however, those biases' impacts should be less material in the binary question of whether a dispute is likely than in the scalar question of a dispute's percentage chance of occurrence. If the drafter has adequate information and experience, an applicable bias should lead to a wrong binary answer only when the actual percentage is near 50, but it will always affect the scalar answer. Moreover, when the chance of a dispute is near even, then vague and precise alternatives are probably similar in cost-effectiveness, so a wrong call may be relatively inconsequential.

Fortunately, together with the previous cues, these binary questions regarding the probability of disputes obviate the need for further inquiries regarding the other factors underlying back-end costs. First, the costs of dispute resolution, with or without litigation, are so uncertain upon contract formation that they cannot reliably inform language choices.[272] Instead, as with front-end costs, the decision tree should simply incorporate as a constant the cost optimization model's relevant generalization, which holds that precise rules involve lower back-end costs than vague standards do.[273] Rather than add questions regarding back-end costs, this generalization should simply be integrated into the decision tree's exits. If a dispute is deemed relatively probable, then enforcement costs become more salient, and the decision tree should point to the precise rule because it tends to economize on those costs. Beyond dispute resolution expenditures, several subsequent factors in the cost-benefit analysis address the possibility that a judicial error would benefit one party at the other's expense. Conveniently, these factors are already subsumed by the previous question regarding any strategic advantage of vagueness.[274] The final factors of back-end costs address the timing of any cash flows relating to dispute resolution and the appropriate discount rate. A dispute's date is almost as impossibly uncertain as the costs of resolving it, but unlike those costs, the timing is less a function of the contract's language than of the parties' behavior and exogenous events. Therefore, in determining that language, the decision tree should hold the timing of disputes as a constant, without any further questions. This disposition obviates a discount rate, which would apply only when dates are predicted as in a cost-benefit analysis,[275] not in a heuristic that eschews that prediction.

The final steps of a cost-benefit analysis would be to add each alternative's front-end and back-end costs and to choose the one with the lowest total costs. Because a heuristic does not entail numerical cost calculations, these steps do not apply in this context. Instead, we must organize the formulated questions as cues in a decision tree with appropriate exits. Figure 1 presents the assembled product.
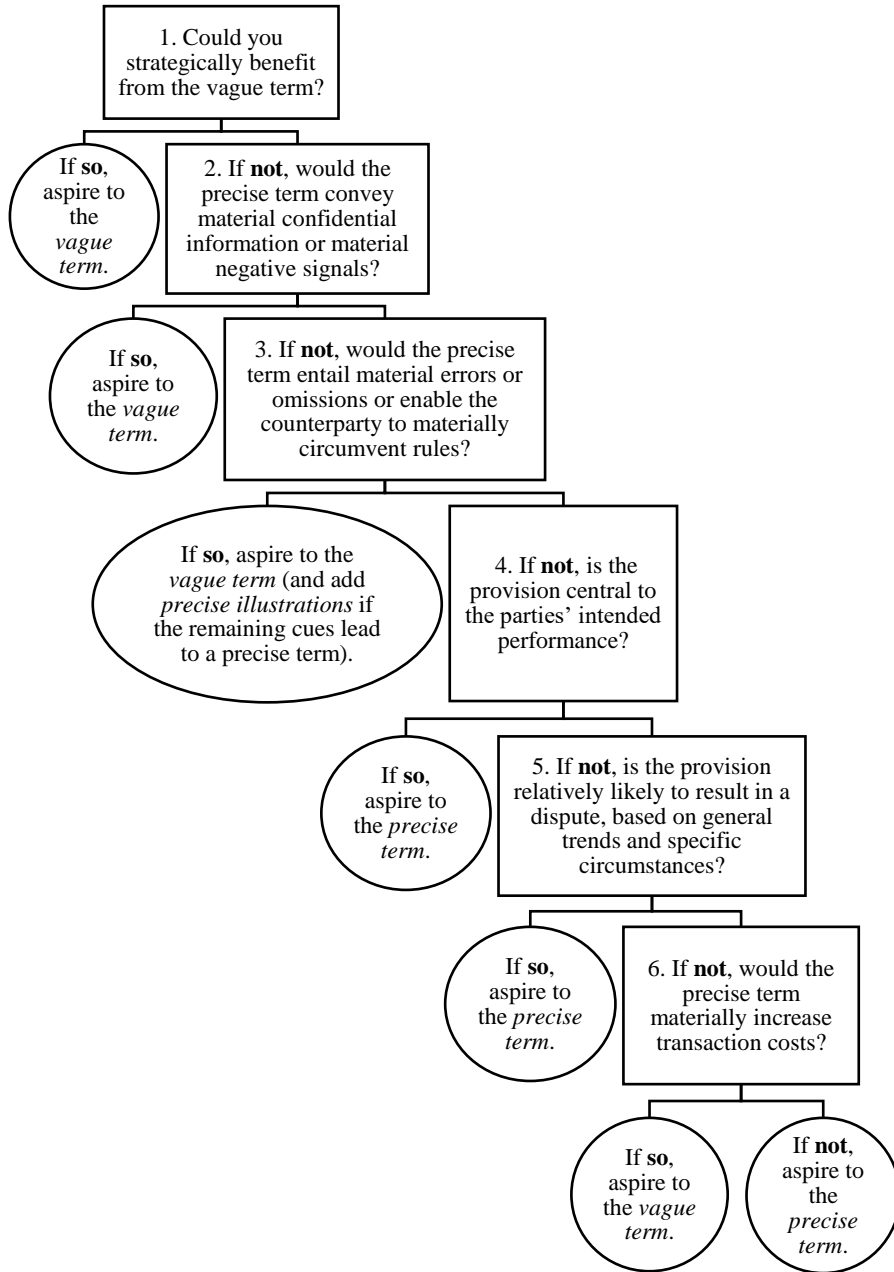
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[272] *See supra* Section III.D.2.
[273] *See supra* notes 33–34 and accompanying text.
[274] *See supra* note 257 and accompanying text.
[275] *See supra* notes 183–186 and accompanying text.

FIGURE 1: DECISION TREE FOR CHOOSING
VAGUE OR PRECISE CONTRACT LANGUAGE[276]

1. Could you strategically benefit from the vague term?

If **so**, aspire to the *vague term.*

2. If not, would the precise term convey material confidential information or material negative signals?

If **so**, aspire to the *vague term*.

3. If not, would the precise term entail material errors or omissions or enable the counterparty to materially circumvent rules?

If **so**, aspire to the *vague term* (and add *precise illustrations* if the remaining cues lead to a precise term).

4. If not, is the provision central to the parties' intended performance?

If **so**, aspire to the *precise term*.

5. If not, is the provision relatively likely to result in a dispute, based on general trends and specific circumstances?

If **so**, aspire to the *precise term*.

6. If not, would the precise term materially increase transaction costs?

If **so**, aspire to the *vague term*.

If **not**, aspire to the *precise term*.

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[276] As noted above, this decision tree is based on the individualized cost-benefit analysis proposed in Section II.B.1. To adapt it to the original, collective analysis described in Section I.B, one should delete question 1, because strategic advantages apply to one party at

Now fully formed, our decision tree elicits several technical observations. In the language of behavioral science, this is a FFT because it has one exit for every cue except the last one, which has two exits.[277] Accordingly, it has "three building blocks: (a) ordered search, (b) fast stopping rule, and (c) one-reason decision making."[278] The FFT is a "noncompensatory strategy," in contrast to a compensatory strategy like an optimization method, which involves "weighting and adding different cues in a manner that allows trade-offs" between those cues,[279] such that a "a cue can be outweighed, or compensated for, by an individual cue or combination of other cues."[280] Instead, the tree "search[es] and consider[s] cues in a certain order and stop[s] whenever the value on a cue indicates a decision. The unconsidered cues have no effect on the decision outcome even if their values all point to the opposite direction."[281] This allows noncompensatory strategies to outperform compensatory ones amid complexity and uncertainty, by reducing both "computational demand on the cognitive system" and "noisy information" from inapposite data.[282] Finally, the tree is considered "frugal" because, "on average, it looks up fewer cues than are available";[283] that is, one can sometimes make a decision without proceeding to the final question. This frugality makes the heuristic more efficient than the optimization method that it replaces, which would require one to collect and compute all information for every decision. All these aspects of the decision tree should suit it to the complex, uncertain, cost-conscious, and time-sensitive environment in which sophisticated contracts are usually drafted.

2. *Demonstration*

To illustrate these abstract benefits in concrete detail and to test our decision tree's accuracy, this Section applies it to several common contract provisions and measures its outputs against the legal profession's best practices. An executive employment agreement provides this demonstration's initial setting, but similar provisions appear in many types of business contracts. As explained below, the decision tree is robust enough to guide parties through the different considerations that could arise in all these situations, so that they can rationally design any kind of agreement.

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the other's expense. *See supra* text accompanying note 257. If symmetrical information is assumed per the existing literature, then one could also delete question 2, which relates to private knowledge. *See supra* text accompanying note 51.

[277] *See supra* note 249 and accompanying text.

[278] Martignon et al., *supra* note 248, at 363.

[279] Luan & Reb, *supra* note 228, at 31.

[280] Artinger et al., *supra* note 23, at S38.

[281] Luan & Reb, *supra* note 228, at 31.

[282] *Id.*

[283] Luan et al., *supra* note 149, at 1740.

(a) Compensation

First, consider an employment agreement's compensation provisions, which are among each party's highest priorities. Besides a base salary and equity awards, an executive often receives an annual bonus, "based on the achievement of performance goals," which "can be subjective, objective, or a combination of both, and can be based on company-wide, business unit, individual, or other performance metrics."[284] Here is a somewhat vague provision to this effect from a publicly reported employment contract: "The actual amount of any Annual Incentive Bonus will be determined based on both the Executive's individual contributions during each performance year (50%) and the Company's results achieved (50%) against select metrics of the Company's annual business plan."[285] Alternatively, a precise mathematical formula could link the bonus amount to numerical proxies, or milestones, for those "contributions" and "results."[286] For our first demonstration, let us use our decision tree to recommend each party's preference between these vague and precise approaches.

In response to question 1, the employer would indeed strategically benefit from the vague formulation, by retaining considerable discretion over the amount of any bonus. If the executive were to dispute that amount, the employer could defend its decision with a favorable interpretation of the indeterminate phrases. Thus, without considering any other cues, the employer should aspire to (i.e., hope to achieve) that formulation.[287]

Of course, the executive may view this provision differently. Regarding question 1, any strategic advantage of vagueness would belong entirely to the employer, which retains discretion over any bonus amount. Theoretically, the executive could benefit from vagueness if it incented the employer, fearing an expensive interpretive dispute,[288] to award a bonus even when she did not earn it, but that would apply only if they perceived her as unusually litigious. So the executive's answer to question 1 is likely *no*. In response to question 2, no confidential information is at issue, but some executives may worry that haggling over performance metrics may send undesired signals. For example, if the company's "culture" entails a holistic view of job performance, a reductive, numerical approach may make the executive seem like a poor fit. Even if not, proposing milestones that are perceived as too low may make her look unambitious. If those concerns are material to the executive, then she should just settle for the vague

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[284] *Negotiating and Drafting an Executive Employment Agreement*, THOMSON REUTERS PRAC. L., https://us.practicallaw.thomsonreuters.com/2-504-5403 (last visited February 1, 2022) [hereinafter *Negotiating Employment Agreements*]; *accord* Gregory C. Schick, *Executive Employment Agreements*, Corp. Prac. Portfolio Series (BNA) No. 88-2d, at § IV.C.2 (2021).

[285] Sw. Iowa Renewable Energy, LLC, Employment Agreement with Michael Jerke (Exhibit 10.1 to Form 8-K), § 1(b) (Sep. 28, 2018).

[286] *See* Scott & Triantis, *supra* note 4, at 840–41 (describing "the features of an efficient proxy" in a precise rule).

[287] *See supra* note 69

[288] *See supra* text accompanying note 139.

formulation. Otherwise, she should proceed to question 3. In general, the executive would benefit from any omissions (e.g., unquantifiable but desired aspects of performance) or circumvention opportunities (i.e., abilities to meet the milestones without really deserving the bonus), so these should not deter her from a precise approach. If she can reasonably achieve that approach's numerical milestones (i.e., if they do not contain any "errors" from her perspective), then question 4 is next. Here the response is straightforward: this provision is indeed central to the parties' intended performance, because it is a significant component of her compensation. Therefore, she should aspire to the precise rule with numerical milestones.

This initial demonstration of our decision tree elicits several observations. First, in a sign of the tree's accuracy, the suggested aspirations for each party in this example accord with general guidance that the "employer must balance its need for *flexibility* with the executive's need for *certainty* in his compensation arrangements."[289] Second, these suggestions could be extrapolated from bonus payments to almost any conditional obligation to pay consideration under a contract, even a provision as seemingly different as an earnout in an M&A transaction.[290] Typically, in payment obligations, a payer prefers a vaguer covenant to preserve flexibility in the amount, timing, and method, whereas the payee prefers a more precise obligation to ensure predictability.[291] Third, to identify the best term for the executive, a lawyer representing her would need to understand not only the relevant legal issues but also social cues and personal aspects of the parties' relationship, which responsible attorneys glean by communicating openly with their clients.[292] Fourth, as with the improved cost-benefit analysis on which it is based, the decision tree's results are aspirations, not outcomes.[293] Aspirations tell each party only the individually optimal term for which it should aim in a negotiation; they do not predict the language on which the parties will ultimately agree. That depends on several other factors, including each party's reservation point, bargaining power, and negotiating tactics.[294] Fourth, illustrating its "frugality," our decision tree produced one of these recommendations with only one cue and the other without involving the penultimate cue, regarding the probability of disputes. Because that issue is

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[289] *Negotiating Employment Agreements*, *supra* note 284 (emphasis added); *accord* Schick, *supra* note 284, at § IV.C.3.

[290] *See* STARK, *supra* note 3, at 370 (defining an earnout as an arrangement in which "a buyer [pays] the seller a small amount at closing and additional payments in the future . . . based on a formula tied to the business's performance after the acquisition.").

[291] *Id.* at 375 ("To memorialize [an earnout], the purchase agreement will state the formula for determining the income on which the earnout is based. The value of the seller's earnout could be destroyed, however, if that formula merely states that *revenues minus expenses equals income*. In that case, the vagueness of the standard *expenses* would permit the buyer to decrease the income by deducting inappropriate expenses.").

[292] *See* MRPC, *supra* note 64, at r. 1.4(a)(2).

[293] *See supra* note 69 and accompanying text.

[294] Korobkin (2000), *supra* note 52, at 1791–92.

usually the most difficult and time-consuming to determine,[295] a party saves substantial effort whenever it can avoid that step, so this question's position toward the end is prudent. This efficiency gain exemplifies one of heuristics' principal advantages over optimization methods.[296]

(b) Termination

For our next demonstration of the decision tree, consider an employment agreement's provisions regarding termination for cause by the employer. As in many sophisticated contracts,[297] "termination provisions are generally some of the most heavily negotiated provisions" in this type of agreement.[298]

Departing from the default rule of "employment at will,"[299] executive employment agreements typically permit the employer to freely terminate only for "cause" and require it to pay severance upon termination without cause.[300] Under common law, "cause" is limited to the employee's material breach of the agreement, "including by persistent neglect of duties; by engaging in misconduct or other malfeasance, including gross negligence; or by being unable to perform the duties of the position due to a long-term disability." [301] However, rather than rely on these generic standards, employment agreements usually provide more specific or expansive definitions of "cause," often with illustrative examples. [302] Recently, in reaction to widely publicized sexual misconduct allegations, employers have increasingly focused on this definition, seeking to include not just sexual harassment but also consensual romantic relationships with coworkers.[303]

As these default rules and recent developments suggest, vagueness and precision are paramount considerations in these provisions. For example, a vague definition of "cause" may track the legal default rules by reference to "material breach of the agreement, persistent neglect of duties, and misconduct or other malfeasance, including gross negligence." In contrast, a more precise formulation could list specific descriptions of misconduct, including "engaging in any sexual or romantic relationship with a coworker (whether or not in breach of company policies and whether or not consensual)."[304] Faced with these choices, how could each party approach the definition of "cause" using the decision tree?

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[295] *See supra* text accompanying notes 266–271.

[296] *See supra* text accompanying note 283.

[297] STARK, *supra* note 3, at 191.

[298] *Negotiating Employment Agreements*, *supra* note 284; *accord* Schick, *supra* note 284, at § VI.E.

[299] RESTATEMENT OF EMP. L. § 2.01 (AM. L. INST. 2015).

[300] *Id.* at § 2.04 cmt. b.

[301] *Id.* at § 2.04.

[302] *Negotiating Employment Agreements*, *supra* note 284; *accord* Schick, *supra* note 284, at § VI.E.

[303] *Expert Q&A on the Impact of #MeToo on Cause Definitions in Executive Employment Agreements*, THOMSON REUTERS PRAC. L. (Nov. 6, 2018), https://us.practicallaw.thomsonreuters.com/w-017-4141.

[304] *Id.*

First, consider the employer's perspective. Regarding question 1, if this provision is litigated, it would likely be in the context of an action by the executive for breach of contract. Namely, she would claim that the employer fired her for "cause" even though her actions did not satisfy the contract's definition of that term, such that the employer was breaching its covenants to employ and pay her for the rest of the term. In this context, the employer would find it easier to convince a court that each undesired activity constitutes "cause" if the definition explicitly includes that activity as a precise illustration. Thus, the employer would not strategically benefit from the vague provision by itself and should continue to question 2. Some employers may worry about sending negative signals through precise prohibitions on executives' behavior. Until recently, many candidates may have taken restrictions on supposedly social activities to suggest an unfriendly work environment or encroachment into their personal lives. Current trends, however, should mitigate these impressions; as specific rules of this nature proliferate across all companies, they transmit fewer unique messages about each individual company. In addition, these provisions could send *positive* signals to candidates who would *prefer* a workplace that discourages romantic relationships among colleagues. Therefore, many employers today should proceed to question 3. This elicits a different response, as a list of specific grounds for termination clearly presents risks of errors, omissions, and circumvention opportunities. For example, before the #MeToo movement, when executives were accused of sexual misconduct, companies that terminated them usually did so quietly, without cause, and with severance payments, but this practice has clearly changed.[305] Just as so many companies overlooked these risks only a few years ago, how can an employer know whether it is now overlooking another risk that should permit termination after the next scandal? To avoid unforeseeable omissions like this, the employer should follow the decision tree's suggestion to combine a vague "catch-all" standard with precise illustrations, if the remaining cues suggest a "precise term"; otherwise, it should just use the vague formulation alone, because precise illustrations would not be worth the added transaction costs. In response to question 4, this clause is not central to the parties' intended performance, because unlike a payment provision or an obligation to perform duties, a termination provision may never be invoked. This leads the employer to question 5, regarding the likelihood of litigation. Compared with other terms in employment agreements, termination provisions are litigated relatively often. Fired executives routinely sue former employers for wrongful termination and breach of contract, claiming that their agreement did not authorize their dismissal under the circumstances.[306] Therefore, unless for some reason such

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[305] *Id.*

[306] *See Common Pitfalls in Executive Employment Agreements*, THOMSON REUTERS PRAC. L., https://us.practicallaw.thomsonreuters.com/w-016-0113 (last visited February 1, 2022) ("The #MeToo movement has highlighted the importance of referencing specific types

a dispute seems particularly unlikely with a particular counterparty, the decision tree leads the employer to "invest" in a precise rule at the front end to reduce expected litigation costs at the back end. Given the earlier response to question 3, this means drafting a vague standard accompanied by a list of precise examples.[307]

Because termination provisions are often negotiated so heavily, it is not surprising that the decision tree would lead the executive to a different aspiration, based on the first question alone. Compared with a precise list of prohibited behavior that includes her actions (e.g., consensual romantic relationships with coworkers), vague standards like "misconduct," without any illustrative examples, grant the executive a potential interpretive argument that those actions do not amount to misconduct. This would provide a strategic advantage in certain disputes, so the executive should aspire to the vague standard pursuant to question 1.

To achieve this aspiration, however, she would have to overcome the considerable anchor set by the industry standard practice of including illustrations of "cause."[308] While negotiating this term's definition, she may need to choose again between relatively vague and precise illustrations, in which case she could return to the decision tree to determine which choice would be most efficient for each illustration. Although vagueness may provide a strategic advantage in many of these terms (as in the preceding example of "misconduct"), this benefit may disappear if the illustrations become sufficiently limited. For instance, between the vague ground of "illicit activity" and the precise one of "conviction of a felony under state or federal law," she should perceive no strategic advantage to the former per question 1 and should aspire to the latter per question 5.

The considerations explored in this example from the employment context would extend to termination provisions in many other transactional settings too, but they are not universal. For example, a consulting agreement may permit each party to terminate it either immediately for cause or with 90 days' advance notice for "convenience" (i.e., for any reason or no reason). A dispute over these provisions is unlikely if, when a party purports to terminate immediately, the other party expects its enforcement costs to outweigh its foregone benefits of advance notice (e.g., continued payments to the consultant). In that case, during contract formation, the expected back-end savings of a precise definition of "cause" are unlikely to exceed its extra

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of misconduct in the employment agreement rather than referring only to 'anything that could cause harm to the business.' Given the dollar amounts at stake for a top executive whose employment is terminated for cause, this type of vague provision is likely to invite litigation in situations such as a termination due to claims of sexual harassment.").

[307] To avoid a restrictive interpretation under the *ejusdem generis* canon, which would limit the vague language to matters that are similar to the precise examples, the employer should expressly provide that the former "includes, *without limitation*," the latter. *See* Scott & Triantis, *supra* note 4, at 849–50; STARK, *supra* note 3, at 348–51.

[308] *See* text accompanying *supra* note 302. Regarding the anchoring effect in negotiation, see Russell Korobkin & Chris Guthrie, *Psychological Barriers to Litigation Settlement: An Experimental Approach*, 93 MICH. L. REV. 107, 138–42 (1994).

front-end costs. Accordingly, if a party reaches questions 5 and 6, the low likelihood of litigation over this provision will lead that party to aspire to a vague standard if it involves lower transaction costs. This diverges from the employer's preference for a general catch-all standard with precise illustrations in the more litigious context of employment.

(c) Indemnification

As our final demonstration of the decision tree, consider indemnification, which "is an undertaking by one party to compensate the other party for certain costs and expenses" and a common feature of all kinds of commercial contracts. [309] In executive employment agreements, the employer often indemnifies the executive against third-party claims relating to her acts as a director or officer of the company.[310] Indemnities may consist of several components and can vary greatly in length and in scope, so each provision entails several drafting choices. This demonstration focuses on one aspect of an indemnity: the process for making an indemnification claim.

In general, an indemnifying party prefers to receive notice of a covered third-party claim as soon as possible, but "under common law, the indemnified party's failure to give the indemnifying party notice of covered claims does not relieve the indemnifying party from its indemnity obligations." [311] A contract could change this default rule and avoid associated conflicts between the parties through a precise term that specifies whether indemnification is contingent on notice and covers expenses incurred by the indemnified party before notice.[312] Alternatively, a vaguer indemnification provision may refer to notice without mentioning these timing issues, which the default rule would then govern.

In choosing between these options, an employer would respond negatively to the decision tree's first question, because vagueness would provide a strategic disadvantage by leaving intact the undesirable default rule. Next, as a purely procedural provision, the claim process does not involve confidential information, negative signals, errors, omissions, or circumvention opportunities, so the answers to questions 2 and 3 would also be *no*. Like termination, indemnification might never be invoked, so it is not central to the parties' intended performance per question 4. In this context, question 5 merits clarification. The employer must consider not the likelihood of an indemnification claim relating to a third-party lawsuit, but the likelihood of a dispute between the parties relating to the indemnification clause. These probabilities are not necessarily equal. For example, if the employer is a large company that consumers frequently sue while naming its officers as codefendants, then the employer may routinely indemnify and

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[309] *Indemnification Clauses in Commercial Contracts*, THOMSON REUTERS PRAC. L., https://us.practicallaw.thomsonreuters.com/5-517-4808 (last visited February 1, 2022).

[310] *Negotiating Employment Agreements*, *supra* note 284; Schick, *supra* note 284, at § X.F.

[311] *Indemnification Clauses in Commercial Contracts*, *supra* note 309.

[312] *Id*.

defend those officers without any discussion regarding the claim process; indeed, many states legally require this indemnity to some extent.[313] Given their aligned interests, the employer and executive are unlikely to dispute this provision. Therefore, the employer should proceed to question 6 and aim for the vague standard, if the precise rule's complexity would increase transaction costs.

The executive would reach the same result for a different reason. Unlike the employer, she could perceive a strategic advantage in vagueness, because the lack of any timing requirements or conditions, combined with the permissive default rule, would allow her to be compensated even if her claims are late or deficient. Thus, her answer to question 1 would be *yes*, leading her to prefer the vague standard.

With each party's aspirations aligned, we can expect little disagreement regarding the indemnification claim process. And indeed, parties to an executive employment agreement would rarely haggle over this detail.[314] But the context is critical, as our decision tree would correctly lead to thornier results in other situations.

Notably, in M&A agreements involving privately held targets, indemnification often serves an expanded purpose, not only covering third-party claims but also providing an exclusive remedy for direct claims between the parties.[315] In general, even with a mutual indemnity, the buyer is more likely to bring a claim against the seller, and this dynamic drives their strategic considerations in drafting the relevant provisions.[316] Consider again a choice between vague and precise approaches to the indemnification claim process.

Like the employer in the previous example, the seller in a private M&A transaction would be the party most likely to provide rather than receive indemnification, so it would also respond negatively to question 1, perceiving no strategic advantage in vagueness. As in the employment contract, the indemnification claim process is purely procedural, so the seller would answer *no* to questions 2 and 3 too. Regarding question 4, despite its elevated importance in private M&A deals, indemnification is still not central to the parties' intended performance, because it might never be sought. In responding to question 5, however, the seller may diverge from the employer, because disputes between the parties regarding indemnification are relatively common and contentious in these deals.[317] Faced with an indemnification claim, the seller would prefer to limit its liability as much as possible. Given such a claim's relative probability,

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[313] *E.g.,* DEL. CODE ANN. tit. 8 § 145(c) (requiring Delaware corporations to indemnify their officers to the extent that they are "successful on the merits or otherwise in defense of" covered claims).

[314] *See Negotiating Employment Agreements*, *supra* note 284 (omitting timing from the list of issues to negotiate in indemnification provisions).

[315] *Indemnification Clauses in Private M&A Agreements*, THOMSON REUTERS PRAC. L., https://us.practicallaw.thomsonreuters.com/4-568-4787 (last visited February 1, 2022).

[316] *Id.*

[317] *Id.*

question 5 would lead the seller to aspire to a precise term. In contrast, just like the executive, the buyer would choose a vague term in response to the first question, based on the strategic advantage of potential coverage despite procedural deficiencies.

Given the parties' divergent aspirations in the private M&A context, we can expect them to negotiate more intensely over the indemnification claim process and, on average, to agree on more precise formulations than indemnities in employment agreements. Indeed, this expectation mirrors reality, as attorneys devote significant attention to indemnities in these deals, and acquisition agreements routinely include specific rules regarding not just the timing of claims, but also the notices' contents and required supporting documentation.[318] Once again, with the proper inputs, our decision tree readily prescribes the appropriate approach to a challenging drafting task.

3.   Evaluation

These demonstrations call for an assessment of our decision tree's practicality, efficiency, and rationality. By suggesting aspirations in line with best practices for several common provisions, this heuristic clearly passes this Section's initial tests. This success instills confidence that, in less familiar situations for which reputable recommendations are not available, this resource will lead drafters to similarly efficient choices.

When drafting contracts, experienced attorneys may already consider some of our decision tree's cues, like the potential strategic advantage of vagueness.[319] Nonetheless, this tool is primarily prescriptive, not just descriptive. Even if drafters ask some of its questions some of the time, until now they have not had a systematic approach to this fundamental task.[320] Our heuristic provides a form of "decision hygiene,"[321] motivating everyone from law students to seasoned professionals to consider all, and only, the material issues raised by each provision. Notably, to rectify transactional lawyers' common oversight of litigation risk,[322] the decision tree encourages them to consider only the relative probability of disputes, not their indeterminable percentage chances, associated costs, and dates per a true cost-benefit analysis. Penultimately positioned, even this limited question must be asked only when material—that is, when it could determine the outcome because other cues do not provide it independently.

Despite these facilitative features, our decision tree's proper application requires certain degrees of technical skill, legal knowledge, and time commitment. To determine a dispute's relative probability, a drafter who is unfamiliar with the relevant provision may need to read treatises and other

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[318] John J. McDonald & Matthew J. Aaronson, *The Indemnification Claim Process in M&A Transactions*, THOMSON REUTERS PRAC. L., https://us.practicallaw.thomsonreuters.com/w-001-3444 (last visited February 1, 2022).

[319] *See supra* note 85 and accompanying text.

[320] *See supra* note 12 and accompanying text.

[321] KAHNEMAN ET AL. (2021), *supra* note 223, at 226.

[322] *See supra* note 8 and accompanying text.

secondary sources, research case law, and occasionally consult colleagues in the litigation department. While sometimes requiring substantial effort, legal research and intrafirm knowledge transfer are already common or advisable tasks for lawyers,[323] unlike the precise calculations demanded by a true optimization process. Admittedly, our heuristic will not enable a novice to independently create a cost-optimal contract right away, but that is not the point. Just as a pilot's checklist does not empower an untrained civilian to fly a jetliner, no contract drafting decision tree can replace continuing legal education; instead, both resources "are quick and simple tools aimed to buttress the skills of expert professionals" while also serving as valuable training materials.[324] These considerations illustrate the close "fit" between our heuristic and the sophisticated "environment" in which it applies.[325]

Like any strategy, this decision tree is probably not infallible, notwithstanding this Section's successful demonstrations. Even when a user answers all questions accurately, the tree could sometimes lead them to a suboptimal aspiration, as measured against a theoretically perfect cost-benefit analysis. These deviations would most likely arise from the integrated generalizations that precise rules entail higher front-end and lower back-end costs than vague standards do, without any quantification of those differences.[326] Moreover, accurate empirical tests of contract language's efficiency are practically impossible, for many of the same reasons that a cost-benefit analysis is so. Even with hindsight and limitless time and resources, one cannot calculate exact probabilities of disputes, lawsuits, settlements, awards, and judicial errors, because they depend so much on transaction-specific and exogenous factors, like human relationships and macroeconomic events.[327] Therefore, both the existence and the magnitude of any errors produced by our decision tree are generally unverifiable.

Fortunately, this verification is unnecessary to determine whether our heuristic should be adopted. Even with occasional errors, the decision tree is still a rational strategy if, compared with the available alternatives, its process and outcomes are most efficient on balance.[328] The first of those

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[323] Regarding legal, industry, and deal-specific research in contract drafting, see STARK, *supra* note 3, at 410–11. Regarding intrafirm knowledge transfer, see *supra* note 153 and accompanying text.

[324] GAWANDE, *supra* note 197, at 128.

[325] *See supra* text accompanying note 237.

[326] *See supra* text accompanying notes 263, 273.

[327] *See supra* text accompanying note 143; KAY & KING, *supra* note 15, at 263 ("In a world characterised by radical uncertainty, there are many things we don't know, even with hindsight.").

[328] Korobkin & Ulen, *supra* note 102, at 1077–78 ("The decision to adopt a simplified strategy might be sensible given the marginal benefits and costs of making an optimal decision relative to a satisfactory one; in other words, the decision not to maximize utility when solving a single problem might in fact maximize the actor's overall utility. But although a decision not to optimize in a particular situation might be globally 'rational,' such behavior is rarely contemplated by scholars employing rational choice theory in the analysis of a particular decision.").

alternatives would be true cost optimization, except that any attempt at this idealized process would be so futile and wasteful that it should not even be considered a realistic possibility.[329] Unlike a cost-benefit analysis, the decision tree does not demand clairvoyance or actuarial expertise; its operations are within a dutiful lawyer's reasonable ability and should not prohibitively increase front-end costs. Second, optimization's polar opposite is simple disregard for litigation risks, which appears to be common among drafting attorneys.[330] This approach may reduce transaction costs but would often lead to inefficient levels of precision and vagueness.[331] In contrast, our decision tree requires attention to litigation risks at the front end only when it is warranted—that is, when the user must proceed to the penultimate question, regarding the probability of disputes. In those situations, one will generally identify more efficient language by considering back-end costs per our heuristic than by ignoring them, though the precise amount of this efficiency gain is variable and immeasurable. Just like any other form of "decision hygiene," our tree may be "invaluable but thankless" in that it "will, statistically, prevent many errors," but one "will never know *which* errors."[332] Third, rather than ignore dispute risks altogether, an experienced practitioner might consider them based on finely honed intuitions. Even someone who can do this well, however, would likely benefit from our decision tree's systematic approach, because "all mechanical prediction techniques . . . represent significant improvements on human judgment," regardless of expertise.[333] Moreover, reliable intuitions are unavailable to beginners, but the decision tree could help any lawyer draft their very first contract.

Therefore, of the available methods for choosing between vague and precise contract language, a deliberate heuristic would be most efficient and practical overall. This Article does not claim, nor could it logically establish,

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[329] *See supra* Section III.E.

[330] *See supra* note 8 and accompanying text.

[331] For example, if the drafter is an outside attorney, then their fee structure may incent them to spend too much time (as with hourly billing) or too little time (as with fixed fees) on the contract, resulting in excessive precision or vagueness, respectively. The latter situation is especially likely when one begins the drafting process with a standard template that contains general terms intended to apply to many situations, making vagueness a default position. Exacerbating these potential agency costs, neither ethical rules nor malpractice standards require attorneys to optimize contracting costs. The rules of professional responsibility grant lawyers broad discretion in choosing how to negotiate and draft contracts. *See* MRPC, *supra* note 64, at r. 1.2(a); STARK, *supra* note 3, at 456. Separately, lawyers can be liable for breach of fiduciary duty if they do not "exercise the competence and diligence normally exercised by lawyers in similar circumstances" or follow a client's reasonable instructions "about matters within the lawyer's reasonable power to perform." RESTATEMENT (THIRD) OF THE LAW GOVERNING LAWYERS §§ 22 cmt. d, 48, 49 cmt. b, 50, 52(1) (AM. LAW INST. 2000). Because cost optimization is not within lawyers' reasonable abilities, choosing contract language that turns out not to be cost-optimal but is otherwise common would not violate ethical rules or fiduciary duties. Moreover, legal education does not encourage lawyers to pursue cost optimization, as demonstrated by the lack of any guidance to this effect in contract drafting textbooks. *See supra* note 12 and accompanying text.

[332] KAHNEMAN ET AL. (2021), *supra* note 223, at 226.

[333] *Id.* at 127.

that our decision tree is the best strategy that could ever be developed. Compared with the evident alternatives, however, a tool of this nature constitutes the most rational approach to contract design and the most promising avenue for further advancements.

CONCLUSION

For decades, legal scholars have offered profound insights into contract design, elaborating an elegant account of the axiomatically rational choice between vague and precise language. Despite the cost optimization model's universal adoption in academia, until now nobody has attempted to explain how to implement it in practice, and contract drafting textbooks do not even mention it, let alone advocate it. Unfortunately, the cost-benefit analysis suggested by traditional contract theory idealizes and misrepresents the drafting process by overlooking contracting costs' inherent uncertainty and assuming unrealistic degrees of cooperation, clairvoyance, and computation.

Because it would be irrational to attempt an impossible and wasteful optimization process, it is no wonder that lawyers do not create contracts according to this model. However, as scholars have long complained, drafters often go too far in the opposite direction, ignoring dispute risks altogether. This is equally irrational if a feasible and efficient method of considering those risks is available.

From contract theory's normative insights, this Article distills such a method in the form of a robust and accessible decision tree. Drawing upon established research in behavioral science, this tool facilitates efficient choices by separating measurable risks from unmeasurable uncertainty and systematically focusing drafters' attention on the former. In the process, this Article also refines the cost optimization model itself to reflect the true dynamics of transactional negotiation. Together, these contributions bridge the gap between legal scholarship and practice more closely than ever. Academics now have a more accurate account of vagueness and precision in contract design, and lawyers finally have a practical way to implement this newly improved paradigm of contract theory.

More generally, this Article demonstrates that carefully designed heuristics can simplify and enhance decision-making in the legal profession, just as they have done in so many others. Accordingly, future work should not only build on the decision tree proposed by this Article, but also explore the potential for deliberate heuristics to facilitate other complex judgments in business transactions.[334] Following this Article's systematic approach, newly developed strategies could help lawyers design contracts ever more rationally.

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[334] Regarding other important considerations in contract design, see *supra* note 3.