MEASURING ORDINARY MEANING USING SURVEYS

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ABSTRACT

Giving statutes their ordinary meaning can contribute to the rule of law and legislative primacy. But this contribution is threatened if judicial tools for ascertaining that meaning—dictionaries, canons, and judges' own linguistic judgments—are hostage to judges' subjective idiosyncrasies and biases. Stiffening up that contribution requires measuring ordinary meaning objectively.

I argue and show that surveys can be used to measure ordinary meaning objectively. I measure how ordinary persons understand the scope of "using a firearm," the scope of the adverb "knowingly" in a child pornography statute, and the meaning of "without knowledge or consent." My results contradict some famous and controversial judicial interpretations and support others. I find that (i) the ordinary meaning of "using a firearm" has broader scope than using it as a weapon, (ii) swapping a gun for drugs and vice versa count equally as using a firearm, (iii) ordinary meaning can differ from grammatically correct meaning, and (iv) "without knowledge or consent" is genuinely ambiguous between "without knowledge and without consent" and "without knowledge or without consent." I find that ordinary persons' interpretations are more sensitive to their penal preferences than linguistic ability.

I find that surveys are simple, fast, and cheap enough for wider use by scholars, lawyers in disputes, and drafters of statutes and regulations. I argue that surveys are better than corpus linguistic methods at eliciting interpretations that are sensitive to specificities of text, fact pattern, and penal context.

I do not address (i) whether ordinary meaning should trump intention or purpose, (ii) how to synthesize meaning from multiple instances of the same phrase within or across statutes, or (iii) how to reconcile ordinary meaning with interpretive precedents. I only measure the ordinary meaning of a single instance of a single phrase within a general penal statute. However this is contribution enough. The interpretation of such single instances is often sufficient to generate controversy and drive court decisions. And we can't reach the question of how to trade-off, synthesize, or reconcile multiple elements without first being able to measure each element independently.

To solve the thorny issue of how to weigh conflicting interpretive canons (or the dueling canons problem), I argue we should weigh them empirically, as the ordinary person implicitly weighs them when actually interpreting statutes.

1. INTRODUCTION

I argue and show that the ordinary meaning of a statutory text—the interpretation given to it by ordinary members of the general public--can be objectively measured using surveys.

Giving statutes their ordinary meaning promotes the rule of law and legislative primacy. The three major theories of statutory interpretation--textualism, intentionalism, and purposivism—affirm this. It promotes the rule of law to the extent we infer our rights and obligations under the law from its ordinary meaning.[1] It promotes legislative primacy to the extent the "legislature use[s] words in their most ordinary sense"[2] so that ordinary meaning is "the best evidence of legislative intent"[3] and purpose.

Corollary to these goals is that of restraining judicial interpretive discretion. If we want judges to interpret the law the way its subjects and authors do, we have to keep their idiosyncrasies and biases from bleeding into their interpretations. Alas, judges rely on three tools to ascertain ordinary meaning: dictionaries, canons of construction, and their own linguistic judgments as ordinary users of the language.[4] Each is hostage to discretion.

The problem with dictionaries is that "[b]ecause there are so many of them and each offers a variety of definitions for common terms, [they] confirm or exacerbate the

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[1] *See, e.g.*, WILLIAM N. ESKRIDGE, JR. ET AL., LEGISLATION AND STATUTORY INTERPRETATION 231 (2d ed. 2006) ("[P]lain meaning is the most obvious and perhaps the most objective focal point for all of us to know what the rule requires of us and our neighbors."); Walter Sinnott-Armstrong, *Word Meaning in Legal Interpretation*, 42 San Diego L. Rev. 465, 489 (2005) ("[C]itizens often interpret laws on the basis of what the words in those laws normally mean. These public word meanings are usually accessible to competent speakers of the language.").

[2] Lawrence M. Solan, The Language of Statutes: Laws and their interpretation 74 (2010).

[3] ESKRIDGE ET AL. *supra* note 1, at 231.

[4] SOLAN, *supra* note 2, at 70-74.

variety of choices rather than narrow them."[5] According to Solan, dictionaries better provide the outer bounds of a word's meaning than its ordinary or typical meanings.[6] The problem with canons is that there are so many of them, and they point in so many different interpretive directions, that any interpreter can typically find one pointed in the direction of his or her policy preferences. This problem received its classic articulation from Llewellyn[7] but was recently echoed by Eskridge: "For any difficult case, there will be as many as twelve to fifteen 'valid canons' cutting in different directions, leaving considerable room for cherry-picking."[8]

And what about judges' linguistic judgments? Solan finds this the most relied upon method: "During most of American judicial history, the predominant methodology for discovering ordinary meaning has been introspection. Without fanfare, judges simply rely upon their own sense of how common words are typically used."[9] He sees this as a generally good thing:

> If one really believes that the legislature used statutory words in their most ordinary sense, simple introspection is generally an adequate way to discover that sense. After all, linguists heavily rely on their own knowledge of their native languages. They have enjoyed great success exploring their own judgments about grammaticality, felicity, and preferences of one structure or meaning over another.[10]

The linguistic judgments of ordinary language users like judges are of course important. Indeed, the dominant view in both the disciplines of philosophy of language

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[5] William N. Eskridge, Jr., *The New Textualism and Normative Canons*, 113 COLUM. L. REV. 531, 534 (2013) (reviewing ANTONIN SCALIA & BRYAN A. GARNER, READING LAW: THE INTERPRETATION OF LEGAL TEXTS (2012)).
[6] SOLAN, *supra* note 2, at 76.
[7] Karl Llewellyn, Remarks on the Theory of Appellate Decisions and the Rules or Canons About How Statutes are to be Construed, 3 Vand. L. Rev. 395 (1950).
[8] Eskridge, *supra* note 5, at 531.
[9] SOLAN, *supra* note 2, at 75.
[10] *Id.* at 74.

and statutory interpretation is that ordinary meaning is conventional: it is constituted by convergence in the linguistic judgments and practices of the community.[11] Each ordinary language user's linguistic judgment plays some small part in constituting that convention. It also has epistemic value as a sample data point generated by, and therefore shedding light on, that convention.

But making inferences about a community's interpretive conventions on the basis of a few judges' linguistic judgments is as hazardous as making inferences about a population distribution on the basis of a few data points drawn from it. Any single individual's judgments may be idiosyncratic or biased relative to those of the community as a whole.[12]

How to find ordinary meaning, then, by means less exposed to these vagaries? If we go back to the beginning and attend to the constitutive and epistemic aspects of

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[11] *See, e.g.* SCALIA AND GARNER, *supra* note 5, at xxvii ("How is [textual meaning] to be determined? By convention. Neither written words nor the sounds that the written words represent have any inherent meaning. Nothing but conventions and contexts cause a symbol or sound to convey a particular idea."); Frank Easterbrook, *Foreword* to SCALIA & GARNER, *supra* note 5, ix, xxv ("Words don't have intrinsic meanings; the significance of an expression depend on how the interpretive community alive at the time of the text's adoption understood those words."); Michael Rescorla, *Convention*, STAN. ENCYCLOPEDIA PHIL. (2011), http://plato.stanford.edu/archives/spr2011/entries/convention/#ConLan ("Nowadays, virtually all philosophers side with Hermogenes[' broadly conventionalist view of linguistic meaning]. Barring a few possible exceptions such as onomatopoeia, the association between a word and its referent is not grounded in the intrinsic nature of either the word or the referent. Rather, the association is *arbitrary*. In this weak sense, everyone agrees that language is conventional.").

[12] *See, e.g.*, Lawrence Solan et. al., *False Consensus Bias in Contract Interpretation*, 108 COLUM. L. REV. 1268, 1273 (2008) ("Judges, in determining whether . . . language is susceptible to more than one reasonable interpretation, typically rely on their own intuitions as native English speakers. The problem, however, is that a judge has no way of determining whether she is correct in her assessment that her own interpretation is widely shared.").

ordinary meaning, a way suggests itself. I map out these aspects in Section 2 relying on three ideas or programs within the philosophy of language: linguistic pragmatism, linguistic conventionalism, and empirical pragmatics. Gricean linguistic pragmatism suggests we understand the legislature as a "speaker" who passes a statute having a particular text, and who intends that defendants whose actions fall under the scope of the ordinary meaning of the statute's text be punished. It suggests we understand the statutory interpreter as a "hearer" who is trying to infer, using both linguistic and pragmatic interpretive maxims, what actions the lawmaker intends to punish by passing the statute with its particular text. Subjective meaning and interpretation are respectively constituted by the lawmaker's actual punitive intentions and the interpreter's actual inferences regarding those intentions. Lewisian linguistic conventionalism allows us to build an objective, or more precisely, conventional, concept of ordinary meaning upon the subjective Gricean account. It suggests we identify the degree to which the ordinary meaning of some statutory text encompasses some defendant's action *p* with the degree of actual convergence in ordinary persons' linguistically and pragmatically informed subjective judgments that *p* falls under the scope of the text's ordinary meaning.

Experimental pragmatics suggests we adopt an evidentiary approach to ordinary meaning both faithful to its constitution by convention and awake to how hearers deploy interpretive maxims in context-specific ways. The former steers us towards quantitative evidence since conventions manifest themselves at the level of communities and not individuals. The latter to surveys that preserve aspects of context that can influence hearers' choice of maxims. The problem, then, with judicial assertions regarding ordinary meaning in the absence of quantitative evidence is that they are *mere* assertions.

We may be able to live with this most of the time, but not in hard cases. Going beyond assertion to *demonstration* requires mobilizing quantitative data. If we are to aspire to what Justice Scalia calls a "[s]cience of statutory interpretation"[13] we shall have to aspire to direct measurement of the community's interpretive conventions, a necessarily quantitative empirical exercise. Indeed, any non-question-begging assessment or defense of judges' ability to intuit ordinary meaning in hard cases requires comparing their intuitions to the data.

Ordinary meaning is constituted empirically rather than normatively. It reflects how ordinary persons *actually* interpret rather than how they *ought* to by some independent standard of interpretive rationality such as grammaticality. I guard this distinction vigilantly. Grammaticality is a normative concept: an interpretation is grammatically correct in virtue of its conforming to a set of rules designed to preserve the long-term orderliness and productivity of language. We certainly have reason to interpret statutes grammatically: doing so facilitates this long-term virtue in the statutory realm. But though this is a virtue, it is a distinct one from the rule of law and legislative primacy. The interpretation that best respects the ordinary person or legislator's actual understanding is, trivially, the ordinary person or legislator's actual understanding. Though ordinary and grammatically correct meaning might often be one and the same, their constitutive grounds are different, and they serve different masters.

The two methods for quantitative analysis of meaning and interpretation are corpus linguistics (i.e. the statistical analyses of published texts) and survey methods. Though a science of statutory interpretation will build on both, I focus here on the survey

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[13] ANTONIN SCALIA, A MATTER OF INTERPRETATION: FEDERAL COURTS AND THE LAW 14 (1997).

method.[14] Its advantage over the corpus approach is the greater specificity and control it affords the analyst. In interpretive controversies, we often have a highly specific interest: we want to know whether a specific fact pattern (say trading a gun for drugs) falls under the scope of a specific statutory phrase (say "using a firearm during and in relation to a drug trafficking crime") within a specific context (that of determining a defendant's liability under a penal statute). It is unlikely there will be a critical mass of published texts shedding light on this exact nexus of specific concerns. In contrast, an analyst can design a survey that directly incorporates such specificities and measures the extent to which they jointly shape ordinary meaning.

I conduct a survey to measure the scope of the ordinary meaning of three ambiguous statutory phrases. I recruit two samples of about 350 respondents each from the Amazon Mechanical Turk crowdsourcing service to measure ordinary persons' interpretive judgments regarding:

(i) Whether the actions of the defendants in *United States v Smith*[15] ("*Smith*") (trading a gun for drugs[16]), *United States v. Bailey*[17] (keeping a gun in the trunk of a car[18]), and *United States v. Watson*[19] ("*Watson*") (trading drugs for a gun[20]) fall under the

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[14] For recent discussions of applying corpus analysis to statutory interpretation, see SOLAN, *supra* note 2, at 78-79; Stephen C. Mouritsen, *Hard Cases and Hard Data: Assessing Corpus Linguistics As an Empirical Path to Plain Meaning*, 13 COLUM. SCI. & TECH. L. REV. 156 (2012).

[15] 508 U.S. 223 (1993).
[16] *Id.* at 225.
[17] 516 U.S. 137 (1995).
[18] *Id.* at 139.
[19] 522 U.S. 74 (2007).
[20] *Id.* at 76.

scope of the ordinary meaning of "using a firearm during and in relation to a drug trafficking crime,"[21]

(ii) Whether distributing an image knowing it depicted sexually explicit but not knowing the minority of the actor depicted falls under the scope of "knowingly distributes an image, if the image is of a minor engaging in sexually explicit conduct" as was the issue in *United States v. X-citement Video*[22] ("*X-citement Video*"), and

(iii) Whether land was used for drug trafficking crimes "without knowledge or consent" of their owners when these owners knew but did not consent to such use. This issue, implicating de Morgan's rule, arose in *United States v. 171-02 Liberty Avenue*[23] ("*Liberty Avenue*") and *United States v. 890 Noyac Road*[24] ("*Noyac Road*").

I present survey respondents with a paraphrased text of the relevant statute and a description of a defendant's action and ask them to choose whether, in their judgment, the defendant's action: (1) definitely falls under the scope of the statute's ordinary meaning, (2) probably falls under its scope, (3) probably does not fall under its scope, and (4) definitely does not fall under its scope. I analyze the distribution of respondents' judgments across these four options. Actions that unambiguously fall under the scope of the statutes' ordinary meaning are those for whom supermajorities of respondents choose (1). Actions unambiguously outside its scope are those for whom supermajorities choose (4). Ambiguous cases are those falling between. I investigate the sensitivity of respondents' judgments to their penal preferences and linguistic ability.

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[21] 18 U.S.C. § 924(c).
[22] 513 U.S. 64 (1994).
[23] 710 F. Supp. 46 (E.D.N.Y 1989).
[24] 739 F. Supp. 111 (E.D.N.Y. 1990), *rev'd*, 945 F. 2d 1252 (2d Cir. 1991).

My results suggest that surveys successfully deliver on the theoretical promise that ordinary meaning is in principle measurable with quantitative empirical methods. I discuss how my results support or contradict certain famous and controversial judicial interpretations. I find that (i) the ordinary meaning of "using a firearm" has broader scope than using it as a weapon, (ii) swapping a gun for drugs and vice versa count equally as using a firearm, and though both are more ambiguous cases than threatening another person with a gun, they are less so than keeping a gun in the trunk; (iii) that knowingly mailing pornography without knowing it is child pornography is an ambiguous case, which shows that ordinary meaning can differ from grammatically correct meaning, (iv) "without knowledge or consent" is genuinely ambiguous between the interpretations suggested by de Morgan's rule and scalar implicature, and (v) ordinary persons' interpretations are more sensitive to their penal preferences than to linguistic ability.

My article is novel in (i) its application of quantitative empirical survey methods to statutory interpretation when the literature is largely theoretical and qualitative, (ii) its grounding of the empirical work in a philosophically rigorous account of ordinary meaning that takes seriously its constitutive and evidentiary aspects, a grounding that strengthens the design, analysis, interpretation, and the drawing of implications from the empirical work, (iii) the use of online crowdsourcing survey methods targeted at the general population, and that are fast, cheap, simple, and scalable, facilitating their wider use by scholars and practitioners, and (iv) addressing examples of interpretive ambiguities that haven't yet been explored in the quantitative empirical literature.

Surveys help solve the thorny theoretical issue of how to weigh conflicting interpretive canons against each other. To the extent that statutory interpreters use these canons as tools for ascertaining ordinary meaning,[25] they should be weighed empirically, according to the implicit weights ordinary persons give them when they actually and typically interpret statutes. Thus quantitative empirical measures of interpretive conventions already implicitly incorporate the weights ordinary persons give to various potentially conflicting interpretive canons.

There are many fundamental issues I do not address. In truth, I provide no normative defense of ordinary meaning: I only rehearse those that are widely accepted by scholars and judges of all interpretive persuasions. Anyone not compelled by its defenses will surely admit its inevitability: ordinary meaning has unsurpassed prominence on the doctrinal landscape, and it is hard to imagine judicial construction of a non-statutorily defined term that won't begin with it. And measurability is a plus: if ordinary meaning *is* measurable, this counts in its favor vis-à-vis competing categories of meaning that are less so.

Also, I do not address how to synthesize meaning from multiple instances of the same phrase within or across statutes, or reconcile ordinary meaning with interpretive precedents. I only measure the ordinary meaning of a single instance of a single phrase within a general penal statute. However this is contribution enough. The interpretation of such single instances is often sufficient to generate controversy and drive court decisions. And just as we can't find the average of a few quantities without being able to

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[25] Abbe R. Gluck & Lisa Schultz Bressman, *Statutory Interpretation from the Inside-an Empirical Study of Congressional Drafting, Delegation, and the Canons: Part I*, 65 STAN. L. REV. 901, 925 (2013) (stating that one of the three justifications for the use of canons of construction is that they "reflect how ordinary people use language").

measure each quantity independently, we can't synthesize a single meaning from multiple instances without a method for measuring the meaning of each instance separately.

I conclude that measuring ordinary meaning using surveys is philosophically well-grounded and fast, simple, cheap, and scalable. This makes it suitable for wider use not only by scholars, but also by practitioners in actual legal disputes and drafters of statutes and regulations. It can stiffen up ordinary meaning's contribution to the rule of law and legislative primacy and contribute to the emergence of a science of statutory interpretation.

Section 2 describes this paper's framework. Section 3 describes and implements the empirical methodology and analyzes its results. Section 4 concludes.

2. FRAMEWORK

2.1. Overview

Three research programs inform my work. The first is H. Paul Grice's linguistic pragmatism.[26] I depend on this theory for distinctions between different types of meaning and interpretation, the analysis of meaning and interpretation in terms of speakers' intentions and hearers' inferences regarding those intentions, and the idea that hearers use pragmatic principles to inferring speakers' implications. This theoretical perspective is already alive and well within statutory interpretation scholarship, exemplified by the volume PHILOSOPHICAL FOUNDATIONS OF LANGUAGE IN THE LAW (Andrei Marmor & Scott Soames eds., 2011). The second theory is linguistic conventionalism, whose most influential expositor is David Lewis, and which I rely on for defining the concepts of ordinary meaning and ordinary interpretation in terms of

[26] H. Paul Grice, Studies in the Way of Words (1989).

conventions that associate certain kinds of linguistic expressions with certain speaker-implied propositions.[27] The third research program is experimental linguistics and pragmatics, on which I rely for the idea that we should not be content with experts' untested intuitions regarding how ordinary people make linguistic judgments, but rather should directly measure with quantitative empirical methods how they in fact do.[28] I discuss each program in turn.

2.2. Gricean linguistic pragmatism

2.2.1. Meaning: sentence meaning and speaker meaning

Imagine a lawmaker passes a statute containing the sentence (call it S) "All persons who use a firearm during and in relation to a drug trafficking crime shall receive a five year minimum sentence" and a legal subject who is bound by this statute trying to interpret it. We can conceptualize this lawmaking event as a *communicative interaction*. Its elements include a *speaker* (the lawmaker: an individual or collection of individuals); a set of propositions *p* (I'll unpack these propositions more below) the speaker *intends* to communicate to the *hearer* (the legal subject bound by the law); a *sentence* S which the speaker *utters* (either speaks or codifies); an *inference* the hearer makes regarding what propositions *p* the speaker intends to communicate; and a *context* that includes time and place of utterance, the identities of speaker and hearer, and other aspects of the occasion.

We can distinguish two types of meaning: *sentence meaning* and *speaker meaning*. *Sentence meaning* is a sentence's literal, context-free meaning. It is constituted solely by the literal meaning of its words and grammatical rules governing how the

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[27] David Lewis, *Languages and Language*, *in* LANGUAGE, MIND AND KNOWLEDGE 3 (Keith Gunderson ed., 1975).

[28] For overviews, see EXPERIMENTAL PRAGMATICS (Ira A. Noveck & Dan Sperber, eds., 2006); QUANTITATIVE AND EXPERIMENTAL LINGUISTICS (David Eddington ed., 2009).

meanings of sentences are composed from the meanings and arrangement of its words.[29] It is meaning that stays constant across all contexts in which the sentence might be uttered, and so is independent of any particular contextual influences. It is the broadest range of meaning the rules of the language will allow a sentence like S to possess. [30]

In contrast, speaker meaning consists of the propositions *p* that the speaker *subjectively intends* to communicate to the hearer. Formally, a speaker *speaker-means* the proposition *p* if and only if that speaker utters some sentence in some context intending to induce in the hearer a belief that *p* is true by means of the hearer's inferring the speaker's intention.[31] Here, "speaker meaning" is a noun while "speaker-mean" with the hyphen is a verb.

According to the *underdetermination thesis*, sentence meaning S typically falls short of fully conveying speaker meaning *p*.[32] Consider S given above, which says "all persons." This phrase taken literally means *all* persons who ever exist. However, the lawmaker probably subjectively intends something far narrower like "all persons bound by my laws from this time forward," not including the dead, foreigners, or people who may have committed the proscribed act in the past. In other words, the lawmaker surely intends for S--which has the form "All persons who X shall receive Y"--to be a

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[29] *See, e.g.*, Stephen Neale, *Textualism with Intent* 26-27, (Nov. 4, 2008), UNIVERSITY COLLEGE LONDON, http://www.ucl.ac.uk/laws/jurisprudence/docs/2008/08_coll_neale.pdf; DONALD DAVIDSON, *Convention and Communication*, *in* INQUIRIES INTO TRUTH AND INTERPRETATION 265 (1984). This approach to sentence meaning is called the *compositionality* approach because it holds the meaning of sentences to be determined or composed by the meaning of its parts.

[30] *See, e.g.*, Neale, *supra* note 29, at 12.

[31] *See, e.g.*, Rescorla, *supra* note 11.

[32] *See, e.g.*, Stephen Neale, *Pragmatism and Binding*, *in* SEMANTICS VERSUS PRAGMATICS 165, 193 (Zoltán Gendler Szabó ed., 2005), *available at* http://www.princeton.edu/~harman/Courses/PHI534-2012-13/Neale/Neale_PragBind.pdf.

compressed way of communicating the narrower but more fully determined proposition *p*: "All persons bound by my laws from this time forward who X shall receive Y."

Thus, *compression*, the utterance of abbreviated expressions in the expectation that hearers will correctly infer the omitted information from the context, is an important reason sentence meaning underdetermines speaker meaning.[33] Of course, this specific sentence is famous in the statutory interpretation literature for another issue involving compression: that of whether "using a firearm" is a compression of something longer like "using a firearm as a weapon" or "using a firearm actively."[34] Though S's sentence meaning is compatible with any use, the lawmaker's speaker meaning *p* possibly covers a narrower range of uses. How narrow is precisely the interpretive issue.

Another source of discrepancy between sentence meaning and speaker meaning is *drafting error*, when the speaker composes a sentence whose literal meaning actually excludes the proposition the speaker intends to communicate. Thus I might utter "See you Tuesday" when I really mean "Wednesday." Such an error arguably occurred in 21 U.S.C. § 881(a)(7) (1988) (repealed 2000), the statute whose interpretation was at issue in *X-citement Video*,[35] whose operative text can be paraphrased to "All persons who knowingly distribute an image, if the image contains a minor engaging in sexually explicit conduct, shall be punished." This sentence's grammatically correct meaning—which I discuss later—states that persons shall be punished if they know they are distributing an image, even if they do not know either that the image depicts sexually

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[33] *See, e.g.*, Neale, *supra* note 29, at 30-31.
[34] This is discussed in Stephen Neale, *On Location*, *in* SITUATING SEMANTICS: ESSAYS ON THE PHILOSOPHY OF JOHN PERRY 8 (Michael O'Rourke & Corey Washington eds., 2007), *available at* http://michaeljohnsonphilosophy.com/wp-content/uploads/2011/09/NealeOnLoc.pdf.
[35] 513 U.S. at 66.

explicit conduct or that it is a minor engaging in that conduct. Justices Rehnquist and Stevens found it respectively "absurd"[36] and "ridiculous"[37] to suppose that this was Congress' intention. If they are right, then there is a drafting-error-induced discrepancy between the absurd sentence meaning and some non-absurd proposition that Congress intended but failed to communicate.[38]

Sentence meaning and speaker meaning are fundamentally different kinds of entity. Sentence meaning is to speaker meaning what "car" is to my Ford Focus. The former is an abstract category (or type), the latter a concrete particular instance of that category (or token). Types don't exist at particular times and places while tokens do. Speaker meaning, in particular, is instantiated inside the mind of the speaker who intends to communicate it to the hearer. This difference can be expressed in terms of their constitutive grounds. Sentence meaning is constituted by abstract and impersonal linguistic facts. Speaker meaning is constituted by a speaker's intentions: it is by definition whatever proposition the speaker intends to communicate within the context the sentence is uttered.

2.2.2. Three components of speaker meaning

Speaker meaning has at least three components: what the speaker *states*, *implies*, and *intends to effect*. Imagine you and I are at a boring evening party and that at some moment I utter to you "I am tired."[39] There are at least three propositions I may be intending to communicate to you. First is the explicitly *stated* proposition that the person

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[36] *Id.* at 69.
[37] *Id.* at 80.
[38] For a fuller enumeration of the different ways sentence meaning can underdetermine speaker meaning, see Neale, *supra* note 29, at 27-30, 55-59.
[39] This sentence comes from Neale, *supra* note 29, at 31-32.

referred to by "I,"—specifically JP Sevilla--is tired. Second is the *unstated but implied* proposition that I want to leave the party because I find it boring. Third is the *unstated but implied and imperative* proposition that you should leave the party with me.

What is distinctive about the first proposition—which I explicitly *state*—is that linguistic considerations alone allow you the hearer to infer it from context and utterance. You know, for example, from rules regarding first-person pronouns is that "I" refers to the speaker, and you can see from context that the speaker is JP Sevilla. So you can infer on the basis of linguistic rules and context alone that when I uttered "I am tired" I intended to state the proposition that the person referred to by "I," JP Sevilla, is tired. (Note incidentally and in conformity with the underdetermination thesis, that this stated proposition, that JP Sevilla is tired, is underdetermined by the sentence meaning of "I am tired" because abstracted from context, "I" refers to no one in particular.)

What is distinctive about the second proposition—which I imply but do not state—is that the hearer cannot infer it from linguistic considerations alone. No linguistic rules allow the words "am tired" to mean "want to leave this party because it is boring." Rather, to infer what I imply, you must rely on pragmatic considerations. Perhaps "I am tired" is polite subterfuge for "I want to leave this boring party." Or perhaps we earlier agreed to utter "I am tired" to imply that "I want to leave this party because it is boring." The third proposition is also implied and inferred pragmatically. But what is distinctive about it is that it is intended to effect some change in states of affairs: your leaving the party with me.

2.2.3. The lawmaker's intentions

This framework assumes that the lawmaker has intentions. Some find this problematic when the lawmaker is a collection of individuals like a legislature.[40] I sidestep this issue. It is enough for my purposes that the major approaches to statutory interpretation assume it. Intentionalism and purposivism, for example, assume that the lawmaker has specific intentions and general purposes. It is the same with textualism. Justice Scalia says that "[although] we do not . . . look for subjective intent . . . [w]e look for a sort of 'objectified' intent—the intent that a reasonable person would gather from the text of the law . . . ."[41] This commits textualism to the existence of intentions because objectified intent is no more than the reasonable person's best guess of that intent when the only evidentiary basis for the guess is textual evidence.

2.2.4. Context

It is said that context matters, and this is surely true. In Justice Scalia's words, "In textual interpretation, context is everything."[42] But Neale and others enjoin us to be more precise about why it does.[43] It matters in only two ways, only to the extent speakers and hearers "allow" it to matter, and only in ways that implicate intention.

Speaker meaning is constituted by the speaker's intentions. Context can therefore influence speaker meaning only to the extent it influences those intentions. The dullness of the evening party influences my speaker meaning by *making* me want to leave the party. By implication, context cannot matter "from outside" the speaker's intention. It

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[40] See, e.g., Kenneth A. Shepsle, Congress is a "They," Not an "It": Legislative Intent as Oxymoron, 12 INT'L REV. L. & ECON. 239 (1992).
[41] SCALIA, *supra* note 13, at 17.
[42] SCALIA, *supra* note 13, at 37.
[43] Neale, *supra* note 32, at 180.

cannot make me mean something I do not intend to mean. I have to allow the party's dullness to influence my intentions in order for that dullness to matter.

Interpretation, in contrast, consists of a hearer's inferences regarding speaker intentions. Context thus influences interpretation only to the extent the hearer takes it to be *evidence* of intention. The party's dullness influences interpretation if you take it to suggest that I probably want to leave. It cannot matter to interpretation "from outside" your inferences. You have to allow the party's dullness to influence your inferences in order for that dullness to matter.

The constitutive grounds of meaning and interpretation thereby constrain the ways context can matter. It matters only if speakers allow it to shape intentions and hearers allow it to shape inferences regarding them. And it matters in ways intimately linked to intentions. To say context matters is to implicitly affirm the relevance of intentions to meaning, and of inferences regarding intentions to interpretation. It is therefore incoherent to say context matters but intentions don't.

2.2.5. Which meaning is relevant?

Of the various meanings Grice distinguishes, it is the last—what the speaker intends to effect--that is relevant to statutory interpretation. We can rule out sentence meaning because it is too underdetermined (the literal meaning of "All persons who X shall receive Y" fails to even distinguish between a descriptive meaning and an imperative one) and makes no room for intention and context. We can rule out what is explicitly stated because the pragmatic considerations it ignores are very likely to play a role in the constitution of meaning and interpretation (for example, the lawmaker who utters "All persons" most likely means "All persons bound by my law from hereon").

And we can rule out what is merely implied because it ignores the most important aspect of the context: that it involves a law*maker* who intends, through the passing of law, that a particular set of acts, or defendants performing such acts, be punished.

For convenience, I shall refer to the relevant intentions as the lawmaker's punitive intentions. To save on notation, I shall denote the set of acts that the lawmaker intends to punish by the same notation I used to denote propositions: *p*. Thus what the lawmaker is trying to communicate by uttering S in context, and what the subject is trying to infer by interpreting S in context, is which acts *p* the lawmaker intends to punish.

2.2.6. Interpretation and Interpretive Principles

A hearer's *subjective interpretation* consists of that hearer's *inferences* regarding the propositions *p* that the speaker intends to state, imply, and effect. The hearer makes these inferences on the basis of the sentence uttered, context, linguistic conventions that allow the hearer to infer what the speaker states, and pragmatic conventions that allow the hearer to infer what the speaker implies. As Neale says, *meaning* and *interpretation* form a pair: a hearer attempts to interpret what a speaker means.[44] The gap between intention and inference implies the possibility of misinterpretation: the hearer may fail to correctly infer the propositions the speaker intends to communicate.[45] Thus speaker and hearer are in epistemically asymmetric positions: the former knows what the latter is trying to discover.[46]

Grice's theory of conversational implicature tries to explain how hearers infer what speakers imply. Speaker and hearer want the same thing: accurate communication

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[44] Neale, *supra* note 29, at 20.
[45] *Id.* at 21.
[46] *Id.* at 22.

of *p*, not just in any particular instance but generally. Grice theorized that this would lead them to conform to certain principles or maxims that make communication more efficient. The overarching principle Grice called the cooperative principle (CP):

> CP: Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged.[47]

He fleshed out CP into four maxims, called the maxims of relation, quality, quantity, and manner. Simplifying, these say (i) be relevant, (ii) be truthful, (iii) be as informative as required but no more than required, and (iv) be brief, orderly, and clear. According to Carston, most work in the Gricean tradition distills these maxims into two principles, which I paraphrase as follows:[48]

Principle 1: Be as informative as you can while staying true and relevant.

Principle 2: Don't be more informative than necessary.

According to the theory, speakers and hearers will adhere to these principles and assume that the other is too. If a speaker says something that appears to fall short of these principles, the hearer will infer whatever implied proposition *p* would be required to rescue the assumption that the speaker is adhering to them.

Compression, which I discussed earlier, in fact reflects the workings of the maxim of manner ("be brief") and Principle 2 ("Don't be more informative than necessary"). If (and this is a big *if*) there exists a convention of uttering "uses a firearm" to speaker-mean "uses a firearm as a weapon" in penal contexts, and if this convention is common

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[47] H. Paul Grice, *Logic and Conversation*, *in* STUDIES IN THE WAY OF WORDS 22, 26 (1989).

[48] Principles 1 and 2 are my paraphrase of what Carston respectively calls the Q-Principle and the I-Principle in Robyn Carston, *Legal Texts and Canons of Construction: A View from Current Pragmatic Theory*, *in* LAW AND LANGUAGE: CURRENT LEGAL ISSUES VOLUME 15 8, 13-14 (Michael Freeman & Fiona Smith eds., 2013).

knowledge, then it is more informative than necessary to utter "using a firearm as a weapon." As Carston states, it is sufficient by the lights of Principle 2 and in conformity with the maxim urging brevity, to utter "uses a firearm."[49]

Another example, this time of how implications can be inferred from Principle 1, involves *scalar implicature* in the interpretation of "or." Imagine that at a restaurant, your waiter says "You can have soup or salad." In formal logic, this statement is true if any of the following three is true (1) you can have soup but you can't have salad, (2) you can have salad but you can't have soup, and (3) you can have soup and salad. Since the third option is "soup *and* salad," we can say that the logical "or" includes "and." We can also say that the logical "or" is an *inclusive-or*.

But we often infer from the waiter's utterance that we can have one or the other but not both. That "or" excludes "and." We can call this the *exclusive-or*. What licenses the inference of an exclusive-or against the logical inclusive-or?

According to Gricean theory, common knowledge about the waiter's conformity to Principle 1 licenses that inference. Principle 1 tells the waiter to be as informative as possible while staying true and relevant. Imagine it were actually true you could have both soup *and* salad. If this were true, then it would be more informative to say "You can have soup *and* salad" than to utter "You can have soup *or* salad." It is more informative because the former but not the latter winnows out the non-true states of affairs (1) and (2) in which you can have one or the other but not both.

The conclusion of this reasoning is that if (a) it is common knowledge the waiter adheres to Principle 1, and if (b) it were true you can have soup and salad, then (c) the

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[49] *Id*. at 22.

waiter would've said "You can have soup and salad." But this conclusion in turn implies that if (d) it is common knowledge the waiter adheres to Principle 1, and (e) if the waiter does not say "You can have soup and salad," then (f) it is not true you can have soup and salad. Thus when the waiter utters "You can have soup *or* salad" rather than "You can have soup *and* salad," you can infer that you can't have both. Common knowledge of the waiter's adherence to Principle 1 provides an explanation of why we often interpret an utterance of "or" as implying the exclusive-or. This shall come into play when I discuss de Morgan's rule later.

This phenomenon is called scalar implicature because as I showed above, the logical "or" and the logical "and" can be placed on a scale of informativeness: when you can have soup and salad, it is more informative to utter "and" than "or." A speaker conforming to Principle 1 will utter the word that is highest on that scale of informativeness while still being true or relevant. Thus any unuttered word that is higher on the scale than the uttered word must be either false or irrelevant. Since "and" is more informative than "or" but is unuttered, it must be either false or irrelevant.

Carston shows how scalar implicature can lead to an inference opposite from that suggested by compression in the case of "uses a firearm."[50] If it is true that the lawmaker's intends to penalize only a defendant who "uses a firearm as a weapon," then it is more informative to utter that longer phrase than the less informative "uses a firearm." Since that more informative phrase is unuttered, the scalar implicature is that it isn't true the lawmaker intends to penalize only such defendants. I discuss this further below.

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[50] Carston, *supra* note 48, at 22.

2.2.7. Conflict among interpretive principles and how to resolve them

Thus the Llewellyn problem of dueling canons is mirrored by the problem of conflicting Gricean maxims. The fundamental question remains: how do we weigh interpretive canons, maxims, or principles when they point in different directions from one another?

My view is that we answer this question in light of the reason ordinary meaning is normatively significant in the first place. Judges ought to give statutes their ordinary meaning because doing so facilitates the rule of law. That is, because doing so brings us closer to a normatively desirable state of affairs in which the law is applied as the ordinary person *actually* understands it. But if that's the goal, then we should give competing principles precisely those weights that best conduce to that goal. This in turn leads naturally to the hypothesis that we should weigh interpretive principles *empirically*, that is using the weights that ordinary persons implicitly give them when they *actually* interpret statutes. If the ordinary person actually interprets "uses a firearm" largely by relying on scalar implicature and less so by relying on compression, then the statutory interpreter best facilitates the normative goal of the rule of law by giving more weight to the former interpretive principle than the latter.

In Llewellyn's famous attack on the dueling canons, he says that "Plainly, to make any canon take hold in a particular instance, the construction contended for must be sold, essentially, by means other than the use of the canon . . . ."[51] He's right: the canons are not self-justifying. I add to this that given our aims, they are justified by the extent of their ordinary use. But this also implies that if we can directly measure ordinary

[51] Llewellyn, *supra* note 7, at 401.

meaning, then the question of how to weigh competing interpretive principles in some sense just falls away. These principles have only instrumental value. They need only be weighed against each other to uncover ordinary meaning. If we can reach ordinary meaning by a more direct route, the question of how to weigh them against each other needn't even come up.

2.3. Lewisian linguistic conventionalism

Gricean speaker meaning and a hearer's interpretation is *subjective* in the sense that their constitutive grounds are the mental states—intentions and inferences--of single individuals.[52] I could equally well have labeled these concepts *subjective meaning* and *subjective interpretation* respectively.

However, ordinary meaning is not subjective meaning. It is not meaning constituted by the linguistic judgments of a few individuals, even justices of the Supreme Court. Indeed, if ordinary meaning were subjective in this way, it could not have the normative significance that it does. It in no way facilitates rule of law or legislative primacy for judges to give statutes their ordinary meaning if a small number of judges get to stipulate in some potentially idiosyncratic or biased way what that ordinary meaning is. No, if ordinary meaning is to have its normative significance it *must* reflect a community-wide understanding: it must be *conventional*. Its normative significance is grounded in its empirical prevalence. One of Lewis' great contributions to the philosophy of language was to articulate a theoretically sophisticated conventional account of meaning.

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[52] *See, e.g.*, KENNETH EINAR HIMMA, THE NATURE OF LAW: PHILOSOPHICAL ISSUES IN CONCEPTUAL JURISPRUDENCE AND LEGAL THEORY 391 (2011) ("A statement P is *subjective* if and only if the truth-value of P depends wholly on the mental states of the *speaker*.").

Lewis defined a convention as a regularity in action and belief such that (1) everyone conforms to it, in part because everyone else also does; (2) people generally prefer general conformity to the convention over less than general conformity; (3) the regularity is arbitrary in the sense that there is at least one alternative regularity the convention could've converged on but didn't; and (4) all of the preceding is common knowledge to everyone participating in the convention.[53]

We can use the Lewisian picture of convention to ground the concepts of ordinary meaning and interpretation in the Gricean theory of speaker meaning and interpretation. We can say that the *ordinary meaning* of a sentence S uttered in some context contains the proposition *p* if and only if, in that context, there is a convention whereby ordinary persons utter S to speaker-mean *p*. We can also say that the *ordinary interpretation* of a sentence S uttered in some context contains the proposition *p* if and only if, in that context, there is a convention whereby ordinary persons infer that a speaker speaker-means *p* when that speaker utters S. Ordinary interpretation thus defined provides me with a theoretically grounded articulation of Justice Scalia's concept of "objectified intent."[54]

Since the ordinary person is typically a speaker on some occasions and an interpreter on others, we might expect convergence between speaker-side and hearer-side conventions. When there is such a convergence, we can use the term *ordinary meaning* to refer equally to the content of speaker-side and hearer-side conventions.

Ordinary meaning conventions provide a community-level solution to the communicative challenges that speakers and hearers face at the individual level. On the

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[53] Lewis, *supra* note 27, at 164-66.
[54] SCALIA, *supra* note 13, at 17.

one hand when conventions exist, they will exert a gravitational pull on individual speakers and hearers. Everyone will find it convenient and effective to adopt them as default rules for communicating and inferring speaker meaning under the assumption that everyone else does as well. On the other hand, widespread adoption will entrench and perpetuate those conventions. This implies that ordinary meaning is an inherently probabilistic entity: it is meaning that is regular and typical in the community, and that persists over time precisely in virtue of its regularity and typicality.

Conventions can be arbitrary and sub-optimal. The convention of driving on the right hand side of the road is not intrinsically safer or faster than that of driving on the left. Given two arbitrary conventions, historical accident can determine which prevails. A lawmaker may simply make a mental coinflip and stipulate that driving shall henceforth occur on the right. A convention can also be sub-optimal in the sense that once formed, it may be better to stick to it than to replace it with a new convention optimized to new circumstances. It may be inherently more efficient to measure weights using the base-ten metric system of grams and kilograms, but such gains may not be worth the pains of transitioning from the less efficient but well-entrenched English system of ounces and pounds.

Given convention's arbitrariness, vulnerability to historical accident, and potential for entrenchment in sub-optimal states of affairs, we can only ascertain what conventions exist *empirically*, not *theoretically*. We cannot reason from the theoretical superiority of the metric system that therefore the US must currently be using it and not the English. We have to actually look at how history played out. Similarly, we cannot reason from the theoretical superiority of some interpretive convention (assume, for example, that it is

theoretically superior to compress "using a firearm as a weapon" to "using a firearm" in penal contexts) that therefore the convention will actually obtain. Here as well, we have to look. What we observe will also, among other things, provide us with conventional, non-subjective weights for the various interpretive canons and principles.

2.4. Quantitative approach to linguistic judgments

Recall Solan's finding that the dominant method judges use to find ordinary meaning is introspection of their own linguistic judgments. He finds this methodology "generally . . . adequate," and supports its adequacy by invoking professional linguists' "great success exploring their own judgments about grammaticality, felicity, and preferences of one structure or meaning over another."[55]

However, a few academic sub-disciplines outside the law have started to criticize experts' overreliance on their own intuitions and their often-untested assumption that their intuitions are typical of those of ordinary persons. One sub-discipline in which this has occurred is moral philosophy. Knobe describes the issue thus:

> Since the earliest days of analytic philosophy, it has been a common practice to appeal to intuitions about particular cases. Typically, the philosopher presents a hypothetical situation and then makes a claim of the form: 'In this case, we would surely say….' This claim about people's intuitions then forms a part of an argument for some more general theory . . . . One puzzling aspect of this practice is that it so rarely makes use of standard empirical methods. Although philosophers frequently make claims about 'what people would ordinarily say,' they rarely back up those claims by actually *asking* people . . . .[56]

This lament motivates the new sub-discipline of experimental philosophy, one of whose core methodologies is the use of quantitative survey techniques to measure

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[55] SOLAN, *supra* note 2, at 74.
[56] Joshua Knobe, *What is Experimental Philosophy?*, U. ALBERTA, http://www.ualberta.ca/~francisp/Phil488/KnobeExperimentalPhilosophy04.pdf (last visited Aug. 12, 2014).

ordinary persons' ordinary moral judgments regarding philosophers' hypothetical cases. Knobe and Nichols find the results of such experiments eye-opening: "Again and again, these investigations have challenged familiar assumptions, showing that people do not actually think about these issues like the way philosophers had assumed."[57]

Even closer to home, the same issue has been raised in linguistics. According to Cusimano:

> For a long time, linguists constructed arguments and defended linguistic theories on the basis of their own linguistic intuitions. They would report on their own judgments concerning the acceptability or well-formedness of sentences . . . .
> . . . [and such judgments] would be used in the construction of a theory. . . . Recently, the reliability and validity of these judgments has begun to be questioned, with researchers applying quantitative methods on naïve speakers to obtain more scientifically rigorous and reliable results. In several cases, quantitative methods have debunked previously claimed linguistic intuitions . . . .[58]

According to Gibson and Fedorenko:

> The prevalent method in syntax and semantics research involves obtaining a judgment of acceptability of a sentence/meaning pair, typically by just the author of the paper, sometimes with feedback from colleagues. This methodology does not allow proper testing of scientific hypotheses because of . . . the small number of experimental participants (typically one) . . . [and] cognitive biases on the part of researchers and participants . . . .[59]

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[57] Joshua Knobe & Shaun Nichols, *An Experimental Philosophy Manifesto*, in EXPERIMENTAL PHILOSOPHY 3, 3 (Joshua Knobe & Shaun Nichols eds., 2007).
[58] Corey Cusimano, *Acceptability Judgments in Linguistics Research*, BROWN U., https://wiki.brown.edu/confluence/display/kertzlab/Acceptability+Judgments+in+Linguistic+Research (last edited June 8, 2012).
[59] Edward Gibson & Evelina Fedorenko, *The Need for Quantitative Methods in Syntax and Semantics Research*, 28 LANGUAGE & COGNITIVE PROCESSES 88, 88 (2013).

Addressing these issues requires recruiting "multiple naïve experimental participants" and the use of quantitative methods.[60] Experiments using these methods show "many . . . examples of questionable judgments leading to unsound theorizing."[61]

I am of course suggesting a possible parallel. Professional moral philosophers and linguists have often relied on their moral and linguistic intuitions regarding how ordinary people make certain kinds of judgments. Subsequent quantitative empirical work has sometimes shown these experts' intuitions to be wrong. Judges often rely on their own linguistic intuitions regarding how ordinary people make certain kinds of linguistic judgments. Subsequent quantitative empirical work, of which relatively little has been done so far, may also show them to be wrong. Indeed, Solan et al. find in their study of how laypersons and judges interpret ambiguous contractual terms that they are in fact vulnerable to "false consensus bias": the "propensity to believe that one's views are the predominant views, when in fact they are not."[62] Given these risks of bias and idiosyncrasy, and given the normative stakes involved, the discipline of statutory interpretation should give serious thought to the experimentalist/empiricist program.

The vast statutory interpretation literature has largely eschewed quantitative empirical approaches. But there are some noteworthy exceptions. Cunningham et al.'s *Plain Meaning and Hard Cases*[63] uses surveys and corpus analysis to show that the ordinary meaning of the word "enterprise" as it appears in a provision of the Racketeer

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[60] Edward Gibson & Evelina Fedorenko, *Weak Quantitative Standards in Linguistics Research*, 14 TRENDS IN COGNITIVE SCI. 233, 233 (2010).
[61] *Id*.
[62] Solan et al., *supra* note 12, at 1268.
[63] Clark D. Cunningham et. al., *Plain Meaning and Hard Cases*, 103 YALE L.J. 1561 (1994) (reviewing LAWRENCE M. SOLAN, THE LANGUAGE OF JUDGES (1993)).

Influenced and Corrupt Organizations Act (RICO)[64] encompassed not just entities "directed toward an economic goal" as the Seventh Circuit concluded in *Nat'l Org. for Women, Inc. v. Scheidler*,[65] but also non-economic entities so long as they had "a clear goal".[66] As I just mentioned, Solan et al.'s *False Consensus Bias in Contract Interpretation*[67] uses surveys to demonstrate the vulnerability of laypersons and judges to false consensus bias.[68] Farnsworth, Guzior, and Malani's *Ambiguity about Ambiguity* uses surveys of law students to demonstrate the empirical distinction between two different types of ambiguity, the first consisting of a judge's not having clear beliefs about what the meaning of a text is, and the second consisting of the judge's belief that ordinary readers as a group would disagree about what a text means.[69] Farnsworth, Guzior, and Malani's *Implicit Bias in Legal Interpretation* uses surveys of law students to show that their policy preferences regarding how a case ought to be disposed of leads them to interpret statutory texts in the direction that conduces to their preferred outcome, and to show that certain ways of framing the interpretive question—specifically by asking law students how ordinary readers would read a statute-- can minimize this bias.[70] Mouritsen's *Hard Cases and Hard Data*[71] uses corpus analysis to reinvestigate the issue of whether the term "enterprise" as it appears in RICO is ordinarily used to refer to

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[64] 18 U.S.C. § 1962(c) (1988) ("It shall be unlawful for any person employed by or associated with any *enterprise* . . . [to conduct its] affairs through a pattern of racketeering activity or through collection of an unlawful debt.").
[65] 968 F.2d 612, 627 (7th Cir. 1992).
[66] Cunningham et al., *supra* note 63, at 1610.
[67] Solan et al., *supra* note 12.
[68] *Id.* at 1268.
[69] Ward Farnsworth et al., Ambiguity About Ambiguity: An Empirical Inquiry Into Legal Interpretation 2 J. L. ANALYSIS 257 (2010).
[70] Ward Farnsworth et al., *Implicit Bias in Legal Interpretation*, 1 J. L. & CTS 115 (2013).
[71] Mouritsen, *supra* note 14, at 194-201.

organizations that are economically motivated or non-economically motivated. It finds that the former use is vastly more statistically frequently observed in the corpus than the latter, and that occurrences of the word "enterprise" are much more likely to be surrounded by occurrences of other words with economic connotations such as "free."[72]

2.5 Implications of the framework for study design

My study design is informed by Gricean pragmatism, Lewisian conventionalism, and quantitative empirical approaches to meaning and interpretation. I conceptualize the lawmaker as a speaker who utters a statute with text S with the penal intention that any acts *p* falling under the scope of the ordinary meaning of S be punished. What the legal subject bound by the statute is trying to infer by interpreting S in this penal context is which acts *p* the lawmaker intends to punish. Given that S's sentence meaning typically underdetermines *p*, the hearer will make inferences regarding *p* that rely on both linguistic rules and potentially conflicting interpretive principles. We can conclude that the ordinary meaning of S encompasses a particular defendant's action *p* if and only if there is a convention among ordinary hearers to infer that actions *p* would be punished under the ordinary meaning of a statute with text S. I measure the existence and extent of ordinary meaning conventions by asking a large number of ordinary persons survey questions of the following form general form: given a penal statute with text S, to what extent would you say that a particular defendants' actions *p* fall under the scope of the ordinary, everyday meaning of S? Whether the ordinary meaning of S encompasses action *p* depends on the extent to which respondents agree that it does. The existence and extent of agreement across respondents shed light on the existence and extent of

[72] *Id.* at 196-201.

agreement in the community regarding the relative weight of potentially conflicting interpretive principles.

3. SURVEY METHODS, ANALYSIS, AND RESULTS

I recruit two samples of 359 and 355 respondents from the Amazon Mechanical Turk crowdsourcing service to take an online survey hosted on SurveyMonkey.com. Respondents in the first sample were paid $0.75 for a 15-minute survey, while those in the second were paid $1.50 for a 12-minute survey. The Institutional Review Board at George Mason University approved all aspects of this study.

I collected data on the following respondent characteristics: ethnicity, age, education, household income, party and ideological affiliation, and linguistic performance. I assessed linguistic performance on the basis of eleven questions reproduced in Appendix A.[73] Those who got at least nine correct I considered "High" performers, those with eight correct I considered "Middle" performers, and those with seven or less I considered "Low" performers.

The combined sample had a median age of 31; median income between $40,000-60,000; was 80% white; 58% democrat, 19% independent, and 23% republican; 51% liberal, 31% moderate, and 18% conservative; 45% had a highest educational attainment below a four-year college degree, 33% a four-year college degree, and 22% higher than a

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[73] These questions are adapted from the Cambridge English Placement Test, a language assessment test used by Cambridge English Language Assessment (CELA) at the University of Cambridge. The questions from which they are adapted are used by CELA to assess the highest level of English proficiency—called "C2" or "Mastery"--recognized by the Common European Framework of Reference for Language (CEFR), a standard international benchmark for measuring language ability. *Placing Students in the Right Exam*, CAMBRIDGE ENGLISH LANGUAGE ASSESSMENT, http://www.cambridgeenglish.org/cambridge-english-for/exam-centres/support-for-centres/placing-students-in-the-right-exam/ (last visited on June 13, 2014).

four-year college degree; 37% answered less than 7 of 11 linguistic questions correctly, 25% answered 8, and 39% answered 9 and higher.

The three texts I investigate, whose ambiguous components are italicized, are as follows:

> T1: a law that punishes anyone who "*uses a firearm* during and in relation to any drug trafficking crime."
>
> T2: a law that punishes anyone who "*knowingly mails an image, if the image involves a minor engaging in sexually explicit conduct*."
>
> T3: a law that confiscates any land used to commit drug-related crimes except if the land was used "*without the knowledge or consent*" of the owner.

The first sample was used to analyze T3, and the second sample to analyze T1 and T2. These examples do not follow exact statutory language but are adapted from such language in a way that shortens and simplifies the text but preserves intact all the linguistic features that lead to ambiguity.

3.1. Uses a firearm

3.1.1. The text

The first part of the survey analyzes ordinary meaning of T1:

> T1: a law that punishes anyone who "*uses a firearm* during and in relation to any drug trafficking crime."

T1 is based on 18 U.S.C. § 924(c) which in relevant part states that "any person who, during and in relation to any crime of violence or drug trafficking crime . . . uses . . . a firearm . . . shall . . . be sentenced to a term of imprisonment of not less than 5 years."

The textual ambiguity here concerns what actions fall under the scope of "uses a firearm." In three different cases, the Supreme Court considered the following acts:

trading a gun for drugs, based on *Smith*[74]

keeping a gun in a car's trunk while driving that car in relation to a drug trafficking crime, based on *Bailey*[75]

trading drugs for a gun, based on *Watson*[76]

3.1.2. Discussion of interpretive issues

In *Smith*, the defendant Smith offered to trade his unloaded machine gun, a MAC-10, in exchange for two grams of cocaine from undercover police officers in Florida.[77] In *Bailey*, which came two years after Smith, a search of defendant Bailey's car revealed thirty grams of cocaine in the passenger compartment and a nine-millimeter pistol in the trunk. In *Watson*, which came more than a decade after *Bailey*, the defendant Watson offered to buy a semi-automatic pistol from an undercover agent posing as a gun dealer, and offered to pay for the gun with OxyContin.[78]

In all three cases, the Supreme Court addressed the question of whether the defendants' actions constituted "using a firearm" under the ordinary meaning of that phrase. In *Smith*, Justice O'Connor writing for the majority said "When a word is not defined by statute, we normally construe it in accord with its ordinary or natural meaning."[79] In *Bailey*, Justice O'Connor, again writing for the majority, said "The word 'use' in the statute must be given its 'ordinary or natural' meaning."[80] In *Watson*, Justice

[74] 508 U.S. at 225.
[75] 516 U.S. at 139.
[76] 522 U.S. at 76.
[77] 508 U.S. at 225.
[78] 522 U.S. at 77.
[79] 508 U.S. at 228.
[80] 516 U.S. at 145.

Souter writing for the majority said "With no statutory definition or definitive clue, the meaning of the verb uses'[81] has to turn on the language as we normally speak it."

The interpretive debate in all three cases involved, as Neale clarifies, the phenomenon of *compression*, which I discussed earlier.[82] You do not just use a gun, period. Rather you use a gun *in* some way or *for* some purpose. The interpretive question is the scope of the compression in "uses a firearm:" which ways or purposes count as "use of a firearm," and which do not?

In Justice Scalia's famous dissent he argues that when an instrument is designed for a particular purpose, the ordinary meaning of "using" that instrument is using it for that particular purpose:

> To use an instrumentality ordinarily means to use it for its intended purpose. When 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. Similarly, to speak of "using a firearm" is to speak of using it for its distinctive purpose, *i.e.,* as a weapon.[83]

Thus one hypothesis, Justice Scalia's, is that the ordinary person will interpret the ordinary meaning of "uses a firearm" as "uses a firearm as a weapon" and so will interpret any other use as falling outside the scope of that ordinary meaning. I earlier pointed out Carston's observation that Justice Scalia's view can be understood as exemplifying Principle 2 which enjoins the speaker to not be more informative than necessary: if there is a convention of uttering "uses a firearm" as a compression of "uses a firearm as a weapon" then it is unnecessary for the lawmaker to utter the longer expression.

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[81] 522 U.S. at 79.
[82] Neale, *supra* note 34, at 8.
[83] 508 U.S. at 242.

In contrast, Justice O'Connor and the majority reject that the scope of the ordinary meaning of "uses a firearm" is so narrow. They believe that the ordinary meaning of "uses a firearm" is capacious enough to encompass the defendant's trading his MAC-10 for cocaine:

> It is one thing to say that the ordinary meaning of "uses a firearm" *includes* using a firearm as a weapon, since that is the intended purpose of a firearm and the example of "use" that most immediately comes to mind. But it is quite another to conclude that, as a result, the phrase also *excludes* any other use. . . . That one example of "use" is the first to come to mind when the phrase "uses ... a firearm" is uttered does not preclude us from recognizing that there are other "uses" that qualify as well. In this case, it is both reasonable and normal to say that petitioner "used" his MAC–10 in his drug trafficking offense by trading it for cocaine; the dissent does not contend otherwise.[84]

Thus in Justice O'Connor's and the majority's view, the ordinary person will interpret the scope of the ordinary meaning of "uses a firearm" broadly enough so that it encompasses trading a firearm for drugs. Carston observes that this view can be justified in terms of Principle 1. When Justice O'Connor says that "Had Congress intended the narrow construction petitioner urges, it could have so indicated."[85] she is implicitly relying on a scalar implicature for the proposition that the unuttered more informative statement ("uses a firearm as a weapon") must be false.

This raises the question: if the ordinary meaning of "uses a firearm" is broader than "uses a firearm as a weapon," just how broad is it? This question came up in *Bailey* and *Watson*. In *Bailey*, Justice O'Connor writing for the majority held that the ordinary meaning of "uses a firearm" encompasses active uses but excludes passive ones.[86] The

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[84] 508 U.S. at 230.
[85] *Id.* at 229.
[86] 516 U.S. at 144 ("a conviction for 'use' of a firearm under §924(c)(1) requires more than a showing of mere possession . . . [it requires] active employment of the firearm.").

defendant in *Bailey* merely possessed a gun by keeping it in the car trunk, and therefore did not "use a firearm" under its ordinary meaning. [87]

Finally, in *Watson*, Justice Souter writing for the majority introduced an asymmetry in the ordinary meaning of "uses a firearm." He said that while its ordinary meaning encompasses trading a gun for drugs, it excludes trading drugs for a gun:

> 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. . . . So, when Watson handed over the drugs for the pistol, the informant or the agent "used" the pistol to get the drugs, just as *Smith* held, but regular speech would not say that Watson himself used the pistol in the trade.[88]

All sides to this debate presume that the ordinary meaning of "uses a firearm" does not extend to all possible uses: some uses will fall under the ordinary meaning, while others will not. They differ only with respect to where to draw the boundaries of this ordinary meaning. Do these boundaries separate using a firearm as a weapon from all other uses, or just active uses from passive ones? Furthermore, the debate can be framed in terms of how much weight to give to competing interpretive principles: Justices O'Connor and Scalia give more weight to Principles 1 and 2 respectively. For the reasons recounted in Section 2, these questions of where to draw the line or what weight to give competing principles cannot be resolved theoretically, but only empirically, in terms of where ordinary persons actually draw the lines or what weights they actually give these competing principles.

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[87] *Id.* at 150.
[88] 522 U.S. at 79 (citation omitted).

3.1.3. Survey procedure

I designed the survey to measure whether ordinary persons would interpret trading a gun for drugs, trading drugs for a gun, and keeping a gun in a car trunk as falling under the scope of the ordinary meaning of "uses a firearm." Respondents are first asked to give their informed consent to participate in the survey. After this is given, they are presented with the following instructions:

> *Suppose there is a law that punishes anyone who:*
>
> > *"uses a firearm during and in relation to any drug trafficking crime."*
>
> *We are trying to understand how reasonable and linguistically competent members of the general public like you would interpret the ordinary, everyday meaning of the quoted language.*

After respondents were given these instructions, they were required to answer two instructional manipulation check questions.[89] The first question asked what exact characteristics the relevant member of the general public must have to participate in the survey, to which the correct answers were "reasonable" and "linguistically competent." The second asked what exact words describe the meanings being sought, to which the correct answers were "ordinary" and "everyday." Respondents failing to give any of these correct answers were disqualified from further participating in the survey.

After the instructional manipulation checks, survey respondents were asked for their interpretative judgments:

> *Now we ask for your interpretation. Rate the extent to which the following persons' actions constitute "using a firearm during and in relation to a drug trafficking crime" under your understanding of the ordinary, everyday meaning*

[89] Instructional manipulation checks are "quality control" questions designed to ensure that respondents are carefully reading and understanding the survey questions. *See, e.g.*, Daniel Oppenheimer et al., *Instructional Manipulation Checks: Detecting Satisficing to Increase Statistical Power*, 45 J. Experimental Soc. Psychol. 867 (2009).

of that quoted language. You can assume that trading a gun for drugs or vice versa is a drug trafficking crime.

Person A threatens another person with his gun while drug trafficking.

Person B keeps a gun in his back pocket for his own protection while drug trafficking.

Person C trading a gun that he owns in exchange for some drugs.

Person D keeping a gun in his car's trunk while he is driving that car in relation to a drug trafficking crime.

Person E trading some drugs that he owns in return for a gun.

Person A is a "control" person in the sense that under any plausible reading of T1, he should count as having used a firearm. Persons C, D, and E respectively reflect the situations of the defendants in *Smith*, *Bailey*, and *Watson*. Person B was designed to represent someone who uses a firearm in what Justice O'Connor called a passive way. I asked respondents to rank each of persons A to E on a 4-point Likert Scale according to the extent to which their actions constitute "using a firearm during and in relation to a drug trafficking crime." The points on this Likert Scale are: (1) Definitely constitutes, (2) Probably constitutes, (3) Probably does not constitute, and (4) Definitely does not constitute.[90] Allowing survey respondents to modify their interpretive judgments with either "definitely" or "probably" allows them to register their degree of confidence in their interpretive judgment.

Observe that the description of the actions of persons A, B, and D explicitly say they are involved in drug trafficking crimes. In contrast those of persons C and E, who trade guns for drugs and vice versa respectively, do not. Since ordinary members of the

[90] In what follows, I abbreviate these to "Definitely," "Probably," "Probably not," and "Definitely not" respectively.

public may have little familiarity with what does and does not constitute a drug-trafficking crime, the last sentence of the instruction above explicitly informs survey respondents that trading a gun for drugs or vice versa is a drug trafficking crime.

I phrase my question so that it asks survey respondents whether in their judgment these persons' actions fall under the scope of the ordinary meaning of the law's text. This phrasing is rationalized by the standard assumption that those bound by the law will infer the lawmaker's penal intentions from the ordinary meaning of the statutory text that the lawmaker utters.

My instructions provide the respondent with relatively minimal information about the context. The respondent knows that the context of interpretation is penal, is provided with the problematic statutory text, and is told that the goal of the study is to elicit how reasonable, linguistically competent members of the general public would interpret the ordinary, everyday meaning of the text. That's all. I do not share information about, say, adjacent statutory sentences, the over-all statutory scheme, or interpretive precedent. I justify this minimalist approach not because I believe the information I omit is normatively irrelevant (I don't). It's rather because a multi-piece puzzle can only be solved if each piece is in principle measurable individually, and it is this latter that I'm trying to demonstrate for starters. If "uses a firearm" appears in three different places in a statute, and we need to synthesize a single meaning from the three instances, surely we need a method that's capable of measuring the meaning of each instance taken individually. The interpretation of single instances has certainly been enough to drive interpretive controversies at the Supreme Court.

3.1.4. Results, Analysis, Discussion

I summarize the survey results in two forms. Table 1 tabulates the data. Each row corresponds to a different person/defendant, and each column corresponds to a different Likert Scale judgment. For example, we see from the first row and first column that 314 respondents, or 86.7% of the sample judged that person A's use (threatening another person with the firearm during a drug trafficking crime) definitely constitutes "using a firearm" the ordinary meaning of that phrase.

Table 2 computes the average value of the Likert Scale judgments and provides 95% confidence intervals for those judgments, where "Definitely" receives a value of 1, "Probably" receives a value of 2, "Probably not" receives a value of 3, and "Definitely not" receives a value of 4. Thus the average value of judgments for person A is 1.20 and the 95% confidence interval for this average is the interval between 1.14 and 1.25. These values reflect the fact that most respondents judge that person A definitely uses a firearm, a judgment to which I assign a numerical value of 1. The last column in this table states the judgment to which the average value is closest. Thus, the entry for person A is "Definitely" because the average value 1.20 is closer to the value for "Definitely" which is 1, than it is to the value of the next closest judgment, which is "Probably" whose value is 2.

The values in Tables 1 and 2 are related: the more respondents choose "Definitely" (or conversely "Definitely not") in Table 1, the more likely we are to find average values close to 1 (or conversely close to 4) in Table 2.

Table 1. Tabulation of interpretations of "uses a firearm"

	Definitely constitutes		Probably constitutes		Probably does not constitute		Definitely does not constitute	
	N	%	N	%	N	%	N	%
A (threatens with gun)	314	86.7	32	8.8	9	2.5	7	1.9
B (back pocket)	70	19.4	154	42.8	109	30.3	27	7.5
C (trades gun for drugs)	185	51.3	72	19.9	75	20.8	29	8.0
D (keeps gun in car trunk)	59	16.3	115	31.9	138	38.2	49	13.6
E (trades drugs for guns)	185	51.4	67	18.6	75	20.8	33	9.2

Table 2. Average and 95% confidence intervals of interpretations of "uses a firearm"

	Average	95% Confidence Interval		Closest Judgment
A (threatens with gun)	1.20	1.14	1.25	Definitely
B (back pocket)	2.26	2.17	2.35	Probably
C (trades gun for drugs)	1.86	1.75	1.97	Probably
D (keeps gun in car trunk)	2.49	2.39	2.59	Probably
E (trades drugs for guns)	1.88	1.77	1.96	Probably

1=Definitely, 2=Probably, 3=Probably, 4=Definitely not

Result 1. Recall that person A threatened another person with a gun during a drug trafficking crime. Person A is a "control case" in the sense that he was constructed so as to constitute an unambiguous case of a defendant who used a firearm. Thus the survey responses regarding A should show us what an unambiguous case looks like under my method. Table 1 shows that at least a four-fifths supermajority of the sample, 87%, judge that A would definitely be punished for using a firearm, while Table 2 shows that the average value of judgments is 1.20, which is closest to "Definitely." This suggests a rule of thumb: a case is unambiguous when a supermajority of respondents choose either a "Definitely" or "Definitely not" judgment, or when the average value of judgments lies in the numerical intervals of 1.0 to 1.5 and 3.5 to 4.0. Thus, person A constitutes an unambiguous case.

Result 2. A second result is that by the rule of thumb just stated, none of the other persons in the table constitute unambiguous cases. The persons with results most similar to A are persons C and E who trade guns for drugs and vice versa. Only about half the sample judges that they definitely "use a firearm," compared to 87% for A. And the average value of the judgments for C and E is about 1.87, which is closer to "Probably" than "Definitely." Even farther away from A are persons B and D who keep a firearm in their back pocket and car trunk respectively. Less than 20% of respondents judge that they would definitely be punished under this law, and their average judgments fall in the numerical interval between 2.0 and 3.0, so that the average lies between "Probably" and "Probably not."

A few things are worth noting about these results. First, they support the general validity of my method. The validity of a set of data (like my judgments data) is the extent to which it contains the theoretically relevant information it was designed to collect. Loosely speaking, it is the amount of theoretically relevant signal (as opposed to noise) the data contains. It is plausible for a theorist, in advance of seeing the data, to hypothesize that A's case less ambiguous than the others'. The ability of the data to provide empirical support for that plausible hypothesis is evidence that the data is capable of correctly identifying and distinguishing among unambiguous and ambiguous cases.

These results also allow us to evaluate the empirical validity of the linguistic judgments and arguments put forward by the Justices in *Smith*, *Bailey*, and *Watson*. Recall that in *Smith*, Justice Scalia claimed that the ordinary meaning of "use a firearm" was use a firearm "as a weapon."[91] In light of my results, there is an ambiguity in this

[91] 508 U.S. at 242.

claim. One possibility is that we should understand it as the strong claim that the ordinary person would judge that trading guns for drugs definitely does not constitute "using a firearm." My data firmly reject the empirical validity of this strong claim: less than 10% of interpreters judge that C's use definitely does not constitute "using a firearm."

The other possibility is that we should understand it as the weaker claim that the ordinary interpreter would simply refrain from judging that person C's use definitely constitutes "using a firearm." In other words, the weaker claim is that ordinary interpreters would distribute themselves among the other choices: "Probably," "Probably not" and "Definitely not." My results provide more support to this weaker claim over the stronger one: 49% of respondents correspond to its prediction (as opposed to 8% for the stronger one). However, the support is only marginal: a full half of the sample behaves contrary to its prediction.

This raises a more general issue. Once we can generate quantitative measures of ordinary meaning, judges will need to be more precise about what they are claiming when they reject one interpretation in favor of another. Should we interpret Justice Scalia as making the stronger claim that ordinary persons would definitely accept the interpretation that he himself supports? Or should we interpret him as making the weaker claim that ordinary persons would definitely reject the interpretation he himself rejects? These are distinct claims. My results provide no support for the former claim, but provide some if only marginal support for the latter.

In *Smith*, Justice O'Connor and the majority assert that the ordinary meaning of "uses a firearm" is expansive enough to encompass trading a firearm for drugs.[92] My results provide stronger empirical support for this claim than either the strong or weak version of Justice Scalia's claim. At least half the respondents judge that person C's use definitely constitutes "using a firearm." At least 70% of respondents, a two-thirds supermajority-- lean towards the judgment that C's use definitely or at least probably constitutes "using a firearm," with the remainder leaning toward the opposite judgment. And the average value of judgments is 1.86, which is between "Definitely" and "Probably."

And yet, although these claims are better supported than either of Justice Scalia's claims, it is nevertheless the case that person C represents a more ambiguous case than person A. While a full 87% of the sample judge that A definitely uses a firearm, only the slightest majority judge C the same way. And while the average score for A is closer to 1 (representing "Definitely"), the average score for B is closer to 2 (representing "Probably"). This raises another question that only becomes salient when degrees of ambiguity are measurable. Assuming person A constitutes an unambiguous case, how close must another person like C be to A before that person's actions can likewise be judged unambiguous?

Obviously, this is not a linguistic question but rather a normative one, and implicates the fair notice requirement of due process.[93] In *United States v. Lanier*, the

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[92] 508 U.S. at 230.

[93] *United States v. Williams*, 553 U.S. 285, 304 (2008) ("A conviction fails to comport with due process if the statute under which it is obtained fails to provide a person of ordinary intelligence fair notice of what is prohibited . . . .").

Supreme Court enumerated three "manifestations of the fair warning requirement" the second of which, "the canon of strict construction of criminal statutes, or rule of lenity, ensures fair warning by so resolving ambiguity in a criminal statute as to apply it only to conduct clearly covered."[94] One possibility is to interpret strict construction or the rule of lenity as requiring that a person's actions fall under the scope of the statute's ordinary meaning as unambiguously as A's does before that person can be punished.

We might operationalize this by insisting that the average score of judgments should be closer to 1 than to 2, or that a supermajority of ordinary persons judge that a person would definitely be punished under the law. Under this criterion then, person C should not be punished because the law does not sufficiently clearly express that he ought to be. Justice Scalia's view—whether interpreted strongly or weakly—actually respects this normative implication better than Justice O'Connor's: Smith would not be liable under Justice Scalia's view, but is so liable under Justice O'Connor's.

On the other hand, for fair notice, "perfect clarity . . . ha[s] never been required."[95] It only requires that there be "sufficient warning to one bent on obedience that he comes near the proscribed area."[96] According to Justice Holmes:

> Wherever the law draws a line there will be cases very near each other on opposite sides. The precise course of the line may be uncertain, but no one can come near it without knowing that he does so, if he thinks, and if he does so, it is familiar to the criminal law to make him take the risk.[97]

On this view, it can be argued that since a two-thirds supermajority of ordinary persons lean towards the judgment that C's actions definitely or at least probably

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[94] *United States v. Lanier*, 520 U.S. 259, 266 (1997).
[95] *Ward v. Rock Against Racism*, 491 U.S. 781, 794 (1989).
[96] *Winters v. New York*, 333 U.S. 507, 539 (1948).
[97] *United States v. Wurzbach*, 280 U.S. 396, 399 (1930).

constitutes "using a firearm," the ambiguity is sufficiently small to justify treating C as having been put on notice that he is straddling some sort of line, and as assuming the risk that the ambiguity will very likely be resolved against him.

In *Bailey*, Justice O'Connor writing for the majority distinguished between active and passive uses of a firearm, and held that active uses fall under the scope of the ordinary meaning of "uses a firearm" while passive uses do not.[98] The data show some support for this distinction. The active uses of persons C and E have an average score of about 1.85, which falls between "Definitely" and "Probably." In contrast, the passive uses of persons B and D have average scores of 2.26 and 2.49 respectively, which fall between "Probably" and "Probably not." Thus the distinction between active and passive uses appears to reflect a real aspect of the ordinary meaning of "uses a firearm." However, despite the reality of the distinction, I find no evidence that it is a sharply exclusionary one. Passive uses straddle the boundaries ordinary meaning, rather than unambiguously fall outside them. Were the latter the case, I would expect to find a supermajority of respondents choosing (4) for "Definitely not," or an average value of judgments in the interval from 3.5 to 4.0, neither of which is the case.

One implication of these findings is that not only can my method distinguish between unambiguous cases (person A) and ambiguous cases (persons B, C, D, and E), it can also distinguish between *degrees* of ambiguity: persons C and E are *less* ambiguous cases than persons B and D. Thus my method appears capable of distinguishing among at least three classes of cases: unambiguous cases, less ambiguous cases, and more ambiguous cases. One way of quantitatively operationalizing these classes is to consider

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[98] 516 U.S. at 149-50.

a case unambiguous if its average value is closest to either "Definitely" or "Definitely not" categories, corresponding to the numerical intervals 1.0-1.5 and 3.5-4; to consider an ambiguous case to have "lesser" ambiguity if its average values are between 1.5-2.0 and 3.0-3.5, so that they are closest to either "Probably" or "Probably not" but lie outside the interval between "Probably" and "Probably not"; and to consider an ambiguous case to have "greater" ambiguity if its average values fall in the interval 2.0-3.0 between "Probably" and "Probably not."

Finally, in *Watson*, Justice Souter writing for the majority asserts an asymmetry between trading a gun for drugs and trading drugs for guns: the former falls under the ordinary meaning of "use of a firearm" while the latter does not. Indeed, Justice Souter says that although "[t]he Government may say that a person "uses" a firearm simply by receiving it in a barter transaction . . . no one else would."[99] My data do not support this asymmetric treatment. Table 1 shows a near perfect symmetry in judgments involving persons C and E. Indeed, for every possible judgment, the results for C and E are within two percentage points of each other. Far from it being the case that no one would say that E "uses a firearm," more than half the respondents would say that he does. Thus the data suggests that the Court erred with respect to their judgments regarding ordinary meaning in treating the defendants in *Smith* and *Bailey* asymmetrically.

Overall, I find that the scope of the ordinary meaning of "uses a firearm" is rather more inclusive than exclusive. It extends beyond the paradigm case of using a firearm as a weapon, largely includes active uses, and even arguably straddles passive uses. In terms of the conflict between interpretive principles, I understand my results as implying

[99] 522 U.S. at 79.

that the ordinary person gives more weight to Principle 1 and scalar implicature (reasoning that if the lawmaker intended a narrower construction, it would've said so) than to an application of Principle 2 (don't be more informative than necessary) to the presumption that there exists a convention of uttering "uses a firearm" to imply the paradigm case of using a firearm as a weapon.

3.2. Knowingly

3.2.1. The text

> The second part of the survey analyzes the ordinary meaning of T2:
>
> T2: a law that punishes anyone who "*knowingly mails an image, if the image involves a minor engaging in sexually explicit conduct*."

T2 is based on 18 U.S.C. §2252A(a) (1977) which in relevant part states that "Any person who . . . knowingly distributes any visual depiction, if . . . the producing of such visual depiction involves the use of a minor engaging in sexually explicit conduct . . . shall be punished . . . ."

The textual ambiguity in this instance is the scope of the adverb "knowingly." More specifically, does the statute punish someone who knowingly mails an image, even if he or she neither knows that the image is of sexually explicit conduct, nor that it depicts a minor engaging in that conduct?

3.2.2. Discussion of interpretive issues

Kaplan and Green edit down the statutory text to clarify the grammatical issue:

> "Any person who knowingly distributes a depiction
> if producing the depiction involves use of a minor engaging in sexually explicit conduct
> shall be punished."[100]

The key question can be stated thus: does the scope of "knowingly" extend only to the verb phrase "distributes a depiction," or does it extend to "if"-clause as well? If it extends only to the verb phrase "distributing a depiction," (call this the *verb-phrase-only* interpretation) then a defendant who knowingly distributes a depiction shall be punished even if that defendant doesn't know either that the image involves sexually explicit conduct, or that it is a minor engaged in that conduct. On the other hand, if it extends to the if-clause as well (call this the *if-clause-also* interpretation), then defendants can escape punishment if they can show, for example, that they did not know of the minority of the actor engaged in the sexually explicit conduct.

In *X-citement Video*, Chief Justice Rehnquist for the majority adopted the latter if-clause-also reading, while conceding that the former verb-phrase-only reading was "the most grammatical reading."[101] He did so in part because the grammatical reading "would sweep within the statute's ambit actors who had no idea that they were even dealing with sexually explicit material."[102] He called this result "positively absurd" and therefore considered it one Congress could not have intended.[103] Justice Stevens concurred saying that "the normal, commonsense reading of a subsection of a criminal statute introduced

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[100] Jeffrey P. Kaplan & Georgia M. Green, Grammar and Inferences of Rationality in Interpreting the Child Pornography Statute, 73 WASH. U. L.Q. 1223, 1233 (1995).
[101] 513 U.S. at 68.
[102] *Id.* at 69.
[103] *Id*.

by the word 'knowingly' is to treat that adverb as modifying each of the elements of the offense."[104] He said "to give the statute its most grammatically correct reading…would be ridiculous."[105]

Justice Scalia in his dissent adopted the view that the scope of "knowingly" extends only to the verb phrase "distributes a depiction:"

> To say, as the Court does, that this [verb-clause-only] interpretation is "the most grammatical reading," or "[t]he most natural grammatical reading," is understatement to the point of distortion—rather like saying that the ordinarily preferred total for two plus two is four. The [verb-clause-only] interpretation is in fact and quite obviously *the only grammatical reading*. . . . There is no doubt. There is no ambiguity. There is no possible "less natural" but nonetheless permissible reading.[106]

Kaplan and Green perform a scrupulous grammatical analysis of their edited version of the statutory text to demonstrate that Justice Scalia is in fact right about this. Their argument involves clarifying to which parts of the sentence the "if" clause can belong, and where it cannot. First they observe that the verb phrase "distributes a depiction" is embedded within the noun phrase "Any person who knowingly distributes a depiction."[107] They further observe that "if" clauses do not easily occur within verb phrases.[108] This can be seen from the oddity of "John should throw, if he can, the ball farther," which tries to insert the if-clause "if he can" inside the verb phrase "throw the ball."[109] This leads them to conclude that similarly, the "if" clause in the statutory phrase cannot be embedded inside the verb phrase "distributes a depiction."[110] Thus,

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[104] *Id.* at 79.
[105] *Id.* at 79-80.
[106] *Id.* at 81-82 (citations omitted).
[107] Kaplan & Green, *supra* note 100, at 1234.
[108] *Id*.
[109] Id.
[110] *Id*.

"knowingly," which is an adverb and can therefore modify only verbs and verb phrases, can only modify "distributes a depiction," creating a new verb phrase "knowingly distributes a depiction."[111]

They next observe that "if" clauses do not naturally occur within noun phrases either.[112] This can be seen from the oddity of "The if he leaves man will be sorry" which reflects the effort to insert the "if" clause "if he leaves" inside the noun phrase "the man."[113] This leads them to conclude that the "if" clause cannot be easily inserted into the noun phrase "Any man who knowingly distributes a depiction."[114]

Thus far, their argument is about where the "if" clause cannot go. But they also present an argument for where it *can* go. They observe that in general "if" clauses apply to propositions or states of affairs that are capable of being true or false.[115] (Indeed, in propositional logic, propositions such as "if A then B" are meaningful only if A is a state of affairs capable of being true or false. But neither verb phrases (like the verb phrase "knowingly distributes an image") nor noun phrases (like the noun phrase "Any person who knowingly distributes an image") are propositions, so neither can be conditionalized by the "if" clause. Indeed, there is only one proposition in the edited-down text: the proposition that "Any person who knowingly distributes an image shall be punished." Thus this is the only candidate for conditionalizing. But this simply yields the result that "knowingly" only modifies the verb phrase "distributes a depiction," and that the if-clause simply defines a condition precedent for the punishment of any person who

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[111] *Id*.
[112] *Id*.
[113] *Id*.
[114] *Id*.
[115] *Id.* at 1235.

knowingly mails an image. Thus under the only grammatically correct reading, a defendant faces strict liability with respect to the condition that the image is of a minor engaging in sexually explicit conduct.

The problem, and in this Kaplan and Green agree with the majority in *X-citement Video*, is the absurdity of the grammatical reading: all information about sexually explicit conduct and the minority of the actor depicted are inside the "if" clause.[116] The grammatical reading would punish distributors who have no idea that they are even distributing sexually explicit material, so long as it turns out unbeknownst to them that the material involves children.

3.2.3. Survey procedure

The survey was designed to measure whether ordinary interpreters would interpret the scope of the adverb "knowingly" as extending to the elements of the "if"-clause, specifically to whether the image depicted sexually explicit conduct and to whether it depicted a minor engaging in that conduct. Respondents are presented with the following instructions:

> *Suppose there is a law that punishes anyone who*
>
> > *"knowingly mails an image, if the image involves a minor engaging in sexually explicit conduct."*
>
> *We are trying to understand how reasonable and linguistically competent members of the general public like you would interpret the ordinary, everyday meaning of quoted language.*

[116] *Id.* at 1251.

This paraphrase of 18 U.S.C. §2252A(a) preserves the "if" clause whole. It also preserves what Chief Justice Rehnquist referred to as "interruptive punctuation"[117] in the form of a comma separating the verb phrase "mails an image" and the "if" clause.

After respondents were introduced to the statutory text, but before they were allowed to offer their interpretations, they were required to answer two instructional manipulation check questions. The first asked what exact characteristics the relevant member of the general public must have to participate in the survey, to which the correct answers were "reasonable" and "linguistically competent." The second asked what exact words describe the meanings being sought, to which the correct answers were "ordinary" and "everyday." All survey respondents getting any of these instructional manipulation checks wrong were disqualified from the survey.

After the instructional manipulation checks, survey respondents were asked for their interpretations of the text with the following question:

> *Now we ask for your interpretation. In your view, which of the three persons F, G, and H above would be punished under the ordinary, everyday meaning of the quoted language ("knowingly mails an image, if the image is of a minor engaging in sexually explicit conduct")?*
>
> > *Person F who (i) knows he mailed an image, but (ii) doesn't know that the image depicts sexually explicit conduct, and (iii) doesn't know that the image depicts a minor engaging in that conduct.*
> >
> > *Person G who (i) knows he mailed an image, and (ii) knows that the image depicts sexually explicit conduct, but (iii) doesn't know that the image depicts a minor engaging in that conduct.*
> >
> > *Person H who (i) knows he mailed an image, and (ii) knows that the image involves a minor engaging in sexually explicit conduct.*

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[117] 513 U.S. at 68.

Person H is a control person in that under any plausible reading of the statute, he should count as liable. Persons F and G reflect the grammatical issue identified by Kaplan and Green. Under the grammatically correct interpretation, neither of them should be punished. Respondents rate each of these persons on a 4-point Likert-scale with the following points: (1) Would definitely be punished, (2) Would probably be punished, (3) Would probably not be punished, and (4) Would definitely not be punished.[118]

3.2.4. Results, Analysis, Discussion

The results are summarized in Tables 3 and 4, which have the same interpretation as Tables 1 and 2 from the previous section.

Table 3. Tabulation of interpretations of scope of "knowingly"

	Definitely		Probably		Probably not		Definitely not	
	N	%	N	%	N	%	N	%
F (~sex, ~minor)	20	5.5	120	33.2	156	43.2	65	18.0
G (sex, ~minor)	64	17.7	200	55.4	82	22.7	15	4.2
H (sex, minor)	354	97.8	3	0.8	2	0.5	3	0.8

"~sex"=does not know image is sexually explicit, "~minor"=does not know minority, "sex"=knows image is sexually explicit, "minor"=knows minority

Table 4. Averages and 95% Confidence Intervals for interpretations of the scope of "knowingly"

	Average	95% Confidence Interval		Closest Judgment
F (~sex, ~minor)	2.74	2.65	2.82	Probably not
G (sex, ~minor)	2.13	2.06	2.21	Probably
H (sex, minor)	1.04	1.01	1.08	Definitely

1=Definitely, 2=Probably, 3=Probably not, 4=Definitely not

I begin analyzing the results with the last person in this table. Person H knowingly mails an image, and knows that it is an image of a minor engaged in sexually

[118] As in the previous section, I abbreviate these in what follows as "Definitely," "Probably," "Probably not," and "Definitely not" respectively.

explicit conduct. Thus H is a "control" case in the sense that he was constructed so as to constitute an unambiguous case of a defendant who would be punished under this law. Thus, like the data for person A from the previous section, the data for H tells us what lack of ambiguity looks like statistically. I find that 98% of interpreters judge that H would definitely be punished, and that the average value of judgments is 1.04. Thus, H constitutes an even more unambiguous case than person A, and supports my rule of thumb of associating unambiguous cases with a supermajority of respondents choosing "Definitely" or "Definitely not" or with an average value of judgments in either the interval 1.0 to 1.5 or the interval 3.5 to 4.0. It also supports the general validity of my method: here is a second instance in which it is able to correctly identify a plausibly unambiguous case.

In contrast, the judgments regarding persons F and G manifest considerably more ambiguity. A vast majority of judgments—about 75%--falls into either the "probably" or "probably not" categories. The average values of these judgments fall between 2.0 and 3.0, which I called the range of "greater ambiguity." Thus F and G constitute more ambiguous cases than persons C and E from the previous section who traded guns for drugs and vice versa. They are roughly in the same neighborhood of ambiguity as persons B and D, who merely possessed but did not actively use firearms.

What Justice Scalia and Kaplan and Green identify as the only grammatical interpretation fares poorly. If the ordinary person were to interpret the text according to its only grammatical interpretation, then we should expect F and G to be unambiguous cases similar to persons A and H. That is, we should expect a supermajority of interpreters to judge that F and G would definitely be punished, or an average value of

judgments in the range from 1.0-1.5. But this is not what the data says. Less than 10% and 20% of respondents accord with these judgments for F and G respectively, and the average values are in the range of "greater" ambiguity. Thus I conclude that the ordinary person does not necessarily interpret statutes according to their grammatically correct meaning. More briefly, ordinary meaning can differ from grammatically correct meaning.

It is not surprising that such a difference could exist. Chief Justice Rehnquist writing for the majority and Justice Stevens both interpreted the statute differently from its grammatically correct meaning, and Justice Stevens goes so far as to say that the non-grammatical reading is the "normal, commonsense reading."[119] The Third Circuit in *United States v. Cochran*, [120] the First Circuit in *United States v. Gifford*,[121] the Second Circuit in *United States v. Colavito*,[122] and the Fifth Circuit in *United States v. Burian*[123] all interpreted the scope of "knowingly" according to the grammatically incorrect "if-clause-also" reading. If all their interpretations are grammatically erroneous, the error they commit is not a flagrant one. My discussion of Kaplan and Green's argument shows that the argument against the "if-clause-also" interpretation is intricate and esoteric.

This conclusion that ordinary meaning differs from grammatically correct meaning is further supported by another feature of the data. These data reflect the aggregate judgment that G (who knows that the image depicts sexually explicit conduct, but doesn't know that it is a minor engaging in that conduct) would be more likely

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[119] 513 U.S. at 79-80.
[120] 17 F.3d 56, 61 (3d Cir. 1994).
[121] 17 F.3d 462, 472 (1st Cir. 1994).
[122] 19 F.3d 69, 71 (2d Cir. 1994).
[123] 19 F.3d 188, 191 (5th Cir. 1994).

punished under the law than F (who neither knows that the image depicts sexually explicit conduct nor that it is a minor engaging in that conduct): the average judgment scores for G and F are 2.13 and 2.74 respectively, which makes G closest to "Probably" and F closest to "Probably not." But under the grammatically correct reading, there should be no difference in how F and G are punished. Both face strict liability with respect to the single condition that the image is of a minor engaging in sexually explicit conduct.

So if the ordinary reader is not interpreting the law grammatically, what is the ordinary reader doing? A natural hypothesis is suggested by the earlier quoted opinions of Chief Justice Rehnquist and Justice Stevens. It is one that is articulated but rejected by Kaplan and Green. Chief Justice Rehnquist interprets the statute so as to avoid "aburd[ity]"[124]and Justice Stevens to avoid "ridiculous[ness]."[125] Kaplan and Green observe that this interpretive absurdity-avoidance principle can be justified by the interpreter's assumption of the "expected rationality of the 'speaker' of the statute, Congress."[126] They observe that this assumption is not linguistic in nature, but rather a pragmatic assumption of a Gricean sort that hearers use to infer what speakers imply when speakers are at risk of misspeaking.[127] Kaplan and Green ultimately deny that these interpretive absurdity-avoidance principles are supported by the specifics of the case and statute in *X-citement Video*, but they offer no quantitative evidence to support this denial.[128]

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[124] 513 U.S. at 69.
[125] 513 U.S. at 80.
[126] Kaplan & Green, *supra* note 100, at 1246.
[127] *Id.* at 1246-1250.
[128] *Id.* at 1250.

However, my results provide empirical support to the hypothesis, implicit in Justices Rehnquist's and Stevens' view, that ordinary persons *do in fact* implicitly interpret statutes in such a way as to avoid imputing absurd penal intentions to the lawmaker (though perhaps this interpretation is abetted by the obscurity of the grammatically correct interpretation). In *X-citement Video*, the Court's interpretation was influenced by "presumptions that some form of scienter is to be implied in a criminal statute even if not expressed,"[129] particularly when the act is a non-public welfare offense.[130] It was also influenced by the presumption that "a statute is to be construed where fairly possible so as to avoid substantial constitutional questions"[131] because "sexually explicit materials involving persons over the age of 17 are protected by the First Amendment."[132] My results demonstrate that ordinary meaning departs from the grammatically correct meaning *even in the absence* of these two presumptions, which my sample of largely non-legally trained ordinary persons would have little familiarity with.

Let me set aside the First Amendment issues raised by the statute's grammatical meaning, and focus instead on separate issue of whether, if the courts were to give legal effect to this grammatical meaning, those bound by the law will have received fair notice. My results suggest that it is a brute empirical fact that the ordinary person will actually fail to interpret the statute according to its grammatically correct meaning. Should we nevertheless conclude that the ordinary person has fair notice of what the law requires in virtue of the fact that he or she has fair or at least constructive notice of the rules of grammar?

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[129] 513 U.S. at 69.
[130] *Id.* at 71.
[131] *Id.* at 69.
[132] *Id.* at 72.

This is a difficult question that is beyond the scope of my project to fully answer. But I would like to render the question in such a way as to make the issue embedded in the question more acute. There is, of course, a plausible normative reason in support of putting ordinary persons on constructive notice of the rules of grammar: doing so will induce a downstream dynamic whereby both ordinary persons and lawmakers will strive to conform their interpretations and drafting of statutes to the rules of grammar, which in turn will in the long run, if not in every particular situation, contribute to generally greater clarity and productivity in the interpretation and drafting of statutes. Grammaticality is not an intrinsic virtue but rather an instrumental one: it is normatively significant in virtue of its possible contribution to general long-run communicative clarity in the law.

But if long-run communicative clarity is a normatively significant goal, it is nevertheless *distinct* from the goals that justify interpreting statutes according to their ordinary meaning. The *latter* goals depend on the empirical presumption that ordinary meaning of a particular statute captures how those bound by the law *actually* interpret their legal obligations under that same statute, or what lawmakers *actually* intended to penalize under that same statute. It is plausible to suppose that in many situations, ordinary meaning and grammatically correct meaning coincide, so that both normative desiderata are promoted. However, the case of 18 U.S.C. §2252A(a) exemplifies the possibility that ordinary meaning and grammatically correct meaning can come apart, in which case one of these two normative goals cannot be attained without some sacrifice in the other. Construing 18 U.S.C. §2252A(a) according to its only grammatical meaning may conduce to general communicative clarity in the long run. But it is less likely to

reflect how the ordinary person actually interprets—or what the lawmaker actually intends to penalize in—this particular statute. As I said, it is beyond the scope of my project to resolve the trade-off between these two normatively significant goals. But my data provides evidence that the trade-off is real, and exemplified in this case.

Thus the evidence suggests that ordinary persons fail to recognize or adopt the only grammatical meaning of 18 U.S.C. §2252A(a). It therefore appears to me harsh, and contrary to the principle of fair notice, to give legal effect to this statute's grammatical meaning. Thus the constitutional concerns with this statute may extend not only to the First Amendment but also to the Fifth.

3.3. Without knowledge or consent

3.3.1. The text

The third and final part of the survey analyzes the ordinary interpretation of T3:

> T3: a law that confiscates any land used to commit drug-related crimes except if the land was used "*without the knowledge or consent* of the owner."

T3 is based on the pre-2000 amendment version of 21 U.S.C. § 881(a)(7) (1988) which stated in relevant part that:[133]

> The following shall be subject to forfeiture to the United States . . . [a]ll real property . . . which is used, or intended to be used, in any manner or part, to commit, or to facilitate the commission of, a violation of this subchapter punishable by more than one year's imprisonment . . . except that no property shall be forfeited under this paragraph . . . by reason of any act or omission established by [the] owner to have been committed or omitted without the knowledge or consent of that owner.

[133] This example and the general issue of interpreting "And/Or" is discussed in SOLAN, *supra* note 63, at 45-54.

The ambiguity in this text involves the phrase "without knowledge or consent" which I have preserved whole in the survey text T3. More specifically, does this law imply the confiscation of the land of:

> A person who knows but does not consent to his land being used by someone else to commit drug-related crime, based on *Liberty Avenue*[134] and *Noyac Road*.[135]

3.3.2. Discussion of interpretive issues

The interpretive issue surrounds the interpretation of "without knowledge or consent" in what is called the *innocent owner defense* of 21 U.S.C. § 881(a)(7).[136] In both *Liberty Avenue* and *Noyac Road*, the federal government brought forfeiture actions against defendants under that statute, and both defendants invoked the innocent owner defense in response.[137] The defendants in both *Liberty Avenue* and *Noyac Road* argued that the phrase should be interpreted as "without knowledge *or* without consent." Under this more forgiving interpretation, a landowner may escape forfeiture of land even with knowledge of its use for drug trafficking, so long as the owner doesn't consent to that use. In other words, they argue that they need only prove *either one of the two*--lack of knowledge or lack of consent--to avoid forfeiture. The federal government in turn argued that the innocent owner defense should be interpreted as requiring that the owner's land be used *both* without knowledge *and* without consent to escape forfeiture.

The complexity of the phrase "without knowledge or consent" is the result of the interaction between two operators in that phrase: "or" and "without." On the assumptions that (1) "or" means what I earlier called the logical or inclusive-or, and (2) "without" is

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[134] 710 F. Supp. at 46.
[135] 739 F. Supp. at 111.
[136] 710 F. Supp. at 49.
[137] 710 F. Supp. at 46; 739 F. Supp. at 112.

negation which applies to "knowledge or consent," then the meaning of "without knowledge or consent" is governed by de Morgan's rule which generically says that "not (A or B) equals not A and not B."[138] Applied to "without knowledge or consent," de Morgan's rule implies that this should be understood as "without knowledge and without consent," which is the government's reading.

However, de Morgan's rule only applies if the "or" is the inclusive "or" of formal logic.[139] When "or" is the exclusive-or of scalar implicature, de Morgan's rule no longer holds. The natural alternative interpretation becomes that of the defendants: "without knowledge or without consent."

As the Second Circuit said in *United States v. 141st Street Corp. by Hersh* ("*141st Street Corp.*"), "[t]he plain language . . . is, at best, confusing."[140] Solan calls this construction "a difficult one."[141] Defendants, plaintiffs, and courts have offered different theories in support of one or the other view. In *Liberty Avenue*, the court sided with the defendants' view, saying that "If Congress had meant to require a showing of lack of knowledge . . . it could have done so by replacing 'or' with 'and.' "[142]

Note that this argument is precisely the argument that is warranted by scalar implicature: if (i) it were true that the lawmaker requires that the innocent owner both lack of knowledge *and* lack of consent, and if (ii) that lawmaker conforms to Principle 1 which says "be as informative as you can while staying true and relevant," then (iii) the

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[138] SOLAN, *supra* note 63, at 49.
[139] Stephen Crain, *The Interpretation of Disjunction in Universal Grammar*, 51 Language & Speech 151, 154 (2008) ("The conjunctive entailment of disjunction under negation follows only if disjunction is assigned the truth conditions associated with inclusive-or.").
[140] 911 F.2d 870, 878 (1990).
[141] SOLAN, *supra* note 63, at 52.
[142] 710 F. Supp. at 50.

lawmaker would have uttered "and" rather than "or." The fact that the lawmaker utters "or" implies "not and."

In contrast, the government in *Noyac Road* explicitly invoked de Morgan's rule in support of its interpretation.[143] The District Court agreed with the government, but not on the basis of de Morgan's rule.[144] Rather it said that the defendant's reading led to absurd results.[145] It analogized the use of "or" in "without knowledge or consent" to its use in an insurance policy that provides a benefit for "loss of life, limb, sight or time."[146] The court reasoned that if the "or" in the insurance policy were to be read as excluding "and," then an insured could receive benefits for losing limb or sight, but not both.[147] The court found this interpretation absurd and concluded that interpreting "or" in "without knowledge or consent" as excluding "and" was equally absurd: it would allow the defendant to have knowledge of her property's use for drug trafficking and still be able to claim that her property was used without her knowledge or consent.[148]

Professor Solan echoes the District Court's point by providing the following example:

> She drove the car without the knowledge or consent of the owner. The owner knew but did not consent.[149]

Solan finds this statement "odd"[150] presumably because of the incongruity between the first and second sentence. That is, it is odd to say that she drove the car

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[143] 739 F. Supp. at 113.
[144] *Id.* at 115-16.
[145] *Id.* at 114.
[146] *Id*.
[147] *Id*.
[148] *Id*.
[149] Solan, *supra* note 63, at 52.

without the knowledge or consent of the owner, when in fact the owner knew but did not consent. He finds that this oddity is a reflection of the naturalness of the de Morgan's rule interpretation: "we most naturally interpret 'without knowledge or consent' as 'without knowledge and without consent.' "[151]

In contrast, in *141st Street Corp*, the Second Circuit held in favor of the defendants' reading.[152] It did so in part on the basis of what they called "the ordinary meaning of 'consent.' "[153] It observed that under the government's preferred reading of "without knowledge and without consent," having knowledge is sufficient to preclude the defendant from invoking the innocent owner defense.[154] But it also reasoned that the ordinary meaning of consent implied that you could consent only to something you already had knowledge of.[155] This implies that the issue of consent could only arise if the defendant knew of the use.[156] But given that knowledge was sufficient to preclude the defense, the issue of consent could never arise.[157] This "renders the phrase 'or consent' superfluous," and interpretations that do so should be avoided.[158] Although the Second Circuit does not explicitly invoke Gricean principles, we can see shades of Principle 2 (don't be more informative than necessary) at work: to add the phrase "or consent" when it never has operative effect is to provide unnecessary information.

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[150] *Id*.
[151] *Id*.
[152] 911 F.2d. at 878.
[153] *Id*.
[154] *Id*.
[155] *Id*.
[156] *Id*.
[157] *Id*.
[158] *Id*.

Thus we see here, as we saw in *Smith*, an instantiation of conflict among competing interpretive principles or canons. The question of how the ordinary reader actually resolves these competing principles cannot be answered by theory, but rather requires evidence.

3.3.3. Survey procedure

The survey was designed to measure whether ordinary interpreters would interpret "without knowledge or consent" as "without knowledge and without consent" or "without knowledge or without consent." Respondents are presented with the following instructions:

> *Suppose that a law confiscates any land used to commit drug-related crimes except if the land was used "without the knowledge or consent of the owner."*
>
> *We are trying to understand how reasonable and linguistically competent members of the general public would interpret the [ordinary, everyday/most linguistically proper] meaning of the quoted language.*
>
> *[More specifically, under the ordinary, everyday meaning of the language, what happens to land if the owner knows it is being used to commit drug-related crimes but doesn't consent to it?]*

Note that these instructions have two bracketed terms in them, the first is the phrase "ordinary, everyday/most linguistically proper," and the second is the sentence beginning "More specifically . . . " When I implemented this part of the survey, I randomly assigned half the sample to receive a version of the instruction where the first bracketed term was given as "ordinary, everyday" and the other half received the instruction where that term was given as "most linguistically proper." This allowed me to test whether interpretations were sensitive to the choice between these terms. In particular, I wanted to see the effect of prompting respondents to be especially attentive

to linguistic issues, which in turn may contribute to a heightened attention to issues of syntax, which in turn may contribute to a heightened sensitivity to the syntax of "or."

I also randomly assigned half the sample to receive the bracketed sentence "More specifically . . ." which explicitly informs the respondent of the nature of the ambiguity involved. In particular, I wanted to see whether respondents—who it should be remembered have no more exposure to legal training than a random sample of the population would--might have difficulties identifying the ambiguity. If so, then receiving this hint may give them a clearer grasp of the issues involved.

However, analysis of the data, whose results I omit for purposes of brevity but are available on request, showed that neither randomization had any theoretically or statistically significant effect on interpretations. Thus from hereon, I shall treat the sub-samples that were randomly assigned to these various conditions as a single sample.

After respondents were introduced to the statutory text, but before they were allowed to offer their interpretations, they were required to answer two instructional manipulation check questions. The first asked what exact characteristics the relevant member of the general public must have to participate in the survey, to which the correct answers were "reasonable" and "linguistically competent." The second asked what exact words describe the meanings being sought. For half the sample, the correct answers were "ordinary" and "everyday." For the other half, the correct answer was "most linguistically proper." Respondents failing to give any of these correct answers were disqualified from further participating in the survey.

After the instructional manipulation checks, survey respondents were asked for their interpretations of the text with the following question:

> *Now we ask for your interpretation. In your view, whose land would be confiscated under the ordinary, everyday [most linguistically proper] meaning of the quoted language?*
>
> > *Person I, who knows and consents to his land being used by someone else to commit drug-related crime.*
> >
> > *Person J, who knows but does not consent to his land being used by someone else to commit drug-related crime.*
> >
> > *Person K, who neither knows nor consents to his land being used by someone else to commit a drug-related crime.*

The square brackets in the question indicate that the question was framed with either the words "ordinary, everyday" or "most linguistically proper" to appropriately reflect the randomization. Persons I and K are "control" persons in that under any plausible interpretation, I's land should be subject to forfeiture while K's land should be exempt. Person J exemplifies the problematic pattern found in *Liberty Avenue* and *Noyac Road*. For each of these persons, respondents were asked whose land in their judgment would be confiscated under their interpretation of the statutory language. For each such person, this judgment is made on a 4-point Likert scale with the following points: (1) Definitely confiscated, (2) Probably confiscated, (3) Probably not confiscated, and (4) Definitely not confiscated.[159]

[159] In what follows, I abbreviate these to "Definitely," "Probably," "Probably not," and "Definitely not" respectively.

3.3.4. Results, Analysis, Discussion

The data are summarized and analyzed in Tables 5 and 6 below, which follow the same format as those of previous sections.

Table 5. Tabulation of interpretations of "without knowledge or consent"

	Definitely confiscated		Probably confiscated		Probably not confiscated		Definitely not confiscated	
	N	%	N	%	N	%	N	%
I (knows and consents)	346	96.4	11	3.1	1	0.3	1	0.3
J (knows, no consent)	88	24.5	130	36.2	112	31.2	29	8.1
K (no knowledge or consent)	2	0.6	4	1.1	34	9.5	319	88.9

Table 6. Averages and 95% Confidence Intervals for interpretations of "without knowledge or consent"

	Average	95% Confidence Interval		Closest Judgment
I (knows and consents)	1.04	1.02	1.07	Definitely
J (knows, no consent)	2.23	2.13	2.32	Probably
K (no knowledge or consent)	3.87	3.82	3.91	Definitely not

1=Definitely, 2=Probably, 3=Probably not, 4=Definitely not

Persons I (who knows and consents to his land being used for drug trafficking) and K (who neither knows nor consents) are both "control" persons in that they should constitute unambiguous cases. The data bear this out. Over 96% of respondents judge that person I's land would definitely be confiscated, and almost 89% of respondents judge that person K's land would definitely not be confiscated. The average scores for their judgments are 1.04 and 3.91 respectively, which are very close to "Definitely confiscated" and "Definitely not confiscated" respectively. Thus, the data for these control persons also corroborate my rule of thumb for identifying unambiguous cases, and also suggests the general ability of my methods to detect such unambiguous cases.

In contrast, person J represents the potentially ambiguous case of a landowner who knows but does not consent to his land being used for drug trafficking. The data clearly affirms this ambiguity. Two-thirds of respondents' judgments fall into the "probably" and "probably not" categories. The average score of the judgments is 2.23, which falls in the category of "greater" ambiguity.

Thus the data provides clear support to *neither* the de Morgan's rule interpretation *nor* the interpretation based on scalar implicature. Although the federal government and the District Court in *Noyac Road*, as well as Professor Solan, suggest that adherence to the de Morgan's rule interpretation is logically coherent, and avoids absurdity and oddity, I find no empirical support for the view that ordinary interpreters give these considerations significantly greater weight than opposing ones. Of course, the average score of 2.23 is closest to "Probably Confiscated" so we do see some pull towards the de Morgan's rule interpretation. But this pull appears to me weak. The strongest empirical support for the proposition that the ordinary interpreter naturally tends to the de Morgan's Rule interpretation would have been for the average scores of the judgments to be in the range of 1.0-1.5, which is far from the case.

On the other hand, the opposite interpretation based on scalar implicature is not empirically supported either. Scholars and judges in this and other interpretive contexts have been reluctant to depend on de Morgan's rule to interpret constructions similar to "without knowledge or consent." For example, Prof. Ryan rejects that de Morgan's rule should be used to interpret the punishments clause "nor cruel and unusual punishments be inflicted"[160] because the rule involves a "highly technical analysis" that it is unlikely "any

[160] U.S. Const. amend. VIII.

ordinary person of the late eighteenth century…would have engaged in."[161] Though the District Court in *Noyac Road* ultimately adopted the interpretation urged by the federal government, it did not do so on grounds of de Morgan's Law, saying that "logic and syntax do not exist in a vacuum."[162]

If, in conformity with the spirit of these remarks, the ordinary interpreter were to firmly eschew the de Morgan's rule interpretation, we should expect a supermajority of interpretive judgments to fall in the "Definitely not" category or an average value of judgments somewhere in the interval from 3.5 to 4.0. But we do not see this. Thus the claim that "without knowledge or consent" is ordinarily interpreted as "without knowledge or without consent" is not empirically supported either. We seem to have genuine ambiguity here. There is an empirical deadlock between the interpretive principles offered by de Morgan's rule and scalar implicature.

In the end, my results provide objective empirical support for the Second Circuit's view in *141st Street* Corp that the language is "at best, confusing,"[163] and Prof. Solan's view that the construction is "a difficult one."[164] Neither the de Morgan's rule interpretation nor the scalar inference interpretation finds strong empirical support. I therefore concur with Prof. Solan's normative conclusion that it is "extraordinarily harsh for a court to construe a complex and confusing statute as permitting the government to seize the property of an owner who objects to the misuse of his property."[165]

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[161] Meghan J. Ryan, Does the Eighth Amendment Punishments Clause Prohibit Only Punishments That Are Both Cruel and Unusual?, 87 WASH. U.L. REV. 567, 624 (2010).
[162] 739 F. Supp. at 113.
[163] 911 F.2d at 878
[164] SOLAN, *supra* note 63, at 52.
[165] *Id*.

3.4. Interpretation and background characteristics

I collected data on respondents' linguistic performance, penal preferences, and party and ideological affiliation. These data allow me to assess the correlation between their linguistic judgments and these background characteristics. These correlations are of interest for two reasons. First, one of the central normative concerns in statutory interpretation is the extent to which linguistic judgments are influenced by, or perhaps even mere cover for, policy preferences. These correlations shed light on the potential magnitude of that influence. Second, it is natural to hypothesize that linguistic judgments might vary with respect to respondents' background linguistic competencies, especially when they need to make judgments about linguistically intricate situations such as those involving the scope of adverbs, if-clauses, and de Morgan's rule.

3.4.1. Data

Although linguistic judgments, penal preferences, and party and ideological affiliation are all categorical variables, it simplifies analysis to transform them into numerical equivalents and analyze those instead. Thus I transform the categorical values of these variables into numerical values according to Table 7:

Table 7. Conversion of categorical values to numerical values

Linguistic Judgment Categorical Values:	Numerical equivalent:
Definitely	*1*
Probably	*2*
Probably not	*3*
Definitely not	*4*
Penal preferences	
Less penal	*0*
More penal	*1*
Ideological Affiliation	
Strong Liberal	*0*
Liberal	*1*
Independent	*2*
Conservative	*3*
Strong Conservative	*4*
Party Affiliation	
Strong Democrat	*0*
Democrat	*1*
Independent-leaning Democrat	*2*
Independent	*3*
Independent-leaning Republican	*4*
Republican	*5*
Strong Republican	*6*
Linguistic performance	
Low	*0*
Medium	*1*
High	*2*

Given that the correlations between interpretation and background characteristics are of particular interest in hard interpretive cases, I omit "control" persons from this analysis, and focus on persons that we have prior reasons for believing would be ambiguous: B, C, D, E, F, G, and J.

I classify a survey respondent's preferences as being "more" or "less" penal as follows. Recall that in the analysis of "uses a firearm," respondents were introduced to five persons: A, B, C, D, and E. Person A (who used a firearm to threaten another) was a control person in the sense that under any reasonable interpretation, A would be punished under the law. Persons B, C, D, and E were more ambiguous cases.

The survey posed the following question:

> *Now set aside interpretation of the law. Consider your own personal views about how much each of the persons above should be punished for their actions. For each of persons B, C, D and E, please decide whether their actions should be punished more, less, or equally severely as those of A.*

I coded a respondent as having "more" penal preferences with respect to person B if that respondent judged that B should be punished at least as severely as A, and as having "less" penal preferences if he or she judged that B should be punished less severely. I did so similarly for persons C, D, and E. I also did so similarly for persons F and G although in these two cases, the question was how severely F and G should be punished relative to H (who mailed an image knowing that it depicted a minor engaged in sexually explicit conduct).

With respect to T3 ("without knowledge or consent"), I coded a respondent as having "more" penal preferences with respect to J if the respondent judged that J deserved to have his land confiscated, and "less" penal preferences otherwise.

The construction of the variable measuring linguistic performance is explained in the introduction to Section 3.

3.4.2. Analysis and Results

I conduct multiple linear regression analysis in which the dependent variable is linguistic judgment; the independent variables are penal preference, ideological and party affiliation, and linguistic performance; the unit of observation is the survey respondent. In other words, the regression equation is:

$$Linguistic\ Judgment = Constant + B1 * (Penal\ Preference) + B2 * (Ideology) + B3 * (Party) + B4 * (Linguistic\ Performance) + e$$

All variables take on the numerical values shown in the right panel of Table 7. I estimate a separate multiple linear regression for each of the persons B, C, D, E, F, G, and J. The results are shown in Table 8. Each row in this table shows the results for a particular person and regression. Each column reports a separate coefficient in that regression.

Table 8. Regression analysis of relationship between interpretation and background characteristics

	Penal preferences	Ideology	Party	Linguistic performance
B (gun in back pocket)	-0.504***	-0.115*	0.058	0.016
C (trades gun for drugs)	-0.762***	-0.076	0.034	-0.070
D (gun in trunk)	-0.665***	-0.088	0.026	0.050
E (trades drugs for guns)	-0.713***	-0.093	0.046	-0.055
F (~sex,~minor)	-0.598***	-0.137**	0.097**	0.039
G (sex,~minor)	-0.607***	-0.108**	0.076**	-0.049
J (knows, ~consent)	-0.789***	0.070	-0.040	-0.009

***=1% significance, **=5% significance, *=10% significance; all regressions included constant terms, whose coefficients are omitted from the table.

To interpret this table, consider the first row showing the results for person B. Recall that the dependent variable, linguistic judgments, takes on values that step up from 1 to 4, where "1" stands for "Definitely" and "4" stands for "Definitely not." The coefficient on penal preferences is -0.504, which is significant at the 1% level. It implies that respondents with more penal preferences with respect to person B tend to have linguistic judgments that are about half a step closer in the direction of "Definitely" than those with less penal preferences. Thus while respondents with low penal preferences with respect to B may have an average score for B of 2.38 (a number that is not evident from the table, but which I use to clarify the meaning of the coefficient) which falls somewhere between "Probably" and "Probably not," respondents with high penal

preferences would have an average score of 2.38-0.504=1.876 which falls between "Definitely" and "Probably."

Recall that the ideological affiliation variable takes on values that step upwards from 0 to 4, with each upward step constituting a step away from strong liberalism towards strong conservatism. A coefficient in the "Ideology" column thus represents the change in judgments that results from each such step towards conservatism. Thus each step towards strong conservatism leads a survey respondent 0.115 steps closer to "Definitely" for person B. Similarly, each step away from "Strong Democrat" towards "Strong Republican" leads a respondent 0.058 steps closer to "Definitely not punished" for person B. And each step upwards in linguistic performance (there are two steps from "low" to "middle," and from "middle" to "high") leads a respondent 0.016 steps closer to "Definitely not" for person B.

The table's fundamental result is that penal preferences have a theoretically and statistically significant association with interpretive judgments, compared to linguistic performance, which has theoretically and statistically insignificant associations. The coefficients on penal preferences are all negative, implying that the association is in the expected direction: more penal preferences go with more penal interpretations. The directionality of this effect echoes the results found by Farnsworth, et al. who find similar associations between preferences and interpretations.[166] These associations appear large on theoretical grounds. The coefficients are all within the range of -0.5 and -0.79. They are large enough to bridge the gap between the region of "greater" ambiguity and the region of no ambiguity, since these two regions are separated only by an interval of size

[166] Farnsworth et al., *supra* note 70, at 115.

0.5. For example, consider person J who knows but does not consent to his land being used for drug trafficking. The average score of judgments for J is 2.23 in Table 6, corresponding to the range of "greater" ambiguity. But the coefficient on penal preferences is -0.789 from Table 8. This implies that if we were to hypothetically add extra respondents to the sample, all of whom have more penal preferences, the average score of judgments would eventually fall to below 1.5, the range of no ambiguity. Put another way, a community with less penal preferences may judge person J's case as involving "greater" ambiguity while a community with more penal preferences would judge J's case as involving no ambiguity at all. Penal preferences can thus disambiguate.

In contrast, the coefficients on linguistic performance are all much smaller, with no coefficient larger than 0.08. Such coefficients are not large enough to produce the type of disambiguation scenarios that penal preferences can. Furthermore, none of these coefficients is statistically significant. Thus my evidence doesn't suggest any association between linguistic performance and interpretation.

These results lead me to the conclusion that penal preferences do exert a powerful influence on interpretations. This influence is powerful enough to fully disambiguate, in the mind of an interpreter with more penal preferences, a case that would appear to have "greater" ambiguity in the mind of an interpreter with less penal ones. If judges are not immune to such an influence, then the influence of such preferences on judicial statutory interpretation could be very large and serious indeed. It is right to be concerned about how judges' preferences can affect their ordinary meaning judgments.

However, at a more theoretical level, these results show that ordinary meaning *itself* will likely be influenced by the pattern of penal preferences in the community. We

may find that communities with more penal preferences will generate ordinary meanings in conformity with those preferences. The philosophical and statutory interpretation literatures have emphasized how ordinary meaning is conventional, and Gricean theory in particular emphasizes the extent to which it is driven by pragmatic interpretive principles. What my results suggest is that facts about a community's penal or more broadly moral preferences—more specifically the relative proportion of those with more and less penal preferences--may have a very powerful impact on its interpretive conventions, perhaps much more powerful than the impact of facts about its linguistic competencies. While my analysis was not designed to experimentally test for the phenomenon of motivated cognition—"the unconscious tendency of individuals to fit their processing of information to conclusions that suit some end or goal"[167]—that phenomenon can potentially explain my results.

This raises an issue I cannot fully address here so I simply flag it. While an *individual*'s penal preferences may be a source of interpretive *idiosyncrasy* or *bias* relative to the population, it may be that the *population*'s penal preferences play a *constitutive* role with respect to ordinary meaning.

4. CONCLUSION

4.1. Summary of results

I have argued and shown that the ordinary meaning of a text can be measured using surveys. The argument depends on the propositions that ordinary meaning is

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[167] Dan Kahan, *What Is Motivated Cognition and How Does It Work?*, SCIENCE AND RELIGION TODAY (May 4, 2011), http://www.scienceandreligiontoday.com/2011/05/04/what-is-motivated-reasoning-and-how-does-it-work/.

constituted by convention, and that survey methods can measure the quantitative dimensions of these conventions.

I find that this method is capable of distinguishing unambiguous cases from ambiguous ones. Thus I find that the following are all objectively ambiguous: trading a gun for drugs, trading drugs for guns, keeping a gun in a car trunk, mailing an image knowing it depicts sexually explicit conduct but not knowing that it is a minor engaging in that conduct, and knowing but not consenting to one's property being used for drug trafficking crimes. Furthermore, this method can distinguish different degrees of objective ambiguity: trading a gun for drugs and trading drugs for a gun are objectively less ambiguous than the others. Given the method's ability do distinguish between unambiguous and ambiguous cases, and between more or less ambiguous ones, I believe that it is a valid method for measuring ordinary meaning.

I find that penal preferences have a consistent, powerful, and theoretically plausible effect on interpretations. Respondents with more penal preferences are more likely to have more penal interpretations. Indeed, the influence of such preferences is sufficiently powerful that it may disambiguate in the mind of an interpreter with more penal preferences a case that an interpreter with less penal preferences would judge to have "greater" ambiguity. I find that by and large, respondents' linguistic performance does not correlate with their interpretive judgments. I conclude that a community's penal or more broadly moral preferences can exert a significant influence on ordinary meaning itself, an influence that may exceed the impact of the linguistic performance of that community's members.

Lastly, I find that directly measuring ordinary meaning gives an implicit solution to the problem of how to weigh conflicting interpretive principles. Theoretically, the statutory interpreter ought to weigh interpretive principles empirically, that is, with the weights that the ordinary person gives to them when he or she interprets statutes. Empirically, I find that the survey results for 18 U.S.C. § 924(c) ("uses a firearm") suggest that the ordinary person gives more weight to a permissive scalar implicature than to a narrower paradigm-centered interpretation. I also find that the survey results for 18 U.S.C. § 924(c) ("without knowledge or consent") suggest a deadlock between the interpretations suggested by de Morgan's rule and scalar implicature.

Both theoretically and empirically, then, my results suggest that the direct measurement of ordinary meaning through surveys can avoid the cherry-picking problems that afflict judicial reliance on dictionaries and canons of interpretation.

4.2. The experimentalist view is supported

In the field of statutory interpretation, as well as in traditional moral philosophy and linguistics, experts have often relied on their intuitions regarding how ordinary people make judgments. The experimentalist literatures have shown that when we move beyond those intuitions towards direct measurement of those judgments using quantitative empirical methods, we often find those experts' intuitions to be empirically unsupported. My results suggest that this is also the case with the linguistic intuitions of judges and the Justices of the Supreme Court. Thus, for example, I find little empirical support for Justice Scalia's claim that the scope of the ordinary meaning of "uses a firearm" is limited to "uses a firearm as a weapon," for Justice Souter's claim that no one would consider trading drugs for a gun "using a firearm," or for Justice O'Connor's view

that passive use or possession would not be considered "use of a firearm." I find that ordinary meaning can differ from grammatically correct meaning. I find that "without knowledge or consent" is objectively ambiguous and that neither of the interpretations "without knowledge and without consent" nor "without knowledge or without consent" is clearly supported by ordinary interpreters.

The fact that judges can have strongly held but empirically unsupported linguistic intuitions suggests there is value to cultivating the experimentalist program within the field of statutory interpretation, and confronting experts' intuitions regarding ordinary meaning with direct measurements of that meaning.

4.3. Applications to legal practice and drafting

Surveys can play a role in legal practice and drafting. Parties in actual legal disputes often put forth arguments about the ordinary meaning of statutory texts. *Noyac Road* is an example of this, where the federal government argued in favor of a de Morgan's rule interpretation of "without knowledge or consent" and the defendant argued in favor of the interpretation suggested by scalar implicature.[168] The Supreme Court is influenced by professional linguists' expert opinions regarding the interpretation of texts. Solan observes that Justice O'Connor's opinion in *Bailey* appears to have relied on linguistic analysis and examples drawn from an article by Cunningham and Fillmore,[169] though the opinion doesn't mention the article.[170] In *X-citement Video*, the Law &

[168] 739 F. Supp. at 113.
[169] Clark D. Cunningham & Charles J. Fillmore, Using Common Sense: A Linguistic Perspective on Judicial Interpretations of "Use a Firearm", 73 WASH. U. L. Q. 1159 (1995).
[170] SOLAN, *supra* note 2, at 71.

Linguistics Consortium[171] filed an amicus brief[172] regarding the grammatical structure of the problematic language in 18 U.S.C. § 2252(a)(2). It is indeed the argument in that brief that is summarized by Kaplan and Green.[173] The Supreme Court in both *United States v. Granderson*[174] and *Dir., Office of Workers' Comp. Programs, Dep't of Labor v. Greenwich Collieries*[175] cite the linguistic analysis of Cunningham et al.'s law review article *Plain Meaning and Hard Cases*.[176] Indeed Cunningham et al.'s hope in that article was "to experiment with ways that analysis of ambiguous texts by linguists could actually assist judges in identifying and choosing among possible interpretations in a principled and objective way that remains grounded in the textual language."[177] Mouritsen observes that corpus linguistic analysis is believed to have informed the Supreme Court's opinion in *FCC v. AT&T*, 131 S. Ct. 1177 (2011).[178] Parties to legal disputes have and will continue to present arguments to judges about the ordinary meaning of relevant statutory phrases. They ought to be able to present, and judges consider, evidence to buttress such arguments.

Scholars from Hippocrates, to Bentham, to the present day have asserted the normative principle that laws should be drafted so that they are clear as possible to the

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[171] Kaplan & Green, *supra* note 100, at 1223 n.10 ("The Law and Linguistics Consortium is an association of lawyers and linguists interested in the applications of linguistics to legal problems . . . [one goal of which] is to make available to courts faced with questions of statutory interpretation information about how a statutory provision would be understood as a matter of ordinary language.")
[172] Brief Amicus Curiae of the Law and Linguistics Consortium, *United States v. X-citement Video, Inc.*, 513 U.S. 64 (1994) (No. 83-723).
[173] Kaplan & Green, *supra* note 100.
[174] 511 U.S. 39, 53 n.10 (1994).
[175] 512 U.S. 267, 272 (1994).
[176] Cunningham et al., *supra* note 63.
[177] *Id.* at 1561.
[178] Mouritsen, *supra* note 14, at 158-59.

general public upon whom they confer rights and duties, without the public's having to rely on any legal or technical expertise to understand those rights and duties.[179] To the extent possible, statutes and rules should be drafted so that legislators' or administrators' intended legal effects are accurately reflected in the ordinary meaning of their texts.[180] To the extent possible, therefore, they should be written in plain English. The toolkit can help identify potential ambiguities in ordinary meaning within draft legislation and regulations, as well as help identify less ambiguous alternatives.

Surveys can be used in legal practice and drafting because of their simplicity, especially with the advent of online crowdsourcing survey services. Data collection for this project involved recruiting and surveying over 700 subjects at a combined cost of a little more than $1100 over a course of fifteen days, though in retrospect five days would have been sufficient. All survey-design or statistical techniques involved are relatively straightforward. The survey can be designed to reflect the specificities of fact pattern, textual ambiguity, and penal context that interact to produce the interpretive challenges. Online crowdsourcing allows recruiting samples of thousands, facilitating the implementation of surveys at scale.

4.4. Limits

This empirical study, like any other, forces the analyst to make various specification choices that can be made more or less felicitously. Thus I used survey methods rather than corpus linguistics; I used sample sizes in the hundreds rather than the thousands; I drew a convenience internet-based sample rather than a nationally

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[179] Robert J. Martineau & Robert J. Martineau, Jr. Plain English for Drafting Statutes and Rules 6-8, 89 (2012).
[180] Id.

representative one; I asked respondents to judge other persons' actions rather than their own; I did not randomly sort question order, response order, or the order in which statutes were presented; I used paraphrases rather than literal statutory texts; and my design does not allow me to cleanly identify a causal effect of penal preferences on interpretation.

But the great advantage of empirical methods is that we needn't be paralyzed by such concerns. We can address them constructively. The legal community can observe my various specification choices, and perform replication studies to assess the reliability of my results as well as robustness studies to assess the sensitivity of my results to variations in the specification choices. In other words, we can make empirical and therefore scientific *progress*.

In sum, Justice Scalia's hoped for science of statutory interpretation[181] appears to me eminently feasible. Such a science can be grounded in a serious theory of meaning and interpretation informed by Gricean pragmatism and Lewisian conventionalism, a theory that clarifies its constitutive and evidentiary aspects. Among its most important tools will be quantitative empirical methods like corpus analysis and surveys.

[181] SCALIA, *supra* note 13, at 14.

Appendix A. Linguistic Performance Measurement

In the following sentences, select the option that best fills in the blank

1. It was his company's bankruptcy that finally did ___ him.
   to
   for
   with
   in

2. You should come and visit me ____ time you like.
   at some
   every
   on whatever
   any

3. Only once or twice a semester ____ class on time.
   would make the professor come to
   the professor would make it to
   would the professor make it to
   the professor would come in to

4. No sooner had I said what I heard about his wife_____she entered the room.
   when
   than
   until
   before

5. _____decide to go back to school, I'm sure your parents would be thrilled.
   Should ever you to
   If ever you to
   If only you to
   Were you to

6. No one wants to get hurt, ___?
   don't you
   do they
   doesn't he
   does they

7. I couldn't remember his name, try as I_____.
   did
   might
   was able
   would've

8. He couldn't ___ another slice of pizza.
   resist to eat
   resist eating
   resist from eating
   resist for eating

9. He took____exception to the implication that he was miserly.
   large
   great
   absolute
   significant

10. He lied ___.
   through his teeth
   by the skin of this teeth
   through the skin of his teeth
   through thick and thin

11. I can barely make ends meet, ____ with prices being what they are.
   what
   even
   however
   but