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Ordinary Meaning and Corpus Linguistics

[†]Stefan Th. Gries* & Brian G. Slocum**

This Article discusses how corpus analysis, and similar empirically based methods of language study, can help inform judicial assessments about language meaning. We first briefly outline our view of legal language and interpretation in order to underscore the importance of the ordinary meaning doctrine, and thus the relevance of tools such as corpus analysis, to legal interpretation. Despite the heterogeneity of the judicial interpretive process, and the importance of the specific context relevant to the statute at issue, conventions of meaning that cut across contexts are a necessary aspect of legal interpretation. Because ordinary meaning must in some sense be generalizable across contexts, it would seem to be subject in some way to the empirical verification that corpus analysis can provide.

We demonstrate the potential of corpus analysis through the study of two rather infamous cases in which the reviewing courts made various general claims about language meaning. In both cases, United States v. Costello and Smith v. United States, the courts made statements about language that are contradicted by corpus analysis. We also demonstrate the potential of corpus analysis through Hart's no-vehicles-in-the-park hypothetical. A discussion of how to approach Hart's hypothetical shows the potential but also the complexities of the kind of linguistic analyses required by such scenarios. Corpus linguistics can yield results that are relevant to legal interpretation, but performing the necessary analyses is complex and requires significant training in order to perform competently. We conclude that while it is doubtful that judges will themselves become proficient at corpus linguistics, they should be receptive to the expert testimony of corpus linguists in appropriate circumstances.

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INTRODUCTION

A characteristic feature of legal texts is that they employ natural language in order to accomplish their purposes.¹ If one assumes that successful communication is the goal in most cases (especially where notice is important, as with criminal statutes), then these texts

1. See generally HEIKKI E.S. MATTILA, *COMPARATIVE LEGAL LINGUISTICS* (Christopher Goddard trans., 2d ed. 2013) (examining the functions and characteristics of legal language and the terminology of law).

should be understood by different people, including the general public, in the same way.² Such a goal requires that, absent some reason for deviation, such as words with technical or special legal meanings, the language used in legal texts should be viewed as corresponding with the language used in nonlegal communications.³ Indeed, the ‘ordinary meaning’ doctrine, fundamental to legal interpretation, reflects the presumption that legal and nonlegal language correspond.⁴ Should it follow, then, that a fluent English-speaking layperson is as qualified as a judge to determine the meaning of a legal provision? Most might intuitively answer “no,” but on what basis is a judge better qualified to determine the meaning of English sentences? Certainly, we can expect that a judge would understand the legal effects of a provision, and a layperson might not, but understanding the legal effects of a provision is distinct from an understanding of the meaning of its terms. Thus, to borrow from a much-discussed case involving a claim of breach of contract, understanding the meaning of *sandwich*, and whether the concept normally includes within its scope *burritos* and *tacos*, is different from understanding the legal effects of a determination that a burrito is a sandwich.⁵

Notwithstanding the difference between legal effects and meaning (as an abstract matter, at least), legal interpretation is an intricate process that depends crucially on the context surrounding a given provision, requiring an understanding of such things as precedent, related provisions, interpretive rules specific to law, and

2. See Herman Cappelen, *Semantics and Pragmatics: Some Central Issues*, in *CONTEXT SENSITIVITY AND SEMANTIC MINIMALISM: NEW ESSAYS ON SEMANTICS AND PRAGMATICS*, 3, 17 (Gerhard Preyer & Georg Peter eds., 2007) (“When we articulate rules, directives, laws and other action-guiding instructions, we assume that people, variously situated, can grasp that content in the same way.”).

3. See DAVID MELLINKOFF, *THE LANGUAGE OF THE LAW* (1963).

4. We are using double quotes for quotations, single quotes for meanings and concepts, and italics for mentions of words as exemplified in the following sentence: The word *run* can mean ‘to go faster than a walk.’

5. This question arose under a contract between a Panera Bread restaurant and a shopping center that prohibited the shopping center from leasing space to any restaurant “reasonably expected to have annual sales of *sandwiches*” exceeding ten percent of the restaurant’s income. *White City Shopping Ctr., LP v. PR Rests., LLP*, No. 2006196313, 2006 WL 3292641, at *1 (Mass. Super. Ct. Oct. 31, 2006).

the legal effects of any potential interpretation.⁶ This knowledge—not normally possessed by a layperson—helps to distinguish legal interpretation from other kinds of nonlegal interpretation. Nevertheless, pursuant to the ordinary meaning doctrine, judges endemically make claims about language in legal texts that are general in nature and not specific to the law. For example, the Supreme Court has decided multiple cases requiring it to make assertions about the meaning of *use* in relation to a criminal sentencing provision that provides for an enhanced punishment if the defendant “uses” a firearm “during and in relation to . . . [a] drug trafficking crime.”⁷ Similarly, Judge Posner, writing for the Seventh Circuit, made general claims about the meaning of *harbors* in interpreting a statute providing criminal penalties for anyone who “conceals, harbors or shields from detection” an alien who “has come to, entered, or remains in the United States in violation of law.”⁸ In fact, one of the most famous legal hypotheticals, H. L. A. Hart’s no-vehicles-in-the-park scenario, illustrates the fuzziness of natural language terms such as *vehicle*.⁹

Legal interpretation therefore cannot be reduced to an exercise in lexical semantics (i.e., the study of word meaning), but, at the same time, lexical semantics and other aspects of language are integral to legal interpretation. As such, inaccurate judicial assertions about language, which various scholars have catalogued, sometimes result in interpretations that might not have been selected absent incorrect understandings of language.¹⁰ These inaccurate assertions are often based on faulty judicial intuitions or incorrect use of

6. For an excellent overview of legal interpretation, see WILLIAM N. ESKRIDGE, JR., *INTERPRETING LAW: A PRIMER ON HOW TO READ STATUTES AND THE CONSTITUTION* (2016).

7. See, e.g., *Smith v. United States*, 508 U.S. 223, 225 (1993), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469; see *infra* Part IV (describing the Supreme Court’s interpretation of 18 U.S.C. § 924(c)(1)(A) (2012)).

8. *United States v. Costello*, 666 F.3d 1040, 1041 (7th Cir. 2012); see *infra* Part III (describing the Supreme Court’s interpretation of *Costello*, 666 F.3d 1040).

9. See *infra* V (discussing the no-vehicles-in-the-park hypothetical). The term *fuzziness* is used in linguistics and philosophy of language to describe the boundaries of categories (such as vehicle) that are “ill-defined, rather than sharp.” M. LYNNE MURPHY & ANU KOSKELA, *KEY TERMS IN SEMANTICS* 72 (2010); see *infra* notes 172–175 and accompanying text (discussing fuzziness in word meanings).

10. See, e.g., LAWRENCE M. SOLAN, *THE LANGUAGE OF JUDGES* (1993). For example, the book discusses the tendency of judges to declare statutory language to be “plain” when, in reality, it is general and vague. See *id.* at 99–117.

external sources of linguistic information, such as dictionaries.¹¹ Recently, some scholars have advocated that courts would be better served by engaging in corpus-linguistics analysis of relevant statutory and constitutional texts.¹² Corpus linguistics is the study of language based on large collections of language use stored in corpora, which are computerized databases created for linguistic research. Undoubtedly, corpus analysis can reveal insights about language usage and meaning. Furthermore, the use of corpora, and similar empirically based methods of language analysis, may help courts make accurate assertions about the ordinary meaning of language.

This Article demonstrates how corpus analysis, and similar empirically based methods of language study, can help inform judicial assessments about language meaning. First, we briefly outline our view of legal language and interpretation in order to demonstrate the importance of the ordinary meaning doctrine, and thus the relevance of tools such as corpus analysis, to legal interpretation. Part I argues that despite the heterogeneity of the current judicial interpretive process, and the importance of the specific context relevant to the statute at issue, conventions of meaning that cut across contexts are a necessary aspect of legal interpretation. Indeed, such conventions are an important aspect of the sequential nature of legal interpretation, whereby a court first determines the ordinary meaning of the textual language and then (1) accepts that meaning as the legal meaning of the text, (2) rejects it in favor of an unordinary meaning, or (3) precisifies it in some way because the ordinary meaning is indeterminate in relation to the interpretive question before the court. Nevertheless, as Part II discusses, the constituent question of what makes some permissible meaning the ordinary meaning is an inherently normative issue that courts typically, and incorrectly, treat as self-evident. Corpus analysis can provide valuable insights about language usage but cannot by itself resolve normative issues.

Parts III and IV demonstrate the potential of corpus analysis, and similar empirically based methods of language analysis, through the study of two rather infamous cases in which the reviewing courts

11. For a criticism of how judges use dictionaries, see Ellen P. Aprill, *The Law of the Word: Dictionary Shopping in the Supreme Court*, 30 ARIZ. ST. L.J. 275 (1998).

12. Thomas R. Lee & Stephen C. Mouritsen, *Judging Ordinary Meaning*, YALE L.J. (forthcoming 2018).

made various general claims about language meaning. In both cases, *United States v. Costello*¹³ and *Smith v. United States*,¹⁴ the courts made statements about language that are contradicted by corpus analysis.

Part V demonstrates the potential of corpus analysis through Hart's no-vehicles-in-the-park hypothetical. A discussion of how to approach Hart's hypothetical shows the potential but also the complexities of the linguistic analyses required by such scenarios.¹⁵ Corpus linguistics can yield results that are relevant to legal interpretation, but performing the necessary analyses is complex and requires significant training in order to perform them competently. We conclude that while it is doubtful that judges will themselves become proficient at corpus linguistics, they should be receptive to the expert testimony of corpus linguists in appropriate circumstances.

I. CORPUS LINGUISTICS AS A SOURCE FOR ORDINARY MEANING

A. The Heterogeneity of Legal Interpretation

Legal interpretation is heterogeneous in ways that should be accounted for when considering the value of language insights from corpus linguistics. One of the most frequently discussed areas of divergence involves the very question of how courts should approach the interpretation of legal texts. While a variety of interpretive methodologies have been suggested, the basic division is between judges who privilege the linguistic meaning of the legal text (known as textualists) and judges who privilege the intention or purpose of the legislative body that enacted the text (known as intentionalists).¹⁶ A somewhat analogous language distinction (which will be discussed throughout this Article) between “semantics” and “pragmatics” is

13. *Costello*, 666 F.3d 1040.

14. *Smith v. United States*, 508 U.S. 223 (1993), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469.

15. See ANTONIN SCALIA & BRYAN A. GARNER, *READING LAW: THE INTERPRETATION OF LEGAL TEXTS* 36–39 (2012).

16. For a description and critique of textualism and intentionalism, see generally Jonathan R. Siegel, *The Inexorable Radicalization of Textualism*, 158 U. PA. L. REV. 117 (2009). For purposes of this Article, intentionalism and purposivism are viewed as synonymous and the terms are used interchangeably. Although some may argue that intentionalism and purposivism are distinct methodologies of interpretation, any differences between the two are not relevant to the arguments made in this Article.

made by linguists and philosophers. With some simplification, semantics accounts for linguistic phenomena by relating, via the rules of the language and abstracting away from specific contexts, linguistic expressions to the world objects to which they refer.¹⁷ A semantic meaning is thus one based on decoding and not intent determining.¹⁸ In contrast to semantics, pragmatics accounts for linguistic phenomena by reference to the language user (producer or interpreter), and involves inferential processes.¹⁹ The traditional view is that pragmatics takes as input the semantic contents of sentences uttered in contexts.²⁰ After identifying the semantic content of an utterance, pragmatic principles are used for comprehension.²¹ Context is thus centrally involved in explaining how pragmatics complements semantics.²²

Notwithstanding the heterogeneity of interpretive methodologies, it may seem uncontroversial that linguistic insights from corpora should be deemed relevant to the questions courts ask (even if implicitly) when interpreting legal texts. For textualists, the relevance of linguistic insights from corpora seems obvious. Textualism advocates that judges “should seek statutory meaning in the semantic import of the enacted text.”²³ If the “semantic import” of the enacted language is of crucial importance to the court, it follows that generalizations about language usage (which corpus linguistics can provide) would be useful to interpreters. Compared to textualist judges, it is less intuitive that corpus linguistics should be relevant to intentionalist or purposivist judges. After all, such judges

17. See MIRA ARIEL, *DEFINING PRAGMATICS* 24 (2010).

18. See *id.*

19. See *id.* at 4–8, 28.

20. See FRANCOIS RECANATI, *LITERAL MEANING* 21 (2004).

21. An utterance is simply a “specific, concrete instance of language use.” MURPHY & KOSKELA, *supra* note 9, at 167. It “can be taken to include both spoken and written language use.” *Id.*

22. See *id.* Pragmatics is thus concerned with whatever information is relevant to understanding an utterance, even if such information is not reflected in the syntactic properties of the sentence. For example, one kind of pragmatic process, conversational implicature, involves “any meaning or proposition expressed implicitly by a speaker in his or her utterance of a sentence which is meant without being part of what is said in the strict sense.” Yan Huang, *Implicature*, in *THE OXFORD HANDBOOK OF PRAGMATICS* 156 (Yan Huang ed., 2017). Thus, when a speaker utters the sentence, “The soup is warm,” the speaker conversationally implicates an augmented meaning, namely that ‘the soup is not hot.’ See *id.*

23. John F. Manning, *Second-Generation Textualism*, 98 CALIF. L. REV. 1287, 1288 (2010).

purport to interpret statutes in light of the legislature's intent or purpose. Even so, a common sentiment is that intentionalists and purposivists have "more or less adopted textualist practices as their first plan of attack."²⁴ Furthermore, courts in general often state that the ordinary meaning of the statutory text is the "best evidence" of legislative intent or purpose.²⁵ Thus, generalizations about language usage should also be useful to intentionalist judges, even if they may not always be viewed by intentionalists as conclusive of statutory meaning.

Not surprisingly, given the influence of textualism since the 1980s, the idea that textual language should be given its ordinary meaning is more frequently invoked now than in the past.²⁶ The basic premise of the ordinary meaning doctrine is that a legal text is a form of communication that uses natural language in order to accomplish its purposes. Thus, for various reasons including rule of law and notice concerns, textual language should be interpreted in light of the accepted and typical standards of communication that apply outside of the law.²⁷ Identifying the ordinary meaning of the language in a legal text is therefore a purely linguistic matter. The legal concerns of the judge are ostensibly not relevant to the determination, although these legal concerns might influence the ultimate meaning the court chooses.²⁸

Notwithstanding the presumption that textual language should be given its ordinary meaning, heterogeneity in interpretation exists (and would even if all judges agreed to apply the same interpretive

24. David K. Ismay & M. Anthony Brown, *The Not So New Textualism: A Critique of John Manning's Second Generation Textualism*, 31 J.L. & POL. 187, 192 (2015).

25. *Sayles v. Thompson*, 457 N.E.2d 440, 448 (Ill. 1983) ("The ordinary meaning of the language employed by the drafters in the questioned constitutional or statutory clause provides the best evidence of the drafters' intent."); *see also* *Engine Mfrs. Ass'n v. S. Coast Air Quality Mgmt. Dist.*, 541 U.S. 246, 252 (2004) ("Statutory construction must begin with the language employed by Congress and the assumption that the ordinary meaning of that language accurately expresses the legislative purpose." (internal quotation marks omitted)).

26. *See* Antonin Scalia & John F. Manning, *A Dialogue on Statutory and Constitutional Interpretation*, 80 GEO. WASH. L. REV. 1610, 1610 (2012); *see also* *infra* note 82. Scalia and Garner refer to the ordinary meaning doctrine as "the most fundamental semantic rule of interpretation." SCALIA & GARNER, *supra* note 15, at 69.

27. *See* BRIAN G. SLOCUM, *ORDINARY MEANING: A THEORY OF THE MOST FUNDAMENTAL PRINCIPLE OF LEGAL INTERPRETATION* 3 (2015).

28. *See* Brian G. Slocum, *The Contribution of Linguistics to Legal Interpretation*, in *THE NATURE OF LEGAL INTERPRETATION: WHAT JURISTS CAN LEARN ABOUT LEGAL INTERPRETATION FROM LINGUISTICS AND PHILOSOPHY* 14,16 (Brian G. Slocum ed., 2017).

methodology) due to the significant contribution that context makes to meaning. Any theory of interpretation should recognize that the linguistic meaning of a legal text is not limited to the semantic meaning of its language but rather includes the pragmatic processes necessary to identify the meaning of the legislative utterances.²⁹ While semantic meaning must in some ways account for context, identifying the meaning of a legislative utterance requires particular consideration of context.³⁰ In fact, semantic meaning and contextual cues often have a symbiotic relationship. Scholars have demonstrated that efficient communication systems will contain ambiguity as long as context is informative about meaning.³¹ Disambiguation occurs because “comprehenders are able to quickly use contextual information in the form of discourse context . . . , local linguistic context . . . , or more global world knowledge.”³² An efficient communication system may thus produce ambiguous language when it is examined out of context but “will not convey information already provided by the context.”³³

The context in which the legislature enacted a statute is therefore crucial to interpretation, making meaning inherently contextual and dependent on the specific features of the particular context in any given case. In legal cases, the contextual evidence that must be considered is often vast and nuanced, requiring multiple inferences about meaning.³⁴ Even assuming that contextual cues are indicative of meaning, as in nonlegal communication, legal cases involve normative judgments about possible inferences from the context that are not relevant to nonlegal interpretation. (For example, can

29. See Scott Soames, *Defeasibility, Living Originalism, and the Constitution*, in *THE NATURE OF LEGAL INTERPRETATION: WHAT JURISTS CAN LEARN ABOUT LEGAL INTERPRETATION FROM LINGUISTICS AND PHILOSOPHY* 218, 218–19 (Brian G. Slocum ed., 2017).

30. *Nken v. Holder*, 556 U.S. 418, 426 (2009) (“[S]tatutory interpretation turns on ‘the language itself, the specific context in which that language is used, and the broader context of the statute as a whole’” (quoting *Robinson v. Shell Oil Co.*, 519 U.S. 337, 341 (1997))).

31. Steven T. Piantadosi, Harry Tily & Edward Gibson, *The Communicative Function of Ambiguity in Language*, 122 *COGNITION* 280, 280 (2012).

32. *Id.* at 289.

33. *Id.* at 282.

34. Consider, for example, Justice Scalia and Bryan Garner’s recent book, *Reading Law: The Interpretation of Texts*, which lists dozens of principles and canons of interpretation, all of which relate in some way to the context of the statute. SCALIA & GARNER, *supra* note 15.

evidence from legislative history be considered and is it sometimes persuasive?) Furthermore, even if a judge adheres to a particular methodology of interpretation, it may not be predictable how that judge will weigh the often conflicting sources of meaning. The judge might find evidence from legislative history (or a textual canon, dictionary definition, or any number of other determinants of meaning) persuasive in one case but not another, while another judge using the same sources and considering the same evidence might reach a different conclusion.³⁵ Legal interpretation can thus be seen as a very personal, a perhaps idiosyncratic, endeavor.

The relevant contextual considerations in legal interpretation are thus intensely legal in nature, involving various background interpretive principles as well as the remainder of the corpus juris.³⁶ Legal interpretation is an inherently legal process and not one designed to determine meaning as one would outside of the law (as in a private correspondence, for example).³⁷ Courts do not seek the general meaning of a word (or even a sentence); instead, they seek something broader and more along the lines of what a reasonable person would take the author to be conveying by the chosen language in the given communicative context.³⁸ Because the process

35. No methodology of interpretation, such as textualism or intentionalism, has been sufficiently developed so that it contains precise instructions regarding under what circumstances a particular interpretive principle should be applied and how it should be applied. Even if such instructions existed, they would necessarily be sufficiently general so that heterogeneity of results would still obtain.

36. See, e.g., *W. Va. Univ. Hosps. v. Casey*, 499 U.S. 83, 100–01 (1991) (“Where a statutory term presented to us for the first time is ambiguous, we construe it to contain that permissible meaning which fits most logically and comfortably into the body of both previously and subsequently enacted law. . . . We do so . . . because it is our role to make sense rather than nonsense out of the *corpus juris*.”), *superseded by statute on other grounds*, Civil Rights Act of 1991, Pub. L. No. 102-166, 105 Stat. 1071, 1079, *as recognized in* *Landgraf v. USI Film Prods.*, 511 U.S. 244 (1994).

37. Cf. Richard H. Fallon, Jr., *Three Symmetries Between Textualist and Purposivist Theories of Statutory Interpretation—and the Irreducible Roles of Values and Judgment Within Both*, 99 CORNELL L. REV. 685, 707 (2014) (“Modern textualists emphasize that Congress invariably legislates against the background of a number of linguistic and cultural understandings that influence, and indeed determine, what a linguistically competent person would understand a statute to say.”).

38. See Oliver Wendell Holmes, *The Theory of Legal Interpretation*, 12 HARV. L. REV. 417, 417–18 (1899) (indicating that the interpreter’s role is not to ask what the author meant to convey but instead determine “what those words would mean in the mouth of a normal speaker of English, using them in the circumstances in which they were used.”); see also Fallon, *supra* note 37, at 703 (arguing that “[o]nce an interpretive context is specified, both

must take account of various considerations unique to the law, nonlegal generalizations about language usage are seen by some to be relatively unimportant if not irrelevant.³⁹ In this light, the focus of concern in legal interpretation should be on how best to account for the ways in which context shapes meaning rather than how to find generalizations about language that cut across contexts.

B. Ordinary Meaning as a Necessary Component of Legal Meaning

Judicial practice and the very nature of legal interpretation complicate the above described context-centric view of interpretation. For instance, the rule of law requires that governing rules provide advance notice to enable people to plan their affairs with knowledge of the legal consequences of their actions.⁴⁰ Thus, despite the context-sensitive nature of natural language communication, a basic assumption of at least some legal texts (e.g., criminal statutes) is that they should be understood by different people, including the general public, in the same way and the understanding should be based on the semantic meaning of the language.⁴¹ Such an assumption suggests that these texts should be interpreted according to standards of communication that give texts readily discernible meanings based on a somewhat limited consideration of context.⁴² Even if one discounts the influence of the rule of law on legal interpretation, it seems implausible that courts would systematically disregard the semantic meanings of words. Indeed, it is difficult to conceive of a realistic interpretive methodology in which the semantic meanings of the words did not generally act (at the least) as a constraint on permissible interpretations.⁴³

[textualists and purposivists] rely on a largely unanalyzed notion of reasonableness to determine ultimate meaning.”).

39. See, e.g., Marc R. Poirier, *On Whose Authority?: Linguists' Claim of Expertise to Interpret Statutes*, 73 WASH. U. L.Q. 1025, 1034 (1995) (arguing that “[w]hen judges say plain meaning, they may not mean plain meaning in a sense that linguists would recognize as ordinary language.” (emphasis omitted)).

40. Richard H. Fallon, Jr., “*The Rule of Law*” as a Concept in Constitutional Discourse, 97 COLUM. L. REV. 1, 7–8 (1997).

41. See Cappelen, *supra* note 2.

42. Notice is especially important in some areas, such as with criminal statutes. See Fallon, *supra* note 40, at 48.

43. See SLOCUM, *supra* note 27, at 91. Of course, it is possible to point to interpretations where the linguistic meaning of the text did not act as a constraint on the

To illustrate, consider H. L. A. Hart's famous hypothetical involving a rule that "forbids you to take a vehicle into the public park."⁴⁴ Suppose a case arises in which a citation is given to a person walking his dog through the park. There have been several dog attacks in the park (some might even say that it has been an epidemic), and the dog at issue is a member of the breed that has been responsible for the majority of the attacks. The court, considering purpose at a high level of generality, decides that the protection of park users (the identified purpose of the provision) dictates that certain dangerous breeds of dogs fall within the scope of the provision. The court thus determines that the dog in question is a "vehicle" within the meaning of the statute.

The court's decision in the above case, even if well-intentioned, would likely be harshly criticized by many commentators. Under common usage, a dog is clearly not a vehicle, and there is no plausible argument that dogs are even borderline cases of vehicles, as any empirical investigation would no doubt confirm.⁴⁵ Critics would likely argue that the court's decision fails to adhere to important rule of law principles. These criticisms would be made even if the case did not involve a situation in which notice would be particularly important. To disregard the text of the law, by ignoring the principle that words have ordinary and ascertainable meanings, would be to fail to comply with rule of law principles.⁴⁶ This line of criticism would likely hold even if the court could find some evidence that the legislative intent was that "vehicle" in the provision should have a very broad meaning.⁴⁷ Indeed, the criticisms reflect an underlying belief, captured by the ordinary meaning doctrine, that the meaning lexicalized by a word (i.e., its semantic meaning) is generalizable across contexts, not based on any specific interpretive clues that can

interpretation chosen by the court. The exceptions do not, however, undermine the generality that linguistic meaning acts (at least) as a constraint on possible legal meaning.

44. H. L. A. Hart, *Positivism and the Separation of Law and Morals*, 71 HARV. L. REV. 593, 607 (1958).

45. Of course, the issue might be closer if the dog was transporting someone (perhaps a small child) on its back. Nevertheless, it is not a controversial claim that there exist objects that clearly are not vehicles.

46. See SCALIA & GARNER, *supra* note 15, at xxix, 4 (arguing that courts should act as faithful agents of the legislature, which includes an acceptance that "words convey discernible meanings").

47. Obviously, the legislature can stipulate an unordinary meaning in the text of the statute, which a court would be bound to implement.

be traced to the drafter of the text. Under a mainstream view of lexical semantics, and consistent with Hart's analysis, knowledge of the semantic meaning of a word like *vehicle* may not resolve all interpretive disputes, because the inherent fuzziness of words means that there will be uncertainties regarding the word's scope of domain (i.e., the objects to which the word should be applied).⁴⁸ Nevertheless, the semantic meaning can fairly rule out some objects (like dogs) as being vehicles.

The picture of legal interpretation that should emerge is one in which the interpreter determines meaning on the basis of various interpretive tools, most of which are based on conventions of meaning or other principles resting on generalized assumptions about language usage.⁴⁹ Still, while the interpreter must determine the meaning of the text on the basis of the words used and their composition, the consideration of context is crucial to meaning, both within and outside of law.⁵⁰ In general,

[a] typical author in typical circumstances is motivated to exploit external factors in order to provide the interpreter with sufficiently clear evidence that will enable the interpreter to interpret the inscription as intended. In fact, the author cannot reasonably expect the interpreter to recognize the intended meaning unless the author believes that sufficient cues exist and are available to the interpreter to determine the meaning.⁵¹

Nevertheless, the context available in interpreting legal texts may often be multivocal and involves normative judgments about whether a possible determinant (e.g., legislative history) may be considered.

The interpretive process thus involves a mix of determinants of meaning, all of which relate in some way to the relevant statute, whether the relation is to the statute's language or the circumstances

48. See *infra* notes 172–75 and accompanying text (discussing fuzziness in word meanings).

49. See generally SLOCUM, *supra* note 27, at 2–3 (describing the determinants of the ordinary meaning doctrine, which are all dependent on generalized assumptions about language usage).

50. MURPHY & KOSKELA, *supra* note 9, at 36 (“The principle of compositionality states that the meaning of a complex linguistic expression is built up from the meanings of its composite parts in a rule-governed fashion.” Thus, a sentence is compositional if its meaning is the sum of the meanings of its parts and of the relations of the parts.)

51. SLOCUM, *supra* note 27, at 93.

surrounding the statute's enactment. Legislative history, for example, allows the interpreter to consider the particular context surrounding the enactment of a statute and make inferences about legislative intent based on that evidence.⁵² Other determinants depend primarily on the systematicities of language rather than multiple interpretive clues drawn from the particular context of a statute.⁵³ The ordinary meaning doctrine acts as an umbrella concept that encompasses various such determinants.⁵⁴ Dictionaries are an obvious, and commonly used, example. A dictionary definition is considered useful, not because it reveals some particular legislative intent, but rather because of both the (often mistaken) belief that the definition provides the ordinary meaning of the relevant word and the correlative generalized presumption that the legislature intended for the word to be given its ordinary meaning. However, dictionaries, in general, list words as a set of isolated items, and dictionary definitions cannot account for the particular context of the provision at issue.⁵⁵

Notwithstanding the existence of determinants of meaning that relate to the particularized context of a statute, such as legislative history, it is not surprising that courts consistently state that the words of the text, and the ordinary meaning of those words, are the surest, safest evidence of a legislature's intentions.⁵⁶ As previously indicated, people are generally motivated to choose words that express their intended meaning.⁵⁷ Due to the multivocal nature of contextual evidence relating to actual authorial intent, discerning that intent apart from the ordinary meaning of the words used is an uncertain proposition.⁵⁸ Despite the importance of context,

52. For an analysis of legislative history, see, for example, James J. Brudney & Corey Ditslear, *The Decline and Fall of Legislative History? Patterns of Supreme Court Reliance in the Burger and Rehnquist Eras*, 89 JUDICATURE 220 (2006); Charles Tiefer, *The Reconceptualization of Legislative History in the Supreme Court*, 2000 WIS. L. REV. 205.

53. See SLOCUM, *supra* note 27, at 213–76 (discussing ordinary meaning and lexical semantics in legal interpretation).

54. See generally SLOCUM, *supra* note 27 (analyzing the various interpretive principles that can be said to determine ordinary meaning).

55. See M. A. K. HALLIDAY & COLIN YALLOP, LEXICOLOGY: A SHORT INTRODUCTION 24–25 (2007).

56. See *supra* note 25 and accompanying text.

57. SLOCUM, *supra* note 27, at 98.

58. See John F. Manning, *Inside Congress's Mind*, 115 COLUM. L. REV. 1911, 1947 (2015) (analyzing the difficulties of ascertaining legislative intent).

determinants of meaning that relate only superficially (or partially) to the particularized context of the provision and depend on generalized assumptions about legislative intent, such as dictionaries, can be valuable tools of legal interpretation.⁵⁹ They must, however, be combined with an examination of the particularized context of the statute in order to fix the meaning of the relevant provision.

C. Ordinary Meaning and Sequential Interpretation

The heterogeneity of the determinants of legal meaning makes the justificatory requirements of legal interpretation critical. By distinguishing between semantics and pragmatics, language theorists can more perspicuously address both the conventions and systematicities of language (i.e., semantics) and the inferential processes involved in determining a speaker or author's meaning (i.e., pragmatics).⁶⁰ In a similar way, the sequential process of statutory interpretation allows courts to express the different aspects of determining the legal meaning of a text. By providing an initial anchoring point for deciding whether arguments about meaning are accepted or rejected, the ordinary meaning concept is an essential aspect of legal interpretation that enhances judicial accountability. A sequential process whereby ordinary meaning is first explicitly determined and then (1) accepted as the legal meaning of the text, (2) rejected in favor of an unordinary meaning, or (3) precisified in some way because the ordinary meaning is indeterminate in relation to the interpretive question before the court, is preferable to an alternative where the legal meaning is decided without considering the ordinary meaning of the text.

Notwithstanding its importance, the presumptive meaning created by the ordinary meaning doctrine can be overcome on whatever basis a court finds persuasive. Frequently, a court will choose an interpretation that is motivated by concerns specific to the law, such as the desire to avoid serious constitutional questions.⁶¹ In other situations, a particular context will indicate that some

59. See *infra* note 82 (criticizing judicial reliance on dictionaries).

60. Certainly, there are also numerous systematicities associated with pragmatics. See generally FRANÇOIS RECANATI, *TRUTH-CONDITIONAL PRAGMATICS* (2010). It is nonetheless useful to distinguish between semantics and pragmatics when analyzing language.

61. See generally Ernest A. Young, *Constitutional Avoidance, Resistance Norms, and the Preservation of Judicial Review*, 78 TEX. L. REV. 1549 (2000).

unordinary meaning was intended. For example, if an intentionalist judge believes that the ordinary meaning of the relevant language conflicts with legislative intent, the judge may choose a different meaning. In these cases, as well as many cases involving interpretations motivated by legal concerns, the legal meaning given to the text will differ from the ordinary meaning of the words used.⁶²

Judicial decisions regarding ordinary meaning are typically explained in the judge's opinion, thereby illustrating the justificatory nature of legal interpretation. In general courts do not simply announce or assume that a particular interpretation is correct but rather explain their process of reasoning. Specifically, courts explain how the evidence establishes a meaning that corresponds with one of the objectives of interpretation, such as determining the ordinary meaning of the language.⁶³ An ordinary meaning determination, therefore, adds explicit structure to what might otherwise be a comparatively open-ended judicial explanation if only the final legal meaning of the text were being determined. Thus, notwithstanding its defeasibility, the presumption of ordinary meaning sets a useful default which requires that deviations be explained and justified or that the indefinite nature of the language be identified. Of course, courts might erroneously evaluate the relevant language, such as by exaggerating its definiteness. Judges are, nevertheless, accountable for the meanings they choose in the sense that they should give reasons for their decisions.⁶⁴

Ordinary meaning is, thus, a presumptive meaning that can be modified on the basis of concerns specific to the law or a conclusion

62. See also *Johnson v. United States*, 529 U.S. 694, 706 n.9 (2000) (explaining that the Court was “departing from the rule of construction that prefers ordinary meaning [T]his is exactly what ought to happen when the ordinary meaning fails to fit the text and when the realization of clear congressional policy . . . is in tension with the result that customary interpretive rules would deliver.”), *superseded by statute*, 21st Century Department of Justice Appropriations Authorization Act, Pub. L. No. 107-273, 116 Stat. 1758, 1806 (2002); SCALIA & GARNER, *supra* note 15, at 70 (stating that “[o]ne should assume the contextually appropriate ordinary meaning unless there is reason to think otherwise. Sometimes there is reason to think otherwise, which ordinarily comes from context.”) (emphasis removed). A particular context may also make a vague or general meaning more precise by indicating that some more determinate meaning was intended by the legislature than the textual language that was used.

63. The relevant standard is typically seen by courts as a straightforward search for the “correct” interpretation.

64. See generally Louis Michael Seidman, *Ambivalence and Accountability*, 61 S. CAL. L. REV. 1571 (1988).

(based on contextual cues) that the legislature intended to give the language a meaning other than its ordinary meaning. Nevertheless, the above discussion that distinguishes between ordinary meaning and the legal meaning given to the text by the judge is, admittedly, somewhat normative, rather than descriptive, in nature. Courts do not uniformly or consistently discuss or distinguish these concepts.⁶⁵ Though, if it is to be a coherent concept, the notion of ordinary meaning must entail that some meanings can be grammatical and comprehensible but nevertheless unusual and thus not ordinary.⁶⁶ In that sense, the ordinary meaning doctrine establishes a constraint on interpretations that presumptively excludes meanings that are unlikely or unusual.

II. CURRENT JUDICIAL APPROACH TO ORDINARY MEANING

If the linguistic meaning of a legal text is an integral aspect of its legal meaning, even if not always decisive, an accurate understanding of the conventions and systematicities of language should be important to legal interpreters. Unlike the ultimate legal meaning given a text, which may well reflect considerations other than language, an ordinary meaning should be orthogonal to such concerns.⁶⁷ Determining ordinary meaning though may seem at different times, either self-evident or elusive. Courts must answer, even if implicitly, both the constituent question of what makes a meaning the ordinary one and the evidential question of what are the proper determinants of ordinary meaning.⁶⁸ The constituent

65. A recent exception is *Taniguchi v. Kan Pacific Saipan, Ltd.*, 566 U.S. 560 (2012), where the Court determined that “interpreter” can, but does not ordinarily, include one who translates written documents, reasoning that just because a dictionary “definition is broad enough to encompass one sense of a word does not establish that the word is ordinarily understood in that sense.” *Id.* at 568 (emphasis omitted). The Court indicated that an unordinary, but sometimes used, meaning of the word, which includes document translation, would not control “unless the context in which the word appears indicates that it does.” *Id.* at 569.

66. See *infra* notes 129–57 and accompanying text (describing *Smith v. United States*, 508 U.S. 223 (1993), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469, where Justice Scalia, in dissent, argued that the Court’s meaning was grammatical and comprehensible, but nonetheless unordinary).

67. See *supra* notes 3, 41 and accompanying text (explaining that the ordinary meaning doctrine is based on the presumption that legal and nonlegal language coincide).

68. See SLOCUM, *supra* note 27, at 94–95 (describing the constituent and evidential questions).

question requires that one believe that there is such a thing as an “ordinary meaning” and that ordinary meaning can be distinguished from other concepts, such as technical or unusual meaning. In turn, the evidential question might be framed as empirical in nature and based on an accurate understanding of language. Perhaps because the answers to the constituent and evidential questions may seem elusive or daunting, they are typically treated by courts as self-evident.⁶⁹ This Part does not seek to comprehensively answer the constituent and evidential questions but rather outlines the issues involved in answering these questions before briefly addressing how corpus linguistics is relevant to the resolution of the issues raised.

A. The Constituent Question of Ordinary Meaning

The constituent question may seem self-evident to courts and others because language usage is effortless for the average native speaker of a language. A typical person encounters thousands of words in a single day and uses them with great facility, seemingly without thinking.⁷⁰ In a real sense, even nonlinguists are experts in their native languages. For instance, judgments by native speakers of the grammaticality and acceptability of sentences, as well as other linguistic intuitions, can be a major source of evidence for linguists when constructing grammars.⁷¹ In contrast, the selection of some standard of meaning commonness, or some other linguistic measure necessary to constitute ordinary meaning, is a normative matter that must be decided based on the needs of the legal profession.⁷² However, courts have not offered consistent answers to the constituent question of what makes a meaning the ordinary one. At times, the Supreme Court has indicated that a permissible but unusual usage may not fall within the ordinary meaning of a word.⁷³ In contrast, in the (in)famous case, *Smith v. United States*, the Court

69. See *id.* at 2–3.

70. JEAN AITCHISON, WORDS IN THE MIND: AN INTRODUCTION TO THE MENTAL LEXICON 3 (4th ed. 2012).

71. CARSON T. SCHÜTZE, THE EMPIRICAL BASE OF LINGUISTICS: GRAMMATICALITY JUDGMENTS AND LINGUISTIC METHODOLOGY xvii (2016).

72. Of course, linguistics can help determine whether that standard has been met.

73. See *supra* note 65 (describing *Taniguchi v. Kan Pacific Saipan, Ltd.*, 566 U.S. 560 (2012)).

suggested that an unusual but still permissible usage would fall within the ordinary meaning of the relevant language.⁷⁴

Other facts specific to the law also distinguish legal language from nonlegal discourse and, in some ways, make legal interpretation more difficult and less susceptible to layperson judgment. For instance, routine, everyday interpretation often yields a “merely ‘good enough’” meaning, “rather than a detailed linguistic representation of an utterance’s meaning.”⁷⁵ However, litigated cases frequently pose close and contested issues of meaning that implicate linguistic knowledge that is rarely deemed pertinent to routine, nonlegal verbal interactions. Such advanced knowledge of syntax and semantics is not obtained merely by fluent knowledge of a language. A judge might, for example, be called to consider the relevance of a comma (or its absence) to the meaning of the text.⁷⁶ This sort of interpretive problem does not occur in oral conversations and may be infrequently encountered by the ordinary person. Furthermore, legal cases often involve lexical fuzziness or underspecification that may not be a concern in ordinary conversations but may pose problems in legal interpretation. Legal interpretation is binary in nature and requires a “yes” or “no” answer to resolve the legal dispute at issue. If, for example, the dispute involves a matter of categorization (e.g., is a Segway a vehicle?), the court must give a definitive answer even if language experts indicate that category membership among ordinary language users is properly viewed as a matter of degree.⁷⁷

The strong norm encouraging the externality of judicial decision-making, reflected in the ordinary meaning doctrine, also adds production costs to the identification of ordinary meaning. If the identification of ordinary meaning is not satisfied merely by the

74. *Smith v. United States*, 508 U.S. 223, 230 (1993), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469; *see infra* Part IV (describing and analyzing the case).

75. *See* Fernanda Ferreira, *The Misinterpretation of Noncanonical Sentences*, 47 *COGNITIVE PSYCHOL.* 164 (2003).

76. Courts will, for example, consider a principle such as the rule of the last antecedent, which provides that when a modifier is set off from a series of antecedents by a comma, the modifier should be interpreted to apply to all the antecedents. Terri LeClercq, *Doctrine of the Last Antecedent: The Mystifying Morass of Ambiguous Modifiers*, 2 *LEGAL WRITING: J. LEGAL WRITING INST.* 81, 87 (1996).

77. *See supra* note 44 and accompanying text (describing the no-vehicles-in-the-park hypothetical).

judge's personal intuitions as a fluent speaker of the language but rather depends to some degree on external verification, the requirement that articulated reasons support the meaning chosen will tend to make the process elusive rather than self-evident. The philosopher Waismann, writing about the "ordinary use of language" by philosophers, wondered, "[H]ow ought one to determine what this ordinary use is, e.g. in a case of doubt?"⁷⁸ One could "ask people," perhaps targeting the "competent ones," which may be difficult or controversial.⁷⁹ With legal interpretation, a court might ask what a "reasonable person" would deem to be the ordinary meaning of the provision, but the reasonable person standard provides dubious externality when it is used by a judge with no external determinants of meaning.⁸⁰

The reasonable person standard may have some value in underscoring that an interpretation should be external to the, perhaps idiosyncratic, personal views of the judge, instead being based on the conventions of the larger community. But the reasonable person standard does not itself provide any sort of empirical test for the conventions of the relevant language community.⁸¹ Considering that the "reasonable person" is a fictional construct, it is intuitive that judges might seek to test the ordinary meaning of textual language through some scenario that is real rather than an abstract construct. For instance, Justice Scalia wondered in a dissenting opinion whether "the acid test of whether a word can reasonably bear a particular meaning is whether you could use the word in that sense at a cocktail party without having people look at you funny. The Court's assigned meaning would surely fail that test, even late in the evening."⁸² Similarly, in a concurring

78. F. Waismann, *Analytic-Synthetic IV*, 11 ANALYSIS 115, 122 (1951).

79. *Id.*

80. It would be circular to aver that a meaning is ordinary simply by virtue of the actual interpreter proclaiming it as such. There is therefore a necessary distinction between what is in fact the case and what any given individual believes to be the case.

81. See Karen Petroski, *The Strange Fate of Holmes's Normal Speaker of English*, in THE NATURE OF LEGAL INTERPRETATION: WHAT JURISTS CAN LEARN ABOUT LEGAL INTERPRETATION FROM LINGUISTICS AND PHILOSOPHY, 105–29 (Brian G. Slocum ed., 2017) (discussing the failure of courts to develop the reasonable person standard with respect to interpretation).

82. *Johnson v. United States*, 529 U.S. 694, 718 (2000) (Scalia, J., dissenting), *superseded by statute*, 21st Century Department of Justice Appropriations Authorization Act, Pub. L. No. 107-273, 116 Stat. 1758, 1806 (2002). Not surprisingly, the Court in its majority

opinion that argued for a restricted meaning for “tangible object” in the statutory phrase “any record, document, or tangible object,” Justice Alito wondered, “who wouldn’t raise an eyebrow if a neighbor, when asked to identify something similar to a ‘record’ or ‘document,’ said ‘crocodile?’”⁸³ Of course, neither a “cocktail party” standard nor an “eyebrow” standard can be adopted as a general test of ordinary meaning; rather, they serve to highlight the absence of competing standards used by judges.

B. The Evidential Question of Ordinary Meaning

The constituent question of what makes some meaning the ordinary one is intimately intertwined with the evidential question of the proper determinants of ordinary meaning and, in light of the absence of any clear answer for the constituent question, answering the latter question seems to answer the former. Consider one prominent determinant of meaning—dictionary definitions—which currently are used as a sort of substitute for corpus analysis. Courts frequently rely on dictionary definitions to determine meaning.⁸⁴ The increased judicial reliance on dictionaries since the 1980s can be traced to the influence of textualism and its focus on linguistic meaning.⁸⁵ Judges undoubtedly believe that dictionaries provide an expert, neutral, and external standard for the ordinary meaning of words. A dictionary definition is not created for the purpose of litigation, is external to the judge, and is not widely viewed as being created on the basis of ideological biases. Furthermore, the difficult work of defining a word in a dictionary has already been performed by an expert. The judge merely has to consult a dictionary and select the appropriate meaning for the word. Although judicial reliance on dictionaries has increased, their usefulness in determining ordinary meaning has been challenged.

opinion indicated that it did not “consider usage at a cocktail party a very sound general criterion of statutory meaning.” *Id.* at 706 n.9 (majority opinion).

83. *Yates v. United States*, 135 S. Ct. 1074, 1089 (2015) (Alito, J., concurring in the judgment).

84. See James J. Brudney & Lawrence Baum, *Oasis or Mirage: The Supreme Court’s Thirst for Dictionaries in the Rehnquist and Roberts Eras*, 55 WM. & MARY L. REV. 483, 483 (2013).

85. See *id.* (explaining that, while the United States Supreme Court’s use of dictionaries was virtually nonexistent before 1987, now as many as one-third of statutory decisions cite dictionary definitions).

Some of the issues regarding dictionaries concern how they are (mis)used by judges. Critics have, for example, addressed judges' tendency to go "dictionary shopping," which allows them to select the particular dictionary and definition that furthers the judge's personal predilections.⁸⁶ A further problem is that courts often erroneously treat the definitions as though they set forth necessary and sufficient conditions of category membership.⁸⁷ If ordinary meaning is being sought, a strict, quasi-mathematical symbolization of meaning is deeply flawed. As argued above, judges are typically motivated to define words in such a way as to avoid uncertainty in application, which assists the judge in reaching the required "yes or no" answer in what seems like an objective manner. The court can therefore point to a broad dictionary definition (e.g., something defining vehicles as "means of carrying or transporting something · planes, trains, and other *vehicles*"⁸⁸) and treat the definition as though it sets forth necessary and sufficient conditions for the concept. Defining words in such a manner may seem to narrow interpretive discretion. The result, however, is contrary to the empirical findings and theoretical work of linguists and psychologists regarding the nature of word meanings.⁸⁹

Other issues involving the construction of dictionaries should also undercut their use by judges. For example, dictionaries tend to favor definitions that represent technical meanings, which may not accurately reflect the ordinary meaning of the words.⁹⁰ A different issue concerns the contribution that context makes to meaning. While dictionaries are useful as a general matter, "the listing of words as a set of isolated items can be highly misleading if used as a basis of

86. See Aprill, *supra* note 11.

87. See LAWRENCE M. SOLAN, *THE LANGUAGE OF STATUTES: LAWS AND THEIR INTERPRETATION* 62–63 (2010).

88. *Vehicle*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/vehicle> (last visited Jan. 15, 2018).

89. See SOLAN, *supra* note 87, at 63–66.

90. Thus, dictionaries do not always reflect the important distinction between the flexible meaning of terms in natural language and the stipulative definitions of the scientist. Patrick Hanks explains that "[g]iving a precise, unambiguous definition for a word is a stipulative procedure, not a descriptive one, and a stipulative definition inevitably assigns the status of technical term to the word so defined, removing it from the creative potential that is offered by fuzzy meaning in natural language." PATRICK HANKS, *LEXICAL ANALYSIS: NORMS AND EXPLOITATIONS* 8 (2013).

theorizing about what words and their meanings are.”⁹¹ The problem is that a dictionary is a highly abstract work that presents words individually and takes them “away from their common use in their customary settings.”⁹²

Philosophers of language and linguists typically focus on sentences as the relevant units of meaning.⁹³ In contrast, the judiciary’s “focus on word meaning instead of sentence meaning stems from [its] overreliance on dictionaries, which offer acontextual word meanings.”⁹⁴ Instead of an exclusive focus on word meaning, a distinction should be made between the meaning of words and the meaning of sentences.⁹⁵ Defining ordinary meaning in terms of sentence meaning helps to mitigate the tension between the inherent nature of contextual consideration by an interpreter and the necessity of definitional generalizability. Thus, ultimately the relevant ordinary meaning inquiry should not focus on words or expressions such as *use* or *vehicle*, which encompass numerous and varied senses. Instead, the focus should be on the ordinary meaning of the sentences in which the words appear.⁹⁶

Determinants of ordinary meaning such as dictionaries respond to the externality issue in legal interpretation where, without evidence external to the interpreter, the basic guide to meaning is the interpreter’s own world knowledge. Consequently, identifying and assessing the reliability of possible determinants is an essential aspect of the ordinary meaning determination. As the previous

91. HALLIDAY & YALLOP, *supra* note 55, at 25.

92. *Id.*

93. *Word Meaning*, STAN. ENCYCLOPEDIA PHIL., <https://plato.stanford.edu/entries/word-meaning/> (last visited Jan. 15, 2018).

94. SLOCUM, *supra* note 27, at 107.

95. See BERNARD S. JACKSON, MAKING SENSE IN LAW: LINGUISTIC, PSYCHOLOGICAL AND SEMIOTIC PERSPECTIVES 43 (1995).

96. One alternative to a focus on sentence meaning is to assert that “the basic unit of meaning [is] not the sentence, but the relations among sentences.” SLOCUM, *supra* note 27, at 107. Obviously, the relations among sentences might reveal that the communicative meaning of a text differs from its ordinary meaning. Such an observation does not establish, though, that the basic unit of meaning is not the sentence. As explained above, there are advantages to a sequential kind of interpretation that starts with something more basic than an entire document, or even multiple sentences. Still, while the ordinary meaning focus should be on the relevant sentence rather than individual words or the entire document (or statute), this focus should not be taken as a precise standard. The point is that acontextual searches for individual word meanings lead to inaccurate ordinary meaning determinations, but a focus on an entire document (or statute) or body of law would result in a search for communicative meaning and not ordinary meaning.

discussion of dictionaries illustrates, the current determinants do not uncontroversially identify ordinary meaning. To the extent that ordinary meaning is an empirical question, courts and others should consider the possibility that other determinants might be better suited to the task.

C. Corpus Linguistics and Linguistic Knowledge

Regardless of the status of dictionaries in legal interpretation, only very basic linguistic analysis is necessary to convince most people that a dog is not a vehicle. However, the situation is different when the question involves objects harder to classify (e.g., golf cart, Segway, scooter).⁹⁷ In such cases, the extension (i.e., its referential range of application) of *vehicle* must be determined. But linguistic theory indicates that in a borderline case there is no linguistic fact-of-the-matter to discover.⁹⁸ Understanding this aspect of word meanings may lead a judge to conclude that the semantic meaning of the concept ‘vehicle’ does not determine the proper categorization of the object being considered (such as a Segway). Instead, the case must be decided on other grounds, such as the purpose of the provision.

As the above scenario illustrates, if legal texts are to be interpreted in light of the accepted and typical standards of communication that apply outside of the law, an accurate knowledge of language—which would include an understanding of lexical fuzziness—should be indispensable to interpretation. Such knowledge may not be decisive to meaning, as legal considerations may be influential, but it can nevertheless serve an integral role in a court’s analysis. Counterintuitively perhaps, the application of accurate linguistic analysis to the interpretive question can underscore the importance and necessity of nonlinguistic knowledge. Correct linguistic analysis of issues such as lexical fuzziness can reveal the indefinite nature of language, which makes resorting to other considerations necessary. Such a result can, therefore, help frame the scope of judicial discretion accurately and explicitly, adding to the justificatory nature of legal interpretation.

97. These examples are taken from Justice Scalia’s analysis of the no-vehicles-in-the-park hypothetical. See SCALIA & GARNER, *supra* note 15, at 36.

98. See STEWART SHAPIRO, *VAGUENESS IN CONTEXT* 2 (2006).

However, some have advocated that the use of corpus linguistics may solve certain long-standing problems of legal interpretation, including those involving lexical fuzziness.⁹⁹ Like dictionaries, corpus linguistics can provide externality to interpretations, but, in contrast to dictionaries, corpus linguistics is a method for studying language in use and can thus account for some aspects of context.¹⁰⁰ Unlike dictionaries, corpus linguistics allows for the meanings of words to be investigated in light of other words in which they co-occur. Instead of relying on the, perhaps idiosyncratic, views of the interpreter, corpus linguistics can provide an empirically based method of examining word meaning. Indeed, many linguists have turned to corpus data because they believe there is more to data collection than researchers intuiting acceptability judgments about what one can say and what one cannot.¹⁰¹ This is especially true given the volatility that individual judgments about acceptability have been shown to exhibit.¹⁰²

The concept underlying corpus linguistics is also consistent with the idea that an ordinary meaning is one that, in some sense, is general and cuts across contexts. Corpus-linguistic analyses are “always based on the evaluation of some kind of frequencies,” and frequency is a crucial aspect of what distinguishes an ordinary meaning from some meaning that is perhaps grammatical but unordinary.¹⁰³ Corpus linguistics can identify not only the number of senses (i.e., meanings) a linguistic expression may have but also which meaning is most frequently used.¹⁰⁴ It can provide clues as to what the most prototypical meaning of an expression might be based on various factors such as (i) highest frequency of use in corpus data, (ii) most even distribution/dispersion in a corpus (which corresponds to a meaning being used in many very different registers/genres), (iii) being the meaning that is acquired earliest by

99. See Lee & Mouritsen, *supra* note 12, at 3–5.

100. See HANS LINDQUIST, CORPUS LINGUISTICS AND THE DESCRIPTION OF ENGLISH 1 (2009) (“The argument is that if you are interested in the workings of a particular language, like English, it is a good idea to study English in use. One efficient way of doing this is to use corpus methodology . . .”).

101. Stefan Th. Gries, *What is Corpus Linguistics?*, 3 LANGUAGE & LINGUISTICS COMPASS 1225, 1228 (2009).

102. See *id.*

103. See *id.* at 1226.

104. See *id.*

children as they learn their mother tongue, (iv) centrality of a meaning in terms of how it is related to all other meanings a word may have, (v) a meaning of an expression can be seen as prototypical if it is the meaning with the highest number of features with the highest cue validities (which is a statistical way of measuring how predictive a feature is for membership in a category: having feathers and a beak increases the chances of something being a bird, having eyes does not).¹⁰⁵ Of course, corpus linguistics requires a (testable) conceptual leap from frequencies to the issue being researched by the user. Thus, any corpus findings must be analyzed within some framework or understanding of ordinary meaning.

Because ordinary meaning must in some sense be generalizable across contexts, not shaped by legal concerns, it is subject in some way to empirical verification. Certainly, as indicated above, corpus linguistics can take account of context in ways that dictionaries cannot. Nevertheless, unlike other determinants of meaning such as legislative history, the main function of corpus analysis is to provide data about word meanings that cut across contexts. While such information can of course be useful, this limitation helps to explain why meaning is often fixed in other ways, such as the structure or context of the statute at issue.

III. *UNITED STATES V. COSTELLO*

A. Description of the Case

The first of our case studies involves the statute at issue in *United States v. Costello*.¹⁰⁶ In *Costello*, the defendant was charged with violating 8 U.S.C. § 1324(a)(1)(A)(iii), which provides for criminal penalties for anyone who

knowing or in reckless disregard of the fact that an alien has come to, entered, or remains in the United States in violation of law, conceals, harbors or shields from detection [or attempts to do any of these things], such alien in any place, including any building or any means of transportation[.]

105. The assumption “underlying most corpus-based analyses” is the so-called distributional hypothesis, “that formal differences reflect, or correspond to, functional differences” (i.e., semantic). *Id.* at 1228.

106. *United States v. Costello*, 666 F.3d 1040 (7th Cir. 2012).

The defendant “lived in a small Illinois town” and “had a romantic relationship” with a person “she knew to be an illegal alien.”¹⁰⁷ The man lived with her for about a year but was eventually removed to Mexico after having spent several years in prison.¹⁰⁸ The man returned to the United States without authorization and “the defendant picked him up at the Greyhound bus terminal in St. Louis and drove him to her home,” located “about five miles from St. Louis.”¹⁰⁹ The man lived in the defendant’s home, “more or less continuously,” for approximately seven months “until his arrest.”¹¹⁰ After a bench trial, the defendant was convicted of the three charged offenses of “concealing, harboring, and shielding from detection an alien known to be in this country illegally.”¹¹¹

Because “there [was] no evidence that the defendant concealed her boyfriend or shielded him from detection,” on appeal the Seventh Circuit focused on whether the harboring conviction was justified.¹¹² Judge Richard Posner, writing for the Seventh Circuit, stated that the government, relying on dictionary definitions, argued that *to harbor* “just means to house a person” and “to shelter.”¹¹³ Posner reasoned that *to shelter* has an “aura of protectiveness,” requiring that the defendant “provide a refuge” and not merely let her boyfriend live with her.¹¹⁴ Judge Posner further argued that, in any case, dictionary definitions should be “used as sources of statutory meaning only with great caution”;¹¹⁵ not only must statutory purpose be considered,¹¹⁶ but also “[t]here are a wide variety of dictionaries,” typically with multiple definitions for each word, which makes resorting to dictionaries to determine ordinary meaning “particularly troubling.”¹¹⁷ Furthermore, “[d]ictionary definitions are acontextual, whereas the meaning of sentences depends critically on context, including all sorts of background

107. *Id.* at 1041–42.

108. *Id.*

109. *Id.*

110. *Id.*

111. *Id.*

112. *Id.*

113. *Id.* at 1043.

114. *Id.*

115. *Id.*

116. *Id.*

117. *Id.* at 1044.

understandings.”¹¹⁸ In addition, legislatures often draft provisions with lists of words in order to foreclose loopholes but not necessarily to create a provision that extends beyond its purpose.¹¹⁹

Instead of relying solely on the dictionary definitions, Judge Posner conducted a Google search on December 13, 2011, “of several terms in which the word ‘harboring’ appears.”¹²⁰ The search was based on the “supposition that the number of hits per term is a rough index of the frequency of its use.”¹²¹ The search revealed the following:

- “harboring fugitives”: 50,800 hits
- “harboring enemies”: 4,730 hits
- “harboring refugees”: 4,820 hits
- “harboring victims”: 114 hits
- “harboring flood victims”: 0 hits
- “harboring victims of disasters”: 0 hits
- “harboring victims of persecution”: 0 hits
- “harboring guests”: 184 hits
- “harboring friends”: 256 hits (but some involve harboring Quakers—“Friends,” viewed in colonial New England as dangerous heretics)
- “harboring Quakers”: 3,870 hits
- “harboring Jews”: 19,100 hits.¹²²

For Judge Posner, it was “apparent” from the results of the Google search that *harboring*, unlike *sheltering*, has a connotation of “deliberately safeguarding members of a specified group from the authorities, whether through concealment, movement to a safe location, or physical protection.”¹²³ Considering the requirement of “deliberate[] safeguarding,” Judge Posner reasoned that

the emergency staff at the hospital may not be “harboring” an alien when [they] render[] emergency treatment even if [the alien] stays in the emergency room overnight, that giving a lift to a gas station to an alien with a flat tire may not be harboring, that driving an

118. *Id.*

119. *See id.* at 1046.

120. *Id.* at 1044.

121. *Id.*

122. *Id.*

123. *Id.*

alien to the local office of the Department of Homeland Security to apply for an adjustment of status to that of lawful resident may not be harboring, that inviting an alien for a “one night stand” may not be attempted harboring, that placing an illegal alien in a school may not be harboring . . . and finally that allowing your boyfriend to live with you may not be harboring, even if you know he shouldn’t be in the United States.¹²⁴

Judge Posner classified *conceals*, *harbors*, and *shields* as “loophole-stopping near synonyms,”¹²⁵ but indicated that *harboring* was still not redundant. According to Judge Posner,

“concealing” is concealing; “shielding from detection” usually is concealing but could involve bribing law enforcement authorities—in other words paying someone else to conceal (yet the shade of difference is tiny—no surprise in a string of near synonyms); and the office left to “harboring” is, then, materially to assist an alien to remain illegally in the United States without publicly advertising his presence but without needing or bothering to conceal it . . . though harboring *could* involve advertising, for instance if a church publicly offered sanctuary for illegal aliens and committed to resist any effort by the authorities to enter the church’s premises to arrest them.¹²⁶

Following from the above definitions, Judge Posner presented the following scenario, which involves the concept of ‘harboring’ but not of ‘concealing’ or ‘shielding’:

Suppose the owner of a Chinese restaurant in New York’s or San Francisco’s Chinatown employs known illegal aliens as cooks, waiters, and busboys because they are cheap labor, and provides them with housing in order to make the employment, poorly paid though it is, more attractive, and also because they lack documentation that other landlords would require of would-be renters. The owner is harboring these illegal aliens in the sense of taking strong measures to keep them here. Yet there may be no effort at concealment or shielding from detection, simply because the immigration authorities, having very limited investigative resources, may have no interest in rooting out illegal aliens in Chinese restaurants in Chinatowns. It is nonetheless harboring in

124. *Id.* at 1044–45.

125. *Id.* at 1046.

126. *Id.* at 1046–47.

an appropriate sense because the illegal status of the alien is inseparable from the decision to provide housing—it is a decision to provide a refuge for an illegal alien *because* he’s an illegal alien.¹²⁷

Unlike the defendant’s actions, the restaurant owner “provides an inducement to illegal aliens.”¹²⁸ Furthermore, the example illustrates that harboring is not redundant with concealing because the

owner does not house his illegal employees in order to conceal them, though that is one effect. He is reducing their interactions with citizens, who might report them to the authorities. It is a perfect case of harboring, but might be a weak case of concealing, if the defendant could convince the jury that concealment was not his purpose in housing them.¹²⁹

By the end of his opinion, Judge Posner had offered three different glosses on *harboring*: (1) “deliberately safeguarding members of a specified group from the authorities, whether through concealment, movement to a safe location, or physical protection”;¹³⁰ (2) “materially to assist an alien to remain illegally in the United States without publicly advertising his presence but without needing or bothering to conceal it” (and, perhaps, offering an “inducement” to the alien);¹³¹ and (3) providing or offering “a known illegal alien a secure haven, a refuge, a place to stay in which the authorities are unlikely to be seeking him.”¹³² At the same time, and to set the stage for our subsequent analysis, he also made claims that suggest he thinks *to harbor* and *to shelter* are similar because (a) he argued “‘*to shelter*’ has an aura of protectiveness”¹³³ and (b) he said *to harbor* has a connotation “of deliberately safeguarding members,”¹³⁴ which seems to include an aura of protectiveness too, even if the objects being harbored might be different or more specific than the objects being sheltered.

127. *Id.* at 1045.

128. *Id.* at 1046.

129. *Id.* at 1049.

130. *Id.* at 1044.

131. *See id.* at 1046–47.

132. *Id.* at 1050.

133. *Id.* at 1043 (emphasis added).

134. *Id.* at 1044.

B. Corpus Analysis of the Case

From a corpus-linguistic perspective, Posner's approach to determining the meaning of *to harbor* (and potentially its similarity to *to shelter*) is highly problematic for two reasons. First, while a proper corpus-linguistic analysis of the meaning of a particular verb (such as *harbor*) would indeed entail the exploration of the verb's arguments—e.g., the entity performing the action denoted by the verb (usually referred to as the agent) or the entity that undergoes some change as a result of the action denoted by the verb (usually referred to as the patient)—Judge Posner *a priori* restricts his 'data' to a highly selective subset of patients. Judge Posner's method fails to (i) showcase the true variety of the direct objects of *to harbor*, both in terms of the lexical items showing up in the direct object slot of *to harbor* and in terms of the semantic prosody of the objects that *to harbor* takes, and (ii) lead to what is likely to be the ordinary meaning of *to harbor*.

Second, while a certain degree of subjective intuition is virtually unavoidable in the comparative analysis of words, Judge Posner's discussion of the verbs *to harbor* and *to shelter* and how they relate to the government's definitions of *to harbor*, *to shelter*, and *to house* is more subjective than what a proper linguistic analysis would permit. Instead of being based on potentially falsifiable and replicable data, the semantic characteristics Judge Posner posits are based on little else other than his own intuitions.

A more appropriate corpus-linguistic analysis would differ in two main ways. First, it would not be restricted to a few argument types selected by an analyst. Rather, an analyst could generate a concordance of the verb(s) in question and then explore all the verbs' argument types to arrive at a better understanding of their usage, which is the strategy that we follow here. Second, such an analysis would attempt to be intersubjective and replicable by exploring all usage tokens (specific instances in which an expression is used) of the words (in a pseudo-random sample) with an annotation scheme that is grounded in linguistic analysis which could

potentially be applied in a validation study.¹³⁵ Again, that is the approach we follow here.

Specifically, we used a script in the programming language R to retrieve all instances of the verb *to harbor* (including spellings with *u*) and *to shelter* that were tagged as verbs from the 2012–2015 update of the Corpus of Contemporary American English.¹³⁶ We obtained 453 instances of the lemma *to harbor*, which were then inspected manually to identify the agent and the patient of the harboring (i.e., the entity that does the harboring and the entity that is harbored).¹³⁷ Each agent and patient was then classified into one of several semantic categories that proved useful in previous corpus-semantic work.¹³⁸ Categories include, but are not limited to, those exemplified in (1) (for the sake of brevity, we exemplify only patients and abbreviate the concordance lines):

(1)	a.	an area harboring the highest level of biodiversity	[abstract]
	b.	a dark continent <i>harboring</i> <u>mastodons</u>	[animate]
	c.	most strains <i>harbored</i> <u>genes</u>	[genetic]
	d.	a star <i>harbored</i> <u>an earth-sized planet</u>	[concrete]
	e.	what <u>shame and anger</u> would he <i>harbor</i> ?	[emotion/ cognition/ perception]
	f.	a part of the world that <i>harbors</i> <u>islamist militants</u>	[human]
	g.	houses often <i>harboring</i> <u>political action committees</u>	[institutions]

135. See, for example, Stefan Th. Gries & Naoki Otani, Behavioral Profiles: A Corpus-Based Perspective on Synonymy and Antonymy, ICAME J., Apr. 2010, at 121, http://clu.uni.no/icame/ij34/gries_otani.pdf, or in fact nearly every corpus-based semantic study.

136. See Mark Davies, *The Corpus of Contemporary American English (COCA): 520 million words, 2012-2015* (2016). Available online at <http://corpus.byu.edu/coca/>.

137. Not all instances involved both an agent and a patient, as in agentless passives.

138. See, e.g., Stefan Th. Gries, *Corpus-based Methods and Cognitive Semantics: The Many Meanings of To Run*, in CORPORA IN COGNITIVE LINGUISTICS: CORPUS-BASED APPROACHES TO SYNTAX AND LEXIS 57 (Stefan Th. Gries & Anatol Stefanowitsch eds., 2006).

While the semantic classification of patients is not completely uncontroversial, the quantitative findings are relatively clear. For *to harbor*, the data show that humans (i.e., the kinds of objects Judge Posner restricted his analysis to) are in fact quite infrequent as patients of *to harbor*, indicating that Judge Posner's results are unrepresentative and, thus, not conducive to discovering ordinary meaning. More precisely, we found the following relative frequencies of occurrence of classifiable patients: emotion/cognition/perception (44.3%) > animate (16.3%) > concrete (13.7%) > human (10.8%) > abstract (5.9%) > genetic x (5.2%) > institution = disease = location. This is relevant because, in order to make specific claims about the general semantics of *to harbor*, one must acknowledge that most uses of *to harbor* are in fact neither concerned with harboring humans in general nor with humans considered "worthy of protection/safeguarding" in particular. Rather, most of the uses involve emotions and biological/genetic entities, which also undercuts the postulated connotation of protectiveness Judge Posner derived from his too limited set of direct objects. Obviously, if one looks for a verb followed by entities that can and maybe should be protected, a connotation of protectiveness will emerge. In a sense, this is like arguing that *to run* ordinarily means 'manage' because one can find many examples such as *to run a chain of stores* or *to run a business* on Google and one never looked for *to run a race* or *to run a [distance noun]*. Therefore, on the one hand, most cases of *to harbor* are obviously not compatible with Judge Posner's definition. On the other hand, such uses of *to harbor* are in fact very compatible with the government's more inclusive definition of *to harbor*, namely "house a person/giving a person a place to stay" or, even better since it is more abstract and thus more clearly covers even non-human patients, "providing space/a habitat for something."

The dominance of this sense in our data in turn means that this more general sense might well be the main or ordinary sense, or prototype. This should mean that the burden of proof was on Posner to show that the narrower and more specific sense of *to harbor* he stipulated was in fact required to define "harbor [such] alien[s]." He could theoretically have achieved this in two ways. First, he could have provided data to show that our frequency-based approach to ordinary meaning is not borne out by other, more, and/or better data. Judge Posner, however, discussed *to harbor*'s semantics only on

the basis of the few selected direct objects.¹³⁹ Second, he could have produced data showing that *to harbor*, when used with the human direct objects he uses as search terms, *requires* a new sense, one that is different from the general ‘providing space/a habitat for,’ because this general one is not good enough to cover *to harbor*’s use in the statute. However, Judge Posner’s approach fails at that because his data are too limited and his argumentation is too reliant on intuition. He shows neither that *to harbor* actually means what he claims nor what the relation between *to harbor* and *to shelter* is because he never makes an explicit comparison between the two, which could in theory support the conclusion that the two are extremely similar in meaning.

In particular, and with respect to the use of *harbor* with human direct objects, the data we analyzed also undermine Posner’s ‘corpus’ method with regard to the semantic prosody of the objects. As mentioned above, the expressions he chose to google are mostly only cases that already presupposed his definition: he defines *to harbor* as discussed above and then searches for *to harbor* + direct objects such as *fugitives*, *refugees*, and *Jews*, which are direct objects of the type that he stipulates in his definition (i.e., groups of humans that are justifiably harbored) and which portray the agent of harboring as positive. However, this means that his ‘analysis’ also misses the fact that there are uses of *to harbor* that differ in their potential evaluative prosody; the use of *harbor enemies* is one in which harboring that kind of group of humans is probably not justified and portrays the harborer as negative. In our data, for instance, we found eighteen cases that are arguably ‘not to be protected, not worthy of protection, or harboring.’ These cases include *terrorists*, *bandits*, *rebels*, *militants*, *pedophile priest*, and more. In contrast, we found only nine patients of the type Posner restricted his analysis to, namely ones that are ‘to be protected, worthy of protection, or harboring,’ which include *Jews*, *some dedicated people*, *many of the priests*, and *a minor*. Only four of our 453 instances involved *harboring fugitives*. More importantly, the examples of *to harbor* we have with our wider search did not all involve “safeguarding from the authorities,” suggesting that his definition is too specific and that the more

139. See *supra* text accompanying note 125.

general definition of *to harbor* implied by all the nonhuman harborees may be sufficient.

Let us finally return to the question of the potential difference between *to harbor* and *to shelter*, which, according to Posner, the government considered synonymous, and to both of which Posner attributed a meaning component of protectiveness or safe-guarding. To illustrate the kind of comparison one could employ, the same kind of procedure we applied to *to harbor* was then applied to the 325 matches of the verb lemma *to shelter*. The distribution of its patients is quite different from that of *to harbor*: human (60.6%) > concrete (15.5%) > animate (10.4%) > abstract (5.2%) > location = emotion/cognition/perception. When submitted to a simple statistical test (viz. a chi-squared test for independence), we find a statistically significant difference between the kinds of things that are harbored and sheltered. The biggest effects are: (i) *to harbor* prefers emotion/cognition/perception (in all registers) >> genetic x (mostly in academic writing) > animate; and (ii) *to shelter* prefers human (in all registers) >> [not expressed] = location = concrete. The data thus shows that the two verbs are indeed quite different in usage and, by implication, in meaning. This does not support the government's view that *to harbor* and *to shelter* are synonymous, but it suggests—maybe somewhat ironically—that *to shelter* is used in a way that Judge Posner implied *to harbor* would be used in, namely, mostly with direct objects that are human, concrete objects, and animals.

The current study of *to harbor* and *to shelter* could be made corpus-linguistically more sophisticated. For instance, part of Judge Posner's argument is concerned with whether the additions of *harboring* and *concealing* to the statute in the 1952 amendments do in fact make the statute more precise or comprehensive, or both. This kind of question essentially boils down to a quantification of a semantic similarity question, which in corpus linguistics can be operationalized in terms of the overlap of (significant) collocates. In what follows, we briefly describe the underlying logic of this approach and what it might look like in the present case.

As briefly mentioned above, most corpus-linguistic work assumes that distributional similarity in corpora (i.e., naturally occurring speech and writing) reflects functional similarity, where *functional* is typically a broad term for semantic, discursal, register, and information-structural similarity. That means that the similarity of

words x and y can be quantified based on how similar the words are to each other that occur either in context windows, in syntactically defined slots, or in textually defined positions around x and y . For instance, to determine whether there is any functional difference between the words *alphabetic* and *alphabetical* (a question native speakers of English are routinely unable to answer), one could proceed as follows:

- determine the nouns that follow *alphabetic* at least once;
- determine the nouns that follow *alphabetical* at least once;
- for each noun type attested, determine its frequencies after *alphabetic* and *alphabetical* as well as its overall frequency in the corpus. This will also determine how many collocates in percent *alphabetic* and *alphabetical* share, and the higher that proportion and the higher the semantic similarity of the collocates (as compared to, say, randomly chosen adjectives as a baseline control condition), the higher the two adjectives' similarity;
- for each noun type attested after at least one of the two adjectives, create the following co-occurrence table of frequencies:

	<i>Alphabetic</i>	<i>Alphabetical</i>	Total
some noun type	A	B	$a+b$
all other noun types	C	D	$c+d$
Total	$a+c$	$b+d$	$a+b+c+d$

- Compute an association score from this table, such as the log-likelihood ratio or Delta P to quantify which of the two adjectives is associated how strongly to each noun collocate (compared to the other of the two adjectives).

A statistical analysis of (i) collocate-overlap statistics and (ii) association scores of so-called distinctive collocates can then help to identify the overall similarity of words as well as the nature of their functional differences. In the case of *alphabetic(al)*, for instance, the semantic difference can best be characterized by the two adjectives' antonyms. According to the corpus data, the opposite of *alphabetic* is

numeric, whereas the opposite of *alphabetical* is *unordered*.¹⁴⁰ In our case, it would be straightforward to apply a similar logic to *to harbor* and *to shelter* (as well as the other verbs relevant to the statute, such as *to conceal* and *to shield*) to determine to what degree, if any, Judge Posner's account of the similarity between *to harbor* and *to shelter* is valid.

Perhaps Judge Posner should be commended for his recognition of the flaws associated with judicial reliance on dictionaries and his attempt to substitute an empirically based method of language study instead of citing to, for example, his own experience and knowledge of language or to common sense. Nevertheless, the corpus analysis detailed above demonstrates that Judge Posner's Google searches were insufficient to study what *to harbor* means because the search terms he used were not representative of the ordinary uses of *to harbor* (at least as operationalized by frequency). Our analysis thus indicates that the determination of ordinary meaning is susceptible to error when it is based on judges' intuitions about how words are ordinarily used. Our corpus analysis should not, however, be interpreted as an argument that the result in *Costello* was incorrect. Inferences from the context relevant to a statute are crucial to interpretation, and are often intertwined with legal concerns.¹⁴¹ It might be that contextual inferences pointed to an interpretation of the statute that would not allow for conviction based on Costello's actions. Nevertheless, if courts make general claims about language meaning as part of an ordinary meaning determination, as Judge Posner did in *Costello*, the sequential nature of interpretation (whereby initial indications of meaning are shaped by contextual concerns) becomes flawed if those semantic judgments are inaccurate.¹⁴²

140. See Stefan Th. Gries, *Testing the Sub-Test: An Analysis of English -ic and -ical Adjectives*, 8 INT'L J. CORPUS LINGUISTICS 31, 41–42 (2003).

141. See *supra* notes 29–39 and accompanying text (discussing the importance of context to legal interpretation).

142. See *supra* notes 59–65 and accompanying text (describing the sequential nature of interpretation).

IV. SMITH V. UNITED STATES

A. Description of the Case

The infamous case, *Smith v. United States*,¹⁴³ involved the interpretation of 18 U.S.C. § 924(c)(1)(A), which (remarkably for a routine criminal statute providing a penalty enhancement and presenting no constitutional issues) has been interpreted by the Supreme Court on multiple occasions.¹⁴⁴ Section 924(c)(1)(A) provides for enhanced punishment if the defendant “uses” a firearm “during and in relation to . . . [a] drug trafficking crime.”¹⁴⁵ In *Smith*, the defendant offered to trade an automatic weapon to an undercover officer for cocaine.¹⁴⁶ The Court held that the defendant was subject to the sentencing enhancement because the statute does not require that the firearm have been used as a weapon.¹⁴⁷

The Court explained that “when a word is not defined by statute,” as most are not, courts “normally construe it in accord with its ordinary or natural meaning.”¹⁴⁸ The Court stated that exchanging a firearm for drugs “can be described as ‘use’ within the everyday meaning of that term.”¹⁴⁹ The Court consulted two dictionaries regarding the word *use* and concluded that it means “to employ” or “to derive service from.”¹⁵⁰ The Court rejected the argument that *uses* has a reduced scope in § 924(c)(1)(A) because it appears alongside the word *firearm*.¹⁵¹ The Court reasoned that “[i]t is one thing to say that the ordinary meaning of ‘uses a firearm’

143. *Smith v. United States*, 508 U.S. 223 (1993), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469.

144. *See* *Watson v. United States*, 552 U.S. 74 (2007); *Muscarello v. United States*, 524 U.S. 125 (1998), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469; *Bailey v. United States*, 516 U.S. 137 (1995), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469, *as recognized in* *United States v. O’Brien*, 560 U.S. 218 (2010).

145. 18 U.S.C. § 924(c)(1)(A) (2012). The statute also applies to anyone who “carries” or, since an amendment to the statute in 1998, “possesses” a firearm “during and in relation to . . . [a] drug trafficking crime.” *Id.* In the cases described in this section, the defendants were all charged with “use” of the firearm.

146. *Smith*, 508 U.S. at 225–26.

147. *See id.* at 240.

148. *Id.* at 228. Because the defendant traded a “machinegun,” the sentence was thirty years. *Id.* at 227.

149. *Id.* at 228.

150. *Id.* at 229.

151. *Id.* at 229–33.

includes using a firearm as a weapon . . . [b]ut it is quite another to conclude that, as a result, the phrase also *excludes* any other use.”¹⁵² Thus, because “one can use a firearm in a number of ways. That one example of ‘use’ is the first to come to mind . . . does not preclude us from recognizing that there are other ‘uses’ that qualify as well.”¹⁵³ Due to the broad meaning of *use*, the Court concluded that the statute’s language “sweeps broadly, punishing any ‘us[e]’ of a firearm, so long as the use is ‘during and in relation to’ a drug trafficking offense.”¹⁵⁴ Therefore, the Court reasoned, “[I]t is both reasonable and normal to say that [the defendant] ‘used’ his MAC-10 in his drug trafficking offense by trading it for cocaine.”¹⁵⁵ In the Court’s view, if Congress had intended that the firearm be used as a weapon in order for the enhanced punishment to apply, it could have included the words “as a weapon” in the statute.¹⁵⁶

In dissent, Justice Scalia criticized the Court’s failure to properly consider context in determining the ordinary meaning of *use*. First, Justice Scalia pointed out the “elastic” nature of the word *use*.¹⁵⁷ Second, he argued that “[t]o use an instrumentality ordinarily means to use it for its intended purpose.”¹⁵⁸ Thus, “to speak of ‘using a firearm’ is to speak of using it for its distinctive purpose, *i.e.*, as a weapon.”¹⁵⁹ Justice Scalia reasoned that “[w]hen someone asks, ‘Do you use a cane?’, he is not inquiring whether you have your grandfather’s silver-handled walking stick on display in the hall; he wants to know whether you *walk* with a cane.”¹⁶⁰ In Justice Scalia’s view, the words “as a weapon” were “reasonably implicit” from the context of the statute.¹⁶¹

In a similar case, in 2007 the Court held in *Watson v. United States*,¹⁶² that a person who trades drugs for a gun does not “‘use[.]’ a firearm ‘during and in relation to . . . [a] drug trafficking crime.’”¹⁶³

152. *Id.* at 230 (emphasis omitted).

153. *Id.*

154. *Id.* at 229.

155. *Id.* at 230.

156. *Id.* at 229.

157. *Id.* at 241–42 (Scalia, J., dissenting).

158. *Id.* at 242.

159. *Id.*

160. *Id.*

161. *Id.* at 244.

162. *Watson v. United States*, 552 U.S. 74 (2007).

163. *Id.* at 76.

In *Smith* the Court emphasized the dictionary meaning of “any” and discounted Justice Scalia’s examples that were designed to distinguish between the ordinary meaning of a phrase and the Court’s reliance on the dictionary definition of a single word. In contrast, the Court emphasized in *Watson* that “the meaning of the verb ‘uses’ has to turn on the language as we normally speak it.”¹⁶⁴ In the Court’s view, the proper interpretation must “appeal to the ordinary” because “there is no other source of a reasonable inference about what Congress understood when writing or what its words will bring to the mind of a careful reader.”¹⁶⁵ Based on its own understanding of common usage, the Court reasoned as follows:

The Government may say that a person ‘uses’ a firearm simply by receiving it in a barter transaction, but no one else would. A boy who trades an apple to get a granola bar is sensibly said to use the apple, but one would never guess which way this commerce actually flowed from hearing that the boy used the granola.¹⁶⁶

While the Court in *Smith* indicated that a broad meaning should be given the provision considering its purpose of combating the dangerous combination of drugs and guns,¹⁶⁷ the Court in *Watson* declined to give such considerations significance without providing any real discussion.¹⁶⁸ Furthermore, the Court in *Watson* failed to recognize that unlike the verbs *sell* or *give*, *use* is not unidirectional. As the Court noted in its earlier decision in *Bailey v. United States*, one of the dictionary definitions of *use* is “[t]o convert to one’s service,” and another was “to avail oneself of.”¹⁶⁹ Certainly, if one wanted to rely on a dictionary definition, the receipt of a firearm as one’s possession means that the item has been “convert[ed] to one’s service.”¹⁷⁰

164. *Id.* at 79.

165. *Id.*

166. *Id.*

167. *Smith v. United States*, 508 U.S. 223, 240–41 (1993), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469.

168. *Watson*, 552 U.S. 74.

169. *Bailey v. United States*, 516 U.S. 137, 145 (1995) (quoting *Smith*, 508 U.S. at 228–29), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469, *as recognized in* *United States v. O’Brien*, 560 U.S. 218 (2010).

170. *Id.* Of course, such a conclusion should not be based on a dictionary definition, but we make this point only to highlight the inconsistencies in the Court’s opinions.

Note that the Court in *Smith*, when presented with Justice Scalia's dissent pointing out that the common understanding of *use a firearm* is 'discharging a firearm,' does *not* argue that Justice Scalia is incorrect about the ordinary or common meaning of *use* (v.). Instead, the Court retreats to a position that might polemically be paraphrased as follows: 'Just because a more specific meaning may be compatible with the dictionary definition we cite earlier, and may in fact be the most common use (we [the Court] seem to concede this since we do not provide any counterevidence to that claim), does not mean that we cannot choose the more abstract dictionary meaning we prefer and for whose ordinariness or commonness we simply do not provide any evidence.' Somewhat ironically, the Court then rejects Justice Scalia's argument of how one might use a cane by stating: "To be sure, 'use' as an adornment in a hallway is not the first 'use' of a cane that comes to mind. But certainly, it does not follow that the *only* 'use' to which a cane might be put is assisting one's grandfather in walking."¹⁷¹

That is to say, the same Court that a few paragraphs earlier argued that "words not defined in statute should be given ordinary or common meaning" then rejects Justice Scalia's argument, which is essentially based on operationalizing ordinariness or commonness as 'what comes to mind first.' One is tempted to ask pointedly, what definition of ordinariness the Court is assuming when it rejects Justice Scalia's operationalization of ordinariness and instead provides an arcane example of caning in the U.S. Senate in 1856?¹⁷²

B. Corpus Analysis of the Case

There are various legitimate and persuasive bases on which to criticize the Court's opinion in *Smith*, including the methodological inconsistencies between the opinions in *Smith* and *Watson* discussed above. For instance, although the Court viewed the interpretive dispute as requiring a definition of the ordinary meaning of *use*, a dictionary definition cannot answer the question of how the defendant must use the firearm within the meaning of the provision. Instead, the interpretive difficulties can more precisely be framed as arising from the provision's underspecification of *use*. The

171. *Smith*, 508 U.S. at 230.

172. *See id.* at 230–31.

underspecification is due to ellipsis, which is a “truncated or partial linguistic form” “in which constituents normally occurring in a sentence are superficially absent, licensed by structurally present prior antecedents.”¹⁷³ For example, a case of verb phrase ellipsis occurs in the sentence: *Max went to the store, and Oscar did, too.*¹⁷⁴ Cognitive scientists have demonstrated via corpus analysis that expressions with fully specified event structures are rare (i.e., are elided) “when the event is commonly associated with the noun.”¹⁷⁵ In normal usage, a fully specified event structure is used less than five percent of the time.¹⁷⁶ Furthermore, “[f]ull event structures tend to occur only with less predictable activities.”¹⁷⁷ Thus, one critique of *Smith* could focus on the Court’s mistaken focus on *use* without understanding ellipsis and how full event structures are typically made explicit only when referencing less predictable activities (such as using a firearm as currency).¹⁷⁸

Even apart from the ellipsis issue, a corpus-linguistic analysis of *use* paints a picture that is very much at odds with the very general meaning adopted by the Court in *Smith* on the basis of dictionary definitions. Specifically, the Court adopted definitions of *use* from *Webster’s Dictionary* as well as *Black’s Law Dictionary*, which raises two kinds of problems.¹⁷⁹ First, some of the definitions—those in *Black’s Law Dictionary* in particular—are somewhat circular, as when *use* is defined as “[t]o make use of” or “to utilize,” given how these supposed definitions of *use* in fact rely on derivatives of *use* (v.), namely *use* (n.) and *utilize*. Second, and more importantly, the definitions adopted are too general. For instance, consider how the proposed paraphrase of *use*, “to employ,” can be used in contexts (e.g., “he employs many women in his restaurant”) in which *use*

173. Robert May, *Ellipsis*, in 1 ENCYCLOPEDIA OF COGNITIVE SCIENCE 1094 (2003).

174. *See id.* The sentence without ellipsis would read: *Max went to the store, and Oscar went to the store, too.*

175. Matthew J. Traxler, Brian McElree, Rihana S. Williams & Martin J. Pickering, *Context Effects in Coercion: Evidence from Eye Movements*, 53 J. MEMORY & LANGUAGE 1, 2 (2005) [hereinafter Traxler et al.]. “An event is a type of situation . . . in which something happens.” MURPHY & KOSKELA, *supra* note 9, at 65.

176. *See* Traxler et al., *supra* note 175.

177. *Id.*

178. *See* Brian G. Slocum, *Linguistics and ‘Ordinary Meaning’ Determinations*, 33 STATUTE L. REV. 39, 64 (2012).

179. *Smith v. United States*, 508 U.S. 223, 228–29 (1993), *superseded by statute*, Act of Nov. 13, 1998, Pub. L. No. 105-386, 112 Stat. 3469.

would either change the meaning or would have to be given an unordinary meaning.

To provide more objective evidence for Justice Scalia's contention regarding the meaning of *use* (v.) in general and *use a firearm* in particular, we again turned to the 2012–2015 update of the Corpus of Contemporary American English.¹⁸⁰ Using another R script, we found 21,164 instances where the lemma *use* is used as a verb (search tags for the regex: “^v”) and followed by a determiner or possessive pronoun (search tags for the regex: “^(dd[12]|at1?!|appge)\$”) and optionally followed by an adjective (search tags for the regex: “jj[rt]?”) and followed by a noun (search tags for the regex: “nn[12]”).

This data set was explored on two different levels. First, we looked for all instances where the subsequent context contained a small set of *weapon* nouns. As a result of this set of searches, we found 161 instances in which the direct object of *use* was a noun phrase whose head noun lemma was either *gun* (or derivatives like *handgun* or *shotgun*; 64 cases), *rifle* (16 cases), *firearm* (10 cases), *pistol* (7 cases), or *weapon* (62 cases). Some of these cases of *weapon* include scenarios that do not refer to firearms (some additional examples of *weapon* nouns were included because those rows featured one or more of the above search words later in the subsequent context). Sixteen instances were found in which the direct object of *use* was a non-*weapon* noun (e.g., *a van*, *a stolen car*, *his foot*) deployed “as a weapon.”

Two instances had to be discarded because closer scrutiny revealed that their use of *weapon* nouns was metaphorical in nature or did not involve a gun as a weapon (e.g., a caulking gun), leaving us with 159 instances. We then checked that the cases we studied were sufficiently dispersed.¹⁸¹ Specifically, we checked how many

180. See Davies, *supra* note 136.

181. As is well-known among corpus linguists, using only frequency as a measure of the commonness of a word, an expression, or a meaning is treacherous since words with very similar or even identical frequencies in a corpus can be very unevenly dispersed. For instance, in the Brown corpus, a one million-word corpus of general written American English of the 1960s, the words “staining” and “enormous” are equally frequent (37 times), but the former occurs in only one of the 500 samples the corpus consists of, whereas the latter occurs in 36 of the 500 samples, which means it is much more likely to be used/seen by the population the Brown corpus represents. Similar examples abound in other corpora and dispersion has been shown to be a better predictor of word recognition times than frequency,

instances of our *use* DET (ADJ/N) *WEAPON-N* examples were attested in each of the twenty parts of the corpus. This was done to ensure that whatever results we might have found were not due to a high degree of concentration of cases in one corpus part, register, or genre, given how that would undermine any claims of representativity and ordinary usage. We computed a measure of dispersion called *DP*, which ranges from zero (an element is perfectly evenly distributed) to one (an element is completely unevenly distributed) and obtained a value of 0.31.¹⁸² This value is on the ‘even’ side of the continuum but can be understood better when one considers the words that score comparable values in general corpora. Specifically, the value is comparable to that scored by words such as *shark*, *doorsteps*, *cycling*, *Athens*, and *funniest* in the British National Corpus (a 100-million words corpus of British English from the 1990s). These are all ‘standard words’ that any normal native speaker of English and most learners of English would be quite familiar with, which supports the notion that the instances of *use* DET (ADJ/N) *WEAPON-N* are widely used and, thus, representative.

We then checked the 159 instances for whether the phrase *use* DET (ADJ/N) *WEAPON-N* referred to an instance in which the referent of the *weapon*-noun was used for barter. There was not a single occurrence of such a case. More specifically, approximately 88% of all cases were clear cases of ‘not barter.’ Most involved discharging a weapon or brandishing it for deterrence, while the remaining approximately 12% involved cases that were coded as ‘probably not barter’ in the most conservative way. These include cases in which any reader or comprehender would have to bend over backwards semantically to impose a potential, but really rather unlikely, ‘barter’ reading such as the following instances from our data:

see, for example, James S. Adelman, Gordon D.A. Brown & José F. Quesada, *Contextual Diversity, Not Word Frequency, Determines Word-Naming and Lexical Decision Times*, 17 *PSYCHOL. SCI.* 814 (2006); Stefan Th. Gries, *Dispersions and Adjusted Frequencies in Corpora*, 13 *INT’L J. CORPUS LINGUISTICS* 403 (2008); Stefan Th. Gries, *Dispersions and Adjusted Frequencies in Corpora: Further Explorations*, in *CORPUS-LINGUISTIC APPLICATIONS: CURRENT STUDIES, NEW DIRECTIONS* 197 (Stefan Th. Gries, Stefanie Wulff & Mark Davies eds., 2010), which is why it is also used in frequency dictionaries such as MARK DAVIES & DEE GARDNER, *A FREQUENCY DICTIONARY OF CONTEMPORARY AMERICAN ENGLISH: WORD SKETCHES, COLLOCATES, AND THEMATIC LISTS* (2010).

182. See Gries, *supra* note 181.

- (1) there is no talk of whoever is found guilty of having used these weapons should go to the International Criminal Court.
- (2) negotiated the social context of inner-city violence while they were on the “outside.” We asked questions regarding “disrespect” as well as the following questions: Did they carry firearms? In what situations would they use a firearm?
- (3) That’s why I keep receipts, and have myself audited every year. If they want me off the job they’d better use a gun. Don’t tell Vicky I said that.

Surely, in example (2) the intended meaning is not to ask in which contexts inner-city gang members would use their guns for barter.

Although undoubtedly complicated to nonexperts, the above analysis is insufficient. Recent developments in theoretical linguistics, in particular cognitive or usage-based Linguistics and Construction Grammar, have shown that the meaning of linguistic expressions derives not solely from the meanings of lexical items and how they are structurally combined in sentences but also from grammatical patterns, which have meanings on their own.¹⁸³ For instance, the sentence *John fignorpled Mary the book* would be understood by most speakers as involving transfer of the book from John to Mary, even though this understanding cannot possibly arise from the verb simply because the verb does not exist, so a speaker of English could not have learned its meaning. Rather, it arises from the grammatical pattern $V_{fignorpled} NP_{Mary} NP_{the\ book}$. It is therefore necessary to determine whether the ‘barter’ reading stipulated by the Supreme Court may reside not in *use* DET (ADJ/N) *WEAPON-N*, but in a constructional pattern more abstract than that. Thus, we also explored additional levels of granularity/resolution. We re-ordered all 21,000 matches of *use* from above into a random order and annotated the direct objects of *use* until we reached 159 objects that could be classified as concrete objects (this is because guns/firearms are concrete objects and because we found 159 uses of *weapon* nouns as discussed above). We then determined for each item in this

183. See ADELE E. GOLDBERG, CONSTRUCTIONS: A CONSTRUCTION GRAMMAR APPROACH TO ARGUMENT STRUCTURE (1995); ADELE E. GOLDBERG, CONSTRUCTIONS AT WORK: THE NATURE OF GENERALIZATION IN LANGUAGE (2006).

(admittedly small but completely randomly selected) sample of matches of *use* whether the *use* + DO pattern was meant to convey ‘use for barter.’ Again, not a single occurrence of *use* + DO conveyed that meaning.

In sum, corpus-linguistic analysis revealed that the Court’s interpretation of *use* + DO is incompatible with the ordinary-meaning approach the Court claims it is applying. Certainly, our analysis does not dispute the possibility that *use* + Concrete Object *can* mean ‘use the concrete object as barter/currency.’ Undoubtedly, examples of such usage can be created that are both grammatical and comprehensible. The point is that such examples are not ordinary, as the above corpus-linguistic analysis reveals. Justice Scalia’s dissent in *Smith* is strongly supported on three different levels of linguistic/constructional abstraction and on the basis of widely dispersed data. In our data randomly sampled from COCA,

- (1) instances of *use* followed by a direct object involve many cases that are not concrete objects or other entities that would not straightforwardly evoke an interpretation of *use* as ‘use for barter;’
- (2) instances of *use* followed by a direct object referring to a concrete object never evoked an interpretation of *use* as ‘use for barter;’
- (3) instances of *use* followed by a weapon noun never evoke an interpretation of *use* as ‘use for barter.’

As in our examination of *Costello*, we do not claim that our corpus analysis here proves that the decision in *Smith* was incorrect. Rather, the point is that the Court’s general claims about language meaning, which the Court indicated dictated its decision, were flawed and, in fact, supported the defendant’s interpretation. If the Court had a more accurate understanding of the ordinary meaning of the relevant language but nonetheless still wished to reach the same interpretation, it would be compelled to offer quite strong inferences from the statutory context in order to justify its interpretation (thereby demonstrating the sequential nature of interpretation).¹⁸⁴ If the Court could not justify an interpretation

184. See *supra* notes 59–65 and accompanying text (describing the sequential nature of interpretation).

based on such contextual inferences, it would be obliged to interpret the statute in favor of the defendant.

V. THE NO-VEHICLES-IN-THE-PARK HYPOTHETICAL

A. Description of the Hypothetical

Our third vehicle for illustrating corpus analysis of statutes involves an enduring and famous legal hypothetical, H. L. A. Hart's no-vehicles-in-the-park scenario.¹⁸⁵ The hypothetical asks the following questions: "A legal rule forbids you to take a vehicle into the public park. Plainly this forbids an automobile, but what about bicycles, roller skates, toy automobiles? What about airplanes? Are these, as we say, to be called 'vehicles' for the purpose of the rule or not?"¹⁸⁶

The hypothetical classically frames the challenges inherent in categorizing objects and defining words (such as *vehicle*) and the consequent fuzziness often labeled as vagueness) associated with such attempts. Categorization is a psychological process whereby people, including judges, make judgments about whether an object falls within a given concept. The ability to categorize is an integral aspect of childhood development. Early in their development humans demonstrate the ability to countenance differences in order to generalize and form categories based on similarities.¹⁸⁷ The ability to categorize is beneficial because it allows for the organization of knowledge through the creation of taxonomies that include smaller classes within larger ones (e.g., one specific horse < a breed of horses such as Cleveland Bay < Horses < Animals). As such, categorization is part of the process of inductive generalization, where, for example, knowing that a creature has features similar to recognized members of the category 'horse' enables one to categorize the creature as a horse.

In discussing his no-vehicles-in-the-park hypothetical, Hart recognized that "[t]here must be a core of settled meaning" associated with general words like *vehicle*, "but there will be, as well,

185. The hypothetical was discussed earlier in this Article. See *supra* notes 43–47 and accompanying text.

186. Hart, *supra* note 44, at 607.

187. Vladimir M. Sloutsky, *The Role of Similarity in the Development of Categorization*, 7 TRENDS COGNITIVE SCI. 246, 246 (2003).

a penumbra of debatable cases in which words are neither obviously applicable nor obviously ruled out.”¹⁸⁸ The fuzziness associated with most natural language concepts, such as ‘vehicle,’ does not undermine most day-to-day verbal interactions, in which a high degree of precision is not necessary to successful communication. The requirements of the legal system, however, are different. Interpretive questions (e.g., does a certain object fall within the scope of the concept ‘vehicle’) need definite “yes” or “no” answers, and frequently the dispute will involve some object at the margins of the relevant concept (e.g., a car without an engine).¹⁸⁹ Despite the human language faculty and its natural ability to categorize, as well as the widespread intuition that language users are naturally experts on the interpretation of their native language, issues of language and meaning—particularly categorization—have long challenged judges and commentators.¹⁹⁰

Although Hart’s no-vehicles-in-the-park hypothetical is famous for its illustration of the difficulties of categorization, he does not provide any real explanation of how an interpreter identifies the “core of settled meaning” or the parameters of the category.¹⁹¹ That is, he does not explain how a judge should identify criteria for determining membership in a category such as that denoted by *vehicle*. Such identification is crucial, however, to the ordinary meaning doctrine. As discussed earlier, a judge might well approach the meaning of the no-vehicles-in-the-park provision by consulting a dictionary definition of *vehicle*, the key term in the provision.¹⁹² In part due to Justice Scalia’s influence on the Court, judicial reliance on dictionaries is extensive and has dramatically increased since the 1980s.¹⁹³

In fact, in his 2012 book, Justice Scalia (as well as his co-author Bryan Garner) analyzes the no-vehicles-in-the-park hypothetical and argues that judges should consult dictionary definitions in

188. Hart, *supra* note 44, at 607.

189. See *supra* notes 87–89 and accompanying text (discussing the bivalency of the legal system).

190. See SLOCUM, *supra* note 27, at 213–76.

191. See Hart, *supra* note 44.

192. See *supra* notes 79–87 and accompanying text (describing the judiciary’s reliance on dictionaries).

193. See *supra* note 86.

determining the meaning of *vehicle*.¹⁹⁴ However, Justice Scalia rejects the dictionary definitions as being too broad and inclusive, and creates instead (without citing any linguistic authority or analysis) his own definition, claiming that it would be sufficiently definite so as to resolve questions regarding the extension of *vehicle*.¹⁹⁵ He rejects a broad dictionary definition that describes a *vehicle* as “a means of carrying or transporting something,”¹⁹⁶ along with another defining the term as follows: “A means of conveyance, usu. with wheels, for transporting people, goods, etc.; a car, cart, truck, carriage, sledge, etc.” or “[a]ny means of carriage of transport; a receptacle in which something is placed in order to be moved.”¹⁹⁷ Scalia concedes that “[a]nything that is ever called a *vehicle* (in the relevant sense) would fall within these definitions.”¹⁹⁸ Instead, Justice Scalia creates his own definition: “The proper colloquial meaning in our view (not all of them are to be found in dictionaries) is simply a *sizable* wheeled conveyance (as opposed to one of any size that is motorized).”¹⁹⁹

Armed with his self-created definition, Scalia concludes that “remote-controlled model cars, baby carriages, [and] tricycles” would not fall under it.²⁰⁰ But how does one decide whether an object is “sizable” enough to qualify as a vehicle? If the definition of *vehicle* sets forth necessary and sufficient conditions that include anything that is (1) sizable, (2) wheeled, and (3) a conveyance, then there must be some size threshold for the category. However, Justice Scalia does not offer any standard for evaluating what is “sizable.” Notwithstanding his goal of demonstrating an interpretive methodology that will produce consistent answers across judges, Justice Scalia indicates uncertainty concerning the application of his definition to bicycles, indicating that they are “perhaps” not vehicles (albeit confirming later that they are not vehicles), and Segways, indicating that they are “perhaps” vehicles.²⁰¹ Why the distinction

194. See SCALIA & GARNER, *supra* note 15, at 36–37.

195. See *id.* at 37.

196. *Id.* (quoting MERRIAM-WEBSTER’S COLLEGIATE DICTIONARY 1386 (11th ed. 2003)).

197. *Id.* (quoting THE NEW SHORTER OXFORD ENGLISH DICTIONARY 3554 (4th ed. 1993)).

198. *Id.*

199. *Id.*

200. *Id.* at 37–38.

201. *Id.* at 38.

between the two (similarly sized) objects? Justice Scalia does not offer an explanation, nor does he explain the basis for his uncertainty. Furthermore, apparently a scooter is not a vehicle (and neither is a motorized wheelchair) but a moped is.²⁰²

The long-standing no-vehicles-in-the-park hypothetical illustrates the inherent fuzziness of language. A major problem, as Justice Scalia's analysis illustrates, is that, it is in tension with the common motivation of judges to define words in such a way as to avoid uncertainty in application. Doing so assists the judge in reaching the required "yes" or "no" answer in what seems like an objective manner.²⁰³ This may involve selecting a dictionary (or in Justice Scalia's case, his own intuitions about language) and treating one of the definitions as though it sets forth necessary and sufficient conditions that, when met, guarantee membership in the category represented by the word.²⁰⁴ The resulting decision may sometimes be correct, in the sense that the result in the case corresponds with the ordinary meaning of the language, but it will not be based on an accurate understanding of language.

B. Proposed Corpus Analyses of the Hypothetical

Fortunately, the meaning of *vehicle* presents an issue of lexical semantics to which corpus analysis can be applied. Despite the seemingly clear issue of meaning Hart's simple statute presents, however, the corpus analysis is not straightforward. The differentiation of (suspected) near synonyms (relevant in the *Costello* analysis) or the classification of arguments with which, for instance, a verb is used (relevant in the *Smith* analysis), are by now well-established matters in corpus linguistics. The situation is different, though, when it comes to determining the extension of a category such as that denoted by *vehicle* to determine whether a certain object in question (e.g., a Segway or a lawnmower) would fall under the category label. The initial, and intuitive, idea of retrieving sentences such as "[some noun] is a vehicle" to obtain a truly comprehensive set of objects that count as vehicles seems bound to fail in all but the

202. *Id.*

203. See *supra* notes 87–89 and accompanying text.

204. For a critique of such practice see SOLAN, *supra* note 87, at 50–80.

largest corpora. As a result, a more sophisticated approach is needed. We outline some proposals below.

It seems advisable to approach category extension by recognizing that the notion of a corpus can refer to more than collections of texts (written or transcribed spoken data that occurred naturally) in (Unicode) text that may feature linguistic annotation. For instance, there is nothing that rules out extending the notion of *corpus* to include auditory data (spoken language) and textual data (written language) as well as visual data (in the form of images). Textual data are also processed visually, even if they are visual representations of a conventionalized set of symbols. For example, the linguist Levshina discusses a study that consisted of the following steps:

- (1) the compilation of a corpus of images labeled as *Stuhl* (German for *chair*) and *Sessel* (German for *armchair*) from online furniture catalogs;
- (2) their annotation for a variety of features describing their physical and functional characteristics;
- (3) the computation of a multiple correspondence analysis (MCA), which explores the multi-feature annotation of images for commonalities/correlations and returns dimensions that underlie, and hopefully motivate in an interpretable way, the distinction of, in this case, *Stuhl* and *Sessel*.²⁰⁵

It would be methodologically straightforward to apply a similar logic to concepts such as *vehicle* by annotating images of vehicles and other things (as a control group) for features and then have an MCA determine which features or dimensions distinguish vehicles from semantically neighboring terms. Doing so might reveal that while a lawnmower, for example, has wheels and is operated by a human, it does not transport humans or goods (at least not as its primary purpose) and, thus, should not be considered a vehicle. This method is potentially laborious and time-consuming, but once features and data are chosen, it is objective and replicable. Furthermore, the categorization of images and photos by ordinary users of the

205. See NATALIA LEVSHINA, HOW TO DO LINGUISTICS WITH R: DATA EXPLORATION AND STATISTICAL ANALYSIS (2015).

Internet is, arguably, less likely to deviate from ordinary usage than what a judge makes up in his or her chambers.

Another method would involve linguistically and psychologically more sophisticated ways of operationalizing the notions of category membership and prototypicality. For instance, frequency can, but need not, be a good predictor of prototypicality.²⁰⁶ However, not only is it useful to add dispersion to this definition, but some linguists, psychologists, and many other cognitive scientists also argue that a prototype is better defined as an abstract entity that consists of the combination of the most salient attributes of the category. The most salient attributes for a category are those with a high *cue validity* for the category.²⁰⁷ The cue validity of an attribute A of object X with regard to a category C is the conditional probability of X being a member of category C if or given that X has attribute A : $p(C|A)$. In other words, a robin (the object X) is a “good” bird (the category C) because it has many of the attributes A_{1-n} that are highly predictive of something being a bird (e.g., if something has a beak (A_1), it is most likely a bird; if something (also) has feathers (A_2), it is most likely a bird), not because we encounter it so frequently or talk about it so frequently (although frequency and even dispersion *may* of course help in making something seem prototypical).²⁰⁸

Based on the analysis above, the question of what falls within the category of ‘vehicle’ can be approached both corpus-linguistically and experimentally. One can retrieve clauses such as “[some noun] is a vehicle” from a hopefully large and representative corpus, *not* to sample all of the nouns one obtains as a set of category members, but rather to note the attributes they possess and compute the cue validities of those attributes for the category ‘vehicle.’ Armed with these, we can compose a prototype of the category ‘vehicle.’ We can also quantify for every entity we consider a candidate for category membership—Segways, golf carts, scooters, etc.—both how many attributes of the category ‘vehicle’ it possesses, and their cue

206. See *supra* notes 102–04 and accompanying text (discussing frequency).

207. See Eleanor Rosch, *Principles of Categorization*, in COGNITION AND CATEGORIZATION 27, 27–48 (Eleanor Rosch & Barbara Lloyd eds., 1978); John R. Taylor, *Prototype Theory*, in 1 SEMANTICS 643, 643–64 (Claudia Maienborn, Klaus von Heusinger & Paul Portner eds., 2011).

208. For an explanation of dispersion see *supra* note 172.

validities. On those grounds, one is likely to find that a Tesla Model S is a vehicle even though it does not have an internal combustion engine and that a baby stroller is probably not a vehicle even though it has four wheels and conveys a passenger. Experimental data from psycholinguistic testing can enhance such corpus data by helping validate attributes' relevance for categories or by providing examples of vehicles that the corpus data did not provide.

While the above suggestions are programmatic at this stage, they do indicate that corpus-linguistic methods (as well as complementary methods from neighboring disciplines) can provide data that is relevant to enduring issues of statutory interpretation like the fuzziness inherent in natural language words such as *vehicle*. Such data is certainly more accurate than the unsupported intuitions relied on by Justice Scalia in his analysis.²⁰⁹ Nevertheless, as in the cases analyzed earlier, we do not claim that corpus analysis should by itself set the meaning of a statute. A court may well rely on some extra-textual inference from context that may shape whatever meaning of *vehicle* it adopts. For example, a court may, and often does, adopt a meaning based on some circumstance relevant to the purpose of the statute. For example, a judge might believe that ambulances and other emergency vehicles fall under the ordinary meaning of *vehicle* but may be convinced that they should not be excluded from the park in Hart's hypothetical). Such examples do not undermine the general notion that corpus analysis can help a judge decide whether a certain definition is compatible with the ordinary meaning of *vehicle*.

CONCLUSION

Notwithstanding the heterogeneity of interpretive methodologies and the importance of pragmatic inferences from context (which are often intertwined with legal concerns), the ordinary meaning doctrine is a fundamental aspect of legal interpretation. As such, the semantic meanings of words act as a constraint on permissible interpretations, making linguistic insights from corpora relevant to the questions courts explicitly or implicitly ask when interpreting legal texts. Because ordinary meaning must in some sense be generalizable across contexts, not shaped by legal concerns,

209. See *supra* notes 194–202 and accompanying text (describing Justice Scalia's analysis of Hart's no-vehicles-in-the-park hypothetical).

it would seem to be subject in some way to the empirical verification that corpus analysis can provide.

Nevertheless, it is important to properly assess the limitations of a determinant of meaning like corpus analysis that cannot account for the full context of the relevant statute. Its inability to take into account the full context of a statute means that corpus analysis cannot by itself provide conclusive meanings to legal texts. Unlike some other determinants of meaning such as legislative history, the main function of corpus analysis is to provide data about word meanings that cut across contexts. While such information can of course be useful, meaning is often fixed in other ways, such as through consideration of the structure or context of the relevant statute. Furthermore, corpus analysis cannot answer inherently normative questions such as the proper standard for designating some permissible meaning as the ordinary meaning. Instead, it can only provide data relevant to whatever standard is set by courts.

Even though corpus linguistics can provide linguistic facts useful to legal interpretation, a fair amount of sophistication is needed in order to perform the work competently. Judges are experts in interpreting the law, but such knowledge is orthogonal to corpus linguistics. An understanding of how law functions and the role of interpretive principles (many of which reflect legal concerns and values) does not make a judge (or legal scholar) an expert in the academic field of linguistics. The training of linguists often involves methods specifically designed to identify and describe the meaning of expressions and how to experimentally and statistically counter cognitive biases. Judges and lawyers do not currently receive such training. Not surprisingly, judges frequently make basic mistakes about how language functions (let alone mistakes concerning sophisticated linguistic methodologies).²¹⁰ To think that lawyers and judges can easily obtain the necessary corpus linguistics knowledge brings to mind Tushnet's "the 'lawyer as astrophysicist' assumption," whereby he criticizes the oft-prevalent notion among lawyers and legal academics that "the generalist training of lawyers allows any

210. See generally SOLAN, *supra* note 10 (describing judicial mistakes regarding both basic and difficult issues of language).

lawyer to read a text on astrophysics over the weekend and launch a rocket on Monday.”²¹¹

At this time, it is highly doubtful that the cost-benefit analysis of acquiring the knowledge necessary to perform corpus linguistics competently favors widespread judicial adoption. Nevertheless, publicizing the kind of knowledge that can be gained from linguistic work may encourage judges to avail themselves of the services of linguists or, more likely, gain a greater understanding of the nature and functioning of language. Just as legal practitioners defer to expert witnesses when it comes to such things as fingerprinting and analyzing genetic information, legal practitioners could similarly defer to experts who can testify about language meaning. The potential judicial adoption of interdisciplinary knowledge and techniques from fields such as linguistics is intriguing, and the resulting discussions from such proposals may well serve to enhance both the theory and practice of legal interpretation.

211. Mark Tushnet, *Truth, Justice, and the American Way: An Interpretation of Public Law Scholarship in the Seventies*, 57 TEX. L. REV. 1307, 1338 n.140 (1979).

