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Patterns in Language and Law

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Abstract
Our language faculty is rule-like in some ways, pattern-like in others, as Steven Pinker (1999) has shown. Much of syntax is describable a set of rules, whereas the range of meanings attributed to a word is best described in terms of patterns. Laws are typically written as rules, but they are written in words, many of which display pattern-like arrays of usage. Legal systems default to an expression's "ordinary meaning," requiring estimates of patterns of usage. Recently, advances in corpus linguistics have been adduced by judges and legal scholars in this regard. Furthermore, open-textured legal terms, including the word "pattern" itself, are by their nature more describable in terms of patterns of their application than in terms of hard-and-fast rules. Apart from linguistic issues in legal interpretation, legal systems value coherence, requiring that like things be treated alike, often focusing on patterns of how laws are applied. At times, however, these patterns uncover biases in a law's application. This article attempts to describe how this duality in both linguistic description law interact with each other.

Keywords
corpus, ordinary meaning, rule, pattern, standard, legal linguistics, courts, US judiciary

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1. Introduction

The age of big data has not only found its way to the study of language and to the study of law, but it has also found its way to the interdisciplinary field of legal linguistics. The use of linguistic corpora in legal analysis is growing, both in the determination of individual cases and in the study of language use that reveals regularities that are not part of the "official" canon of legal doctrine (see, e.g., Vogel, Hamann & Gauer, 2017).

This article aims to delineate the aspects of legal reasoning and our linguistic competence that combine to make this development possible. The most interesting cases come when the law – which is most often organized as a rule-like system – responds to patterns of family resemblance, rather than to absolute criteria. Legal theorists from both common law and Roman law traditions embrace coherence as a basic rule of law value. Because it is not possible to articulate precisely what common features produce the kind of coherence the law values, the effort to achieve coherence produces legal doctrines that are always subject to challenge.

The law also resorts to pattern-like interpretation when it defaults to the "ordinary meaning" of words and phrases in legislation. Most significant for our purposes, "ordinary meaning" is a distributional fact. A meaning is "ordinary" if it occurs commonly (how commonly is a matter of some disagreement). There is no better way to determine how commonly a particular meaning is assigned to a word than to review a large corpus of general usage of the language and to compute the relative frequency of occurrence. Indeed, excellent work in this regard by Stephen Mouritsen (2010, 2011), and more recently Lee & Mouritsen (forthcoming) demonstrates the utility of corpus analysis in determining ordinary meaning in legal cases, replacing the intuitions of judges and reference to dictionaries as methods in legal decision making that depends upon ordinary meaning. In addition, several U.S. judges have actually employed the method in their resolution of legal disputes.

Moreover, while linguists have successfully made great progress over the past half century using their intuitions as native speakers as the data on which to create theories that separate the grammatical from the ungrammatical, it is much less clear that linguists, or others for that matter, have good intuitions about distributional facts. On the contrary, people are subject to "false consensus bias" when it comes to the distribution of meanings. As native speakers, we tend to think that our understandings of words are the normal ones, not recognizing the possibility that we are outliers. In a study conducted with both lay people and sitting judges, Solan, Rosenblatt & Osherson (2008) asked participants whether they considered employees who were sickened by inhaling sand particles in a factory that used sand to make its equipment to have suffered a "pollution injury," which is a question relevant to in insurance law. About 45 percent of lay people said it was pollution, about 42 percent said it was not, and about 13 percent said they could not decide. All three groups, when told that we had presented the same scenario to 100 people just like them overestimated the percentage of peo-

ple who agreed with their judgment. The first two groups estimated that they were in agreement with 60–65 percent of respondents; those who said they could not decide estimated 38 percent agreement. Judges were also subject to this false consensus bias. While only a small percentage (12 percent) of judges thought the injury was caused by pollution, those that so responded estimated that about 70 percent of judges would agree with them.

A final kind of distributional fact plays a significant role in the relationship between language and law. Laws are not always applied even-handedly, without regard to such things as race and gender. For example, DWI (driving while intoxicated) is an infraction everywhere in the U.S. DWB (driving while black) is not supposed to be an infraction at all. Yet the expression developed to describe differential treatment of racial and ethnic groups by the police. Some instances of disparate treatment are linguistic in nature. When people have the option of choosing among different words or different linguistic structures to convey a thought, the choices they make may reveal various schemas that they carry in their minds (see Shuy, 2015). The distribution of those choices may further reveal sociologically-interesting generalizations. Some relate to hot-button issues, such as the appropriate vocabulary to use in the realm of immigration and diversity. I return to such cases at the end of this article.

2. Rules and Patterns in Language

The human language faculty is multidimensional. Part of it is a rule-like system. Take, for example, the classic case of regular plural formation in English.

book	books
leg	legs
glaze	glazes

While the spelling is the same across these examples, whether the sound of the plural is [s], [z] or [Iz] depends upon the final sound of the word in its singular form. Big data will not be very useful here, other than to reveal potential dialect differences with respect to a small set of words that some may regard as regular, others as irregular. If someone were to say "bookes" as the plural of book, we would conclude that the person is not competent in applying the English plural rule. For that reason, it would not contribute to knowledge about the structure of English if it is discovered from a corpus that someone has made such a mistake in writing. In other words, regular plural formation in English does not produce a set of distributional facts.

The seminal work on this dual nature of linguistic phenomena is Steven Pinker's (1999) book, *Words and Rules*. Pinker argues that some aspects of language – irregular forms, vocabulary and word meaning in particular – must be learned individually,

while other aspects are rule-governed. Pinker distinguishes between the regular plural forms and the irregular ones (*fish*, *woman*, *man*, etc.) that children must learn one by one. German plural forms are more word-like in nature because there are numerous classes of plural forms. Which class a word belongs to is largely (but not entirely) unpredictable from its sound, although as Yang (2002), points out, there may be more regularity in this regard than is sometimes thought.

Furthermore, some aspects of language are best described as independent constructions (Goldberg & Jackendoff, 2004), or as lexical bundles (Conrad & Biber, 2004) and are not derivable compositionally. These too are subject to distributional analysis. As Jackendoff (2008) puts it, words and rules form a continuum, rather than two distinct discreet sets of linguistic phenomena.

For the most part, syntax is rule-based. Consider "do support" in English, studied routinely in first year linguistic courses that use English as an example language.

(1) *Visited you your mother yesterday?

(2) Did you visit your mother yesterday?

(3) Have you visited your mother recently?

(4) *Did you have visited your mother recently?

Sentences of the form (1) are grammatical in many languages, including German and the romance languages. But they are not grammatical in English: the form (2) is required. Moreover, when we hear questions like (2) we have no difficulty knowing what is being questioned. Both the form and the interpretation are fixed, at least to that extent. In English, we insert *do* when a finite verb is being questioned, but not when there is an auxiliary verb that may invert with the subject. We also insert *do* before negation:

(5) Bill didn't leave.

(6) *Bill not left.

(7) ?Bill left not.

Here again, once a child internalizes the system, there is no need to worry about what the main verb is, because it does not matter. The rule applies across all main verbs.

How do the pattern-like aspects of language emerge? First, our computational rule-based linguistic system often leaves a great deal of flexibility in how words are used, and which words and structures are used. This flexibility licenses usage to be distributed in patterns, both within a single individual and across the population of competent speakers of the language. It further allows for patterns within discreet genres, such as the various ways that language is used in the legal system. Returning to our example, while do-support is both rule-driven and obligatory, whether one asks many or only a few questions, or how frequently one uses negation is not.

Gaining an understanding of the linguistic patterns in legal language provides an excellent opportunity for corpus analysis. For one thing, examining a large body of da-

ta permits the researcher to uncover actual distributional facts beyond intuitions developed from exposure to small samples. As Goźdź-Roszkowski (2011: 34) describes it:

> "Corpus linguistics is rightly viewed as a research approach that has developed over the past 40 years to study *language use* in large, principled collections of texts. The central goal of corpus-based analysis is to document and interpret generalizable patterns of use" (emphasis added).

Of course, people generally use language within the bounds of what their rules of grammar permit. For this reason, it is helpful at this point to look briefly at the architecture of the language system. It is here that the generative grammar approach and corpus linguistic analysis of the patterns of usage can meet productively. Let us assume that the human language faculty has at least the following (taken roughly from Jackendoff, 2003 and Chomsky, 2005) as its design (see Solan, 2017, for further detail): A computational system that generates well-formed structures; A relationship between these structures and meaning; An interface between sound and meaning, mediated by the computational system, so that we can break the flow of speech up into words and phrases and use this information to interpret what we hear; An interface between the computational system and its interpretation on the one hand, and a conceptual system on the other, so that we express in words and phrases the concepts we intend to express; Interfaces with various inferential systems that rapidly place the language we use in sufficient context to make sense of it (discourse, pragmatics, cultural assumptions, etc.).

Virtually all of the patterns in language occur at the interfaces between the computational component of language and other linguistic and non-linguistic cognitive systems, especially with respect to conceptualization and our inferential system. To the extent that words have multiple senses, and to the extent that they are polysemous, it is possible to ascertain central tendencies and to privilege those as the ones most likely intended by users. The same holds true for inferences that are typically drawn from language in particular circumstances. People know what a guest has in mind when she asks, "is there any salt" but we can never be certain that different people draw the same inferences.

As for how we conceptualize, research in cognitive psychology for the past forty years has demonstrated convincingly that people judge certain items as better members of categories. In this sense, category membership is graded. Most of the work in this area privileges the "prototype" as the best example (see, e.g., Rosch, 1975), although some work seems to show that items that best match a category's goal are judged better examples even when they are less typical (Lynch, Coley & Medin, 2000; Barsalou, 1983). This is not to say that category membership is determined by typicality of membership (Armstrong, Gleitman & Gleitman, 1983). People judge penguins and robins as both being birds and do not believe that "birdhood" is a graded category. Yet robins, at least in western culture, are considered better examples of birds than are penguins. Moreover, failure in matching words and concepts occurs when we find ourselves using a word or phrase that does not actually communicate what we are trying to convey, and in instances of vagueness, where what we try to convey is on the borderline between concepts.

3. Rules and Patterns in Law

Just as language is structured as a mixture of rules and patterns, so is the law. Legal systems are actually structured as a series of rules, even more so in code-driven legal systems, such as those of Europe. Yet these rules are comprised of words, and the words have prototype effects and distributional properties that create patters of usage. Thus, much of the pattern-like nature of legal analysis is linguistic in nature. The pattern-like nature of law, though, goes way beyond questions of word meaning. Coherence is a fundamental legal value in its own right, as theorists from many different perspectives have noted (see, e.g., Dworkin, 1986; Shapiro, 2011; Zippelius, 2008). First, we look at law as a set of rules.

3.1. The Rule-Like Nature of the Law and the Inevitability of Standards within Rules

Laws – and penal laws in particular – are generally written as classical definitions. The burglary law defines burglary; the arson law defines arson. The laws are comprised of a list of "elements" all of which must obtain for the law to apply to a given situation. Each element is necessary, and together they are sufficient to define what is proscribed. The elements, in turn, are presented either conjunctively or as part of a list of which at least one member must obtain. Thus, legal rules can be described using only the Boolean operators, "and," "or" and "not."

As Schauer (2009) points out, we generally conceptualize the law as a collection of rules. For example, the common law definition of burglary was breaking and entering into someone else's dwelling at night with the intent to commit a felony therein. Modern statutes expand the crime to include any building and not to require that the crime occur in the nighttime. Thus, stealing tomatoes from the garden of another person is not burglary, although it is otherwise against the law. Breaking into a factory to deface it is now an act of burglary, but was not an act of burglary at common law. And so on.

This rule-like nature of laws is not confined to common law jurisdictions. Consider the perjury laws, Sections 153 and 154 of the German Criminal Code. Section 153 covers unsworn false testimony:

> Whosoever as a witness or expert gives false unsworn testimony before a court or other authority competent to examine witnesses and experts under oath shall be liable to imprisonment from three months to five years.

Section 154 defines perjury as falsely swearing an oath to tell the truth:

> (1) Whosoever falsely takes an oath before a court or another authority competent to administer oaths, shall be liable to imprisonment of not less than one year.
>
> (2) In less serious cases the penalty shall be imprisonment from six months to five years.

The law is describable as a classical definition, using Boolean operators. The falsity of the testimony is the focus of Section 153, whereas the false oath is the focus of perjury. In both cases, intent is central. Section 15 of the Criminal Code specifies that all criminal laws carry a state of mind requirement of proving intent, unless otherwise specified.

In contrast, the penalties prescribed by the law are not rule-like in this sense. The law instructs courts to determine the sentence in the first instance, and to decide whether the case is "a less serious" one, in which case the court may impose a shorter sentence. This is a classic example of the distinction between rules and standards. Yet what amounts to a standard is merely an expression in a rule that is sufficiently flexible as to give a court significant discretion in deciding how to apply it. As Professor Kim (2007: 413) observes,

> "[T]he inherent uncertainty of legal rules and the need for flexibility to respond to unanticipated situations means that rules cannot definitively determine what a judge should do in every case."

The U.S. perjury statute is quite similar. 18 U.S.C. § 1621(1) reads:

> "Whoever—having taken an oath before a competent tribunal, officer, or person, in any case in which a law of the United States authorizes an oath to be administered, that he will testify, declare, depose, or certify truly, or that any written testimony, declaration, deposition, or certificate by him subscribed, is true, willfully and contrary to such oath states or subscribes any material matter which he does not believe to be true; [...] is guilty of perjury and shall, except as otherwise expressly provided by law, be fined under this title or imprisoned not more than five years, or both. This section is applicable whether the statement or subscription is made within or without the United States."

Unlike the German code, the U.S. version focuses on the defendant's state of mind with respect to the false statement – not with respect to the oath. Yet, no doubt, borderline cases exist, and judges must decide whether such cases come inside or outside the arson law. In particular, judgments about materiality appear in the rule, but require standard-like reasoning.

3.2. Coherence and Pattern Recognition as the Rule of Law[1]

If a person is caught stealing a set of screw drivers from a hardware store, and charged with the theft, it does not feel like any analysis at all is needed. But a great deal of the time, the question arises whether a particular set of facts *should* be considered as coming within a particular legal rule. Often, that requires legal decision makers to decide whether those features to which the event in question is similar to those events already thought to be encompassed within the legal rule are legally significant. The philosopher Nelson Goodman (1972) described the dilemma by noting that we do not judge

[1] The arguments in this section appear in a more expanded form in Solan (2016).

similarity by counting the features that two things have in common, but rather by judging the overall importance of those properties that are shared. He continues:

> "But importance is a highly volatile matter, varying with every shift of context and interest, and quite incapable of supporting the fixed distinctions that philosophers so often seek to rest upon it." (p. 444)

Coherence is a basic rule of law value, adduced by judges and scholars in both the common law and civil law traditions. Below is a statement made by the late Justice Antonin Scalia, an American jurist best known for his adherence to the text and his eschewal of such concerns as the purpose of a statute:

> "Where a statutory term presented to us for the first time is ambiguous, we construe it to contain that permissible meaning which fits most logically and comfortably into the body of both previously and subsequently enacted law. We do so not because that precise accommodative meaning is what the lawmakers must have had in mind (how could an earlier Congress know what a later Congress would enact?), but because it is our role to make sense rather than nonsense out of the *corpus juris*." (West Virginia Univ. Hosps. v. Casey, 499 U.S. 83 [1991]: 100–101, internal citations omitted)

If we do not care what the legislature had in mind, then we must have some other reason for wanting to make sense out of the *corpus juris*. And, of course, we do. Whether or not the legislators had a coherent code in mind, the judges should care, because the most basic rule-of-law values demand that a legal system make sense to the population that it governs. Empirical work bears out this intuition. Recent work by Tom Tyler and his colleagues to the effect that people respond more positively to the legal system when they regard judges as having made decisions based on legitimate concerns lends strong support for this proposition (see Rottman & Tyler, 2014).[2]

The case above from which Scalia is quoted illustrates the tension between legislative primacy and coherence as its own value. In *West Virginia University Hospitals v. Casey* (499 U.S. 83 [1991]), the question was whether a civil rights statute awarding "a reasonable attorney's fee" (42 U.S.C. § 1988) to a prevailing plaintiff included the awarding of the cost of expert fees. Scalia argued coherence on behalf of the majority: "[I]t is our role to make sense rather than nonsense out of the corpus juris" (499 U.S. 83 [1991]: 101).

A number of federal statutes made reference to expert fees, suggesting that statutes intended to include expert fees as part of attorney fees do so expressly (499 U.S. 83 [1991]: 89–90). On the other hand, as the dissenting opinion pointed out, Congress enacted the statute to override a Supreme Court decision that appeared to Congress to be excessively stingy in permitting fee-shifting. It would be surprising if Congress intended to exclude expert fees (499 U.S. 83 [1991]: 113 – Stevens, J., dissenting). The dissent had the last word when the statute was soon amended to include expert fees, once again overriding the Supreme Court (42 U.S.C. § 2000e-5[k] [2012]).

Coherence is deeply embedded in rule-of-law values, as many have noted. For example, Scott Shapiro (2011) bases his theory of "Legality" on the relationship between

[2] My thanks to William Eskridge for pointing out the importance of Tyler's work in this regard.

law-making and interpreting on the one hand, and "plan-making" and execution of plans on the other. In developing this approach, Shapiro notes from the beginning that plans (and thus law-making) must be rational. He comments: "Rationality not only demands that we fill in our plans over time; it also counsels us to settle on plans of actions that are internally consistent and consistent with each other." (2011: 123). This rationality constraint applies generally, both to "bottom-up" planning, the stuff of common law reasoning, and "top-down" planning, the stuff of legislation. Returning to Scalia's two justifications for judges to concern themselves with coherent interpretation, when one interpretation of a law would make it incoherent with the larger body of law and the other would make it fit more rationally, it should be no surprise that judges choose the latter. This will be the case whether because they assume that the enacting legislators would have wanted them to do so, or because, as institutional players, they have an independent obligation to prefer sense to nonsense in statutory interpretation, or both.

Similarly, Dworkin's (1986: 225–275) notion of integrity in law surely incorporates coherence. Dworkin uses the metaphor of each new interpretation of a statute being the equivalent of a new chapter in a chain novel. The interpretation must simultaneously advance the interpretation of the statute to cover (or not cover) new situations consistent with the highest values of the law, and yet be mindful of the statute's past, which includes everything from the societal situation that gave rise to its enactment, including the law's legislative history, to the language of the statute itself, and thus to subsequent interpretations by courts and other institutional actors. Moreover, Dworkin's concept of law as integrity has coherence embedded in its core. For law to have integrity, it must be sufficiently coherent to treat like situations alike.

Scholars writing in the civil law tradition also adduce coherence as an important value in decision making. To a large extent, they also use precedent to demonstrate coherence, although they do so differently, since civil law systems do not have *stare decisis* as a principle of binding law and cases are most often cited for their actual holding. Regardless of the practice concerning citation of precedent, coherence is respected as a legal value in its own right, often under the rubric of "systematic interpretation". Quoting Savigny, Reinhold Zippelius (2008) notes:

> " '[O]nly when we are clear about what a statute's relationship with the overall legal system is, and how the statute is to work within the system,' can we understand the thoughts of the legislator." (61)

He further advocates for coherence as a value in its own right. And Aleksander Peczenik (2008: 230), a legal theorist writing largely in the civil law tradition, bases his entire theory of legal justification on the concept of coherence, linking coherence to rationality, as does Shapiro (2011), trained in the common law tradition.

3.3. Ordinary Meaning: Where the Law Relies on Patterns to Make the Rules Work

Laws are written in words, and the boundaries of word meanings are often not crisp and well-defined. Legal systems tend to operate in a manner that resembles our judgments about category membership and goodness of fit by privileging the "ordinary meaning" of statutory terms (Eskridge, 2016; Slocum, 2015; Solan, 2010). This is no accident, for much of legal reasoning involves making decisions about membership in legally-relevant categories.

To take a classic example, an 1892 U.S. Supreme Court case, *Church of the Holy Trinity v. United States* (143 U.S. 457), construed a law making it a crime to pay for the transportation into the United States of a person performing "labor or service of any kind." The goal of the law was to protect the local labor market (and was probably racist as well). Yet a case was brought against a wealthy church in Manhattan for paying the transportation from London to New York of their new minister. The Court focused on the term "labor," largely ignoring "service." In a famous opinion, a unanimous Court held that the law was not intended to apply to "brain toilers:"

> "It is a familiar rule, that a thing may be within the letter of the statute and yet not within the statute, because not within its spirit, nor within the intention of its makers." (143 U.S. 457 [1892]: 459)

The question, as the Court understood it, was not whether members of the clergy perform "labor or service of any kind." Of course they do. Rather, the question was whether the word "labor" should be applied to the kind of work they do in the context of the statute. To that, the Court answered in the negative. When one uses the word "labor", one thinks of manual labor, not the work of the clergy. In modern legal parlance, the situation in the case was remote from the ordinary sense of the language that the legislature used. Courts no longer talk of the "spirit" of the law as the 1892 Court did, but the analysis has not changed very much.

Whether based on central tendency (prototype analysis) or on fidelity to goal or purpose, this approach to the interpretation of laws is simultaneously rule-like and pattern-like. It is rule-like in that a person did not violate the law unless all of the law's elements were violated. It is pattern-like in that the courts construe the law as applying more readily in core cases than in peripheral ones in meeting the criteria that the statute sets forth. Just because one *can* say that a person has performed labor does not mean that the statute should be applied to that person if the type of work performed seems remote from the goals of the statute.

Many cases in the canon of U.S. cases interpreting statutory law fit this character. Often the court relies on ordinary meaning. In 1919, would a legislature have considered airplanes to be vehicles for purpose of a law banning the removal of stolen vehicles? Such a case came to the U.S. Supreme Court in 1931, *McBoyle v. United States*. Writing for a unanimous court, Justice Oliver Wendell Holmes wrote:

> "No doubt etymologically it is possible to use the word to signify a conveyance working on land, water or air, and sometimes legislation extends the use in that direction, e. g., [illustration omitted]. But in everyday speech 'vehicle' calls up the picture of a thing moving on land." (283 U.S. 25 [1931]: 26).

One could not be clearer in privileging prototypical usage. The Court held that the statute does not apply to stolen airplanes because the mental "picture" that the word evokes does not include them. Holmes did not end the analysis there. In today's world, judges need not explore intuitions about their mental imagery. Instead, they can refer to a corpus of language and determine for themselves whether, as in *McBoyle*, "airplane" collocates with "vehicle," and if so, how frequently it does so compared to other things we call vehicles.

Not only is sticking to ordinary meaning likely to be a good path to fidelity to the legislative will, as Holmes suggests, but it also enhances rule of law values:

> "Although it is not likely that a criminal will carefully consider the text of the law before he murders or steals, it is reasonable that a fair warning should be given to the world in language that the common world will understand, of what the law intends to do if a certain line is passed. To make the warning fair, so far as possible the line should be clear. When a rule of conduct is laid down in words that evoke in the common mind only the picture of vehicles moving on land, the statute should not be extended to aircraft, simply because it may seem to us that a similar policy applies, or upon the speculation that, if the legislature had thought of it, very likely broader words would have been used." (283 U.S. 25 [1931]: 27)

This is an application of the rule of lenity, prevalent in many legal systems, which says that indeterminacy in a criminal statute is to be resolved in favor of the accused. For Holmes, it is at least as important that the law was enacted according to a process that puts people on notice of their obligations as it is that they read the law and know those obligations. A legal system has the right to punish citizens only if it complies with its own legislative obligations.

One need not look back 85 years to find cases that apply the ordinary meaning approach. A law makes it illegal to discriminate against whistle-blowers who disclose corrupt practices within publicly held companies:

> "No [public] company […], or any officer, employee, contractor, subcontractor, or agent of such company, may discharge, demote, suspend, threaten, harass, or in any other manner discriminate against *an employee* in the terms and conditions of employment because of [whistleblowing or other protected activity]." (18 U.S.C. § 1514A [a] [2006])

The issue in *Lawson v. FMR LLC* (134 S. Ct. 1158), decided by the U.S. Supreme Court in 2014 was whether the highlighted term "an employee" in the statute must refer to an employee of the company, or whether it may refer to an employee of a contractor that works for the public company, when it is the contractor's employee who blows the whistle on fraudulent practices in the public company. An investment management firm had fired two people who revealed corrupt practices within a mutual fund whose investments the firm was managing as an outside contractor. The firm argued that the law protects only employees of the public company (the fund in this case) who blow the

whistle on the public company. The Supreme Court disagreed, applying the "ordinary meaning" rule. The most natural way to understand "an employee" in the context of a contractor, the court held, is to construe the term as referring to the contractor's own employee (p. 1165).

At times, the courts agree that they should rely upon a word's ordinary meaning but cannot agree on which of the competing meanings proposed by the parties is the ordinary one. Does a law that makes it a crime to "carry a firearm" "during and in relation to a drug trafficking crime" apply to a person who had illegal drugs in the trunk of his vehicle and a gun in the glove compartment? Or does the law refer only to those who carry guns on their person? (*Muscarello v. U.S.*, 524 U.S. 125 [1998]). A divided court there held that carrying a gun in a car is ordinary enough, and affirmed the conviction. All nine justices agreed that the ordinary meaning should prevail, but they disagreed by a division of five-to-four about which meaning was the ordinary one. The majority decided that what the defendant had done was within the ordinary meaning of the law and affirmed his conviction.

Much of the discussion amounted to an undignified battle among the justices over which dictionary should be considered the most authoritative, and which literary allusions the most representative of ordinary usage. However, in his majority opinion, Justice Breyer also presented a small corpus analysis (pp. 129–130). He indicated that a search using Lexis and Westlaw news libraries revealed that about one-third of the instances of "carry" within a few words of "weapon" involve carrying it in a vehicle.

Mouritsen (2010) demonstrates how, in this case, the use of a linguistic corpus could help to elucidate ordinary usage. Using the Corpus of Contemporary American English ("COCA"), a corpus of more than 500 million words of English from a variety of genres developed at Brigham Young University, Mouritsen showed that the word "carry" is used about six times more frequently to mean "carry on one's person" than to mean "carry in a vehicle." Thus, the majority did not capture the most ordinary sense of the word as it is used in a large corpus of general English. Yet the dispute raises some profound issues. By "ordinary meaning" should the law be concerned with the circumstances in which a word is most commonly used, or should it be concerned with the circumstances in which people are generally comfortable using that word. If the former, Mouritsen's point prevails. If the latter, Justice Breyer's analysis has merit.

Justice Breyer's corpus analysis is not the only instance of judges resorting to big data to determine the ordinary sense of a word or phrase (see Solan & Gales, 2016). Judge Richard Posner, a very prominent appellate judge and legal scholar searched "Google News" in *Costello v. United States* (666 F.3d 1040 [7th Cir. 2012]) to determine whether a woman who invited her boyfriend, who was in the United States without legal immigration papers, was "harboring" him, in violation of a federal law. He found that the verb "harbor" mostly is used in contexts that suggest hiding someone, such as harboring fugitives or harboring Jews. The happy couple in the case at hand, in contrast, were not living in some secret manner, and Posner therefore decided that the

woman had not violated the statute. Two state high courts have also used corpus analysis, both employing COCA. In *State v. Rasabout* (356 P.3d 1258: 1272–73), decided in 2015, the question was whether a gang member who fired twelve bullets from his car as he drove by a house occupied by an enemy of his had "discharged" his gun twelve times, thus committing twelve separate crimes, or whether he discharged it once, by emptying it. The majority opinion relied heavily on dictionaries to reach the conclusion that had discharged the gun twelve separate times and could thus be sentenced accordingly. In a concurring opinion, Associate Chief Justice Thomas Lee turned to COCA, and reached the same conclusion. "Discharge" in the sense of firing a gun is most often used to describe and individual firing of the gun.

Finally, in 2016, in *People v. Harris*,[3] the Supreme Court of Michigan used COCA to examine how the word "information" is ordinarily used. Three police officers stopped a vehicle. One of the officers then assaulted the driver. A passer-by caught the incident on video. At a disciplinary hearing, all three officers lied about what had happened, as later revealed by comparing their testimony to the video. Under Michigan law, police officers are required to testify at disciplinary hearings, but the "information" they give cannot be used against them if any subsequent criminal charges are brought. The law protects their right not to be compelled to incriminate themselves. Because of their false testimony, the officers were charged with obstruction of justice in the disciplinary proceeding. The question was whether their false testimony should be considered "information" or whether misinformation of this sort is outside the scope of the law that would immunize them

The majority on the Michigan Supreme Court held that law does apply, pointing out that COCA contains many examples of people speaking of false or inaccurate information. The dissent had no problem with using COCA, but disagreed with the way the majority conducted its analysis. According to the dissent, when the bare word "information" is used, it virtually always conveys accurate information. Only when it is appropriately modified to signal its falsehood would a hearer or reader conclude that the information is not accurate. In this case, it is not a simple matter to decide what the legislature had in mind: accurate information only, or all uses of the word "information," with whatever modification occurs. Perhaps the principle of lenity should have been applied, resolving the ambiguity in favor of the accused.

Harris provides an important caution in using corpus analysis to determine ordinary meaning: A corpus is nothing more than data. Unless one asks legally-relevant questions, the corpus cannot assist in legal analysis. In *Harris*, the justices on the Supreme Court of Michigan disagreed about what question should be asked of the corpus data, and came to opposite conclusions.

[3] Nos. 149872, 149873, 150042, 2016 Mich. LEXIS 1125 (June 22, 2016).

The disagreement in *Harris* was a linguistic one, but not the only one that sets limits in corpus analysis in statutory interpretation. Courts do not always rule that words must be understood by virtue of the central tendency of their usage. Sometimes they resolve uncertainty in favor of the reading that best furthers a law's goals even if that reading does not conform to the most "ordinary" understanding of the statute's terms. This approach is most consistent with the teleological approach to interpretation, embraced by most Roman law legal systems.

This fact highlights an important consideration in using corpora in legal analysis: The distributional facts that corpora reveal are only useful to the extent that they illuminate distributional facts that the legal system deems relevant. If the judges, consistent with Lynch, Coley & Medin (2000) and Barsalou (1983), determine in a particular case that the purpose of the law is a more important consideration than the prototypical use of the words in the statute, then corpus analysis will not be very helpful. Indeed, judges often concern themselves more with a law's purpose than with which of the competing interpretations is more ordinary.

Despite the focus on ordinary meaning, it is not difficult to find cases in the United States, that focus more on a statute's purpose than on distributional facts about the usage of the words it contains, especially in recent years. Does a law that makes it a crime to destroy financial records, documents, and "tangible objects" to impede a government investigation, enacted to combat financial scandals, apply to a fishing boat captain who threw undersized fish overboard as inspectors began to board his vessel to inspect the cargo? In *Yates v. United States* (574 U.S. ___), decided in 2015, the Supreme Court said no, even though a dead fish is surely a tangible object. The Court decided to pay more attention to the purpose for the statute's enactment than to the ordinary meaning of its terms, much in keeping with the teleological approach.

In another case, *Bond v. United States* (134 S. Ct. 2077 [2014]), a microbiologist who had learned that her husband was the father of the child to whom her best friend was about to give birth took from her place of work a chemical that causes skin irritation and distributed it on her friend's mailbox, door handle, and other such places that her friend was likely to touch. Eventually her friend did come in contact with the chemical, and suffered a mild irritation on her hand, which she treated with warm water. The microbiologist, Bond, was caught doing this mischief and was prosecuted for violating the Chemical Weapons Convention Implementation Act, the statute enacted to implement the Convention on the Prohibition of Chemical Weapons, a treaty to which the United States is a party. That law makes it a crime to make or use a "toxic chemical" except for an approved benign purpose. "Toxic chemical" is defined broadly as "any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals." The chemical that Bond used, if ingested in large quantities, could cause death or permanent harm to humans, and thus comes within the definition of "chemical weapon" in the statute.

The majority in a divide court would have none of this. To them, this was a local crime that should be handled by the states – not by the law implementing the treaty on chemical weapons. Chief Justice Roberts wrote:

> "The Convention, a product of years of worldwide study, analysis, and multinational negotiation, arose in response to war crimes and acts of terrorism. There is no reason to think the sovereign nations that ratified the Convention were interested in anything like Bond's common law assault.
>
> Even if the treaty does reach that far, nothing prevents Congress from implementing the Convention in the same manner it legislates with respect to innumerable other matters--observing the Constitution's division of responsibility between sovereigns and leaving the prosecution of purely local crimes to the States." (134 S. Ct. 2077 [2014]: 2087, internal references omitted).

One interesting case involves the legal system's treatment of the word "pattern" itself. The U.S. anti-racketeering statute makes it a crime to engage in "a pattern of racketeering activity. Crimes that are considered "racketeering activities" are listed in the statute itself. The law does not fully define the term "pattern," but specifies its meaning to this extent:

> "A 'pattern of racketeering activity' *requires* at least two acts of racketeering activity … the last of which occurred within ten years … after the commission of a prior act of racketeering activity." (18 U.S.C. § 1961[5], emphasis added)

In *H.J., Inc. v. Northwestern Bell Telephone Company* (492 U.S. 229 [1989]), customers sued a telephone company that had given a series of bribes to Minnesota public officials in an effort to obtain a favorable ruling on an application for rate increases that the company sought. Did this effort amount to a "pattern of racketeering activity," or merely an effort to implement a single scheme? The Supreme Court held that the company's activities indeed constituted a pattern: There were numerous bribes within a short period of time, and they were all addressed at accomplishing a particular corrupt result. The Court concluded, "It is this factor of continuity plus relationship which combines to produce a pattern." (p. 239). There was no need to worry about whether the pattern was in service of a single scheme or multiple schemes, according to the Court.

In the U.S., high court decisions interpreting statutes have precedential effect: they must be obeyed by lower courts and, because of the principle of stare decisis, they are not likely to be overturned by the high court itself in a subsequent case. In fact, statutory cases are especially unlikely to be overturned by a subsequent court because the legislature can always decide to override a court decision by simply changing the language of the statute under interpretation. This situation enables us to ask whether there has been a pattern to what the courts call a "pattern" since the Supreme Court decided the issue.

A Lexis database search reveals that since *H.J., Inc.* was decided by the Supreme Court, courts have engaged in more than 300 analyses of "continuity" and "relatedness" to determine RICO liability. Many of these decisions mention the word "pattern" only incidentally. The Supreme Court's effort to create a rule-based approach to deciding

RICO cases by breaking the term "pattern" down into what it believed to be its component parts has not been successful in generating a predictable set of decisions that conform to one's everyday understanding of what constitutes a pattern and what does not.

For example, in the case *Effron v. Embassy Suites* (223 F. 3d 12 [1st Cir. 2000]), an investor in a hotel project in Puerto Rico claimed that the people running construction caused the project to lose money in order to trigger an obligation in the various partnership agreements for the investor to put an additional $1 million into the project. This was done, it was alleged, through a series of seventeen letters and faxes over a 21 month period. The court held that some of these transmissions were not adequately proven and that of the eight that were, almost all had been transmitted within a period of a few months. Thus, the continuity requirement was not met. In another case, *Fleet Credit Corp. v. Sion* (893 F. 2d 441 [1st Cir. 1990]), a company took a secured loan from a bank and the owners then wrote 95 checks over 4.5 years from the company to themselves, leaving the bank with no security. Is this a pattern? The court answered affirmatively, concluding that the continuity requirement had been met, and barely discussing the word "pattern" at all as the operative concept. Together, these two cases illustrate the futility of attempting to create precise lines with respect to concepts that are unspecific by their very nature.

The examples thus far illustrate the fact that although laws are written as hard-and-fast rules, the laws consist of words and word meaning distributes over a conceptual space, forming a pattern. For this reason the need to construe laws, even laws that appear clear on their face, is inescapable. Reliance on context and pragmatic inference (whether about the law's purpose or otherwise) is ubiquitous in legal analysis. Much of the time, of course, the task is not a difficult one. No one would dispute that a stolen car is a stolen vehicle, or that carrying a gun in one's pocket is "carrying a firearm" or that destroying a hard drive that contains incriminating information is destroying a "tangible object" in the context of a financial fraud statute. The hard cases involve situations that appear to be within the outer boundary of the law's language, but remote from prototypical usage, or irrelevant to the law's purpose, or both.

3.4. Laws that Explicitly Call for Pattern-Like Interpretation

Sometimes, in contrast, laws are written to be pattern-like manner as a matter of their drafting. A canon of construction (*ejusdem generis*) tells us that non-exclusive lists are to be limited to the types of things or events that are in the examples that actually occur in the list (see Scalia & Garner, 2012 for detailed discussion). The statute at issue in *McBoyle* (the airplane case discussed above) illustrates this rule. It defines "vehicle" as follows:

> "The term 'motor vehicle' shall include an automobile, automobile truck, automobile wagon, motor cycle, or any other self-propelled vehicle not designed for running on rails" (18 U.S.C. § 408 [1919])

While the definition does not exclude airplanes, the mental model that we form from reading it comfortably includes only vehicles that run along the ground. This principle is grounded in a reasonable folk psychology of language use. The assumption is that when people – including legislators – present examples of what they have in mind and also leave open the possibility of additional items, it is only appropriate to add additional items that are similar to the listed items. Thus, this style of legislation invites statutory interpreters to pattern the statute around a loosely structured set of criteria.

Laws are also sometimes written to describe the prototypical case, allowing for deviation when the ordinary situation does not obtain. The United States Code contains more than 400 such provisions and state codes contain many more in the aggregate.[4] Typical examples include:

> "A term of probation commences on the day that the sentence of probation is imposed, *unless otherwise* ordered by the court." (18 U.S.C. § 3564[a])

> "*Unless otherwise* stated, the requirements applicable to cigarettes under this chapter [21 USCS §§ 387 et seq.] shall also apply to cigarette tobacco." (21 U.S.C. § 387)

> "Definitions. For purposes of this section, *unless otherwise* provided or indicated by the context—
> (1) the term 'Administration for Community Living' means the Administration for Community Living of the Department of Health and Human Services;
> (2) the term 'Federal agency' has the meaning given to the term 'agency' by section 551(1) of title 5, United States Code" (42 U.S.C. § 3515e)

In some instances, the legislature places limits on the legitimacy of straying from the prototype:

> "Hearings under this section shall not be public, *unless otherwise* ordered by the Board *for good cause shown*, with the consent of the parties to such hearing." (15 U.S.C. § 7215)

It is worth noting that these data are also distributional: they reflect the distribution of particular linguistic practices within the legislature. Moreover, the search for such examples constitutes a corpus analysis in its own right. Here, however, the goal of the analysis is not to determine how commonplace the language of a legal document is by comparing the usage in the document to the way the language is used in general speech and writing. Rather, the corpus used here is a legal corpus, with the goal of determining whether that corpus contains a particular linguistic structure, and if so, how often.

4. Patterns in Legal Language

It has been observed that legal language has its own characteristics, many of which are facts about distribution. For example, legal language has its own vocabulary, some of

[4] A Lexis search conducted 28 October 2016 of U.S. Code library "unless otherwise" yielded 423 hits. The same search among state codes yielded 577 hits.

which sounds arcane, and some of which is nothing more than the specialized glossary of a field (see Goźdź-Roszkowski, 2011; Tiersma, 1999; Mattila, 2006). Especially interesting are words that are in common usage outside the legal sphere, but which have specialized legal meaning as well (see Schauer, 2015). To take a classic example, "consideration" is a technical term in contract law meaning the thing given in exchange as part of a bargain, and also has an everyday meaning, thoughtful contemplation.

Similarly, framing effects are important in legal argumentation. The lawyer representing an individual in a deportation hearing is more likely to refer to her client as an undocumented worker, the while the government lawyer may speak of an illegal alien. Moreover, different legal genres may show preferences for different vocabulary: contracts and statutes, while both authoritative legal documents, do not look or sound the same. By the same token, in a rape case in which a man is accused of raping a woman, the prosecutor is more likely to refer to the woman as "the victim," the defense lawyer to refer to her as "the complaining witness." In one publicized case, a judge ordered the prosecutor to stop referring to the woman as "the victim." The defendant was later acquitted. Legal anthropologists have described in considerable detail the ways in which word choice frames issues and the ways in which lawyers attempt to make choices to direct a case's vocabulary in a direction beneficial to the lawyer's client. (see, e.g., Matoesian, 1993; Conley & O'Barr, 1998).

To illustrate, in the United States, "undocumented immigrants" and "illegal aliens" refer to the same groups of people but have very different connotations. Nuñez (2013) conducted a corpus analysis of "alien," "immigrant," and "citizen," using Brigham Young University's Corpus of Contemporary American English (COCA). In order to focus her study on uses of "alien" that do not involve extra-terrestrials and the like, she searched for words that appear in close proximity to both "alien" and "immigrant" (collocates that the two have in common) and compared the relative frequency of occurrence, a design that is likely to capture the intended sense of "alien," at least most of the time. She found that "criminal" and "illegal" occur more frequently with "alien" than with "immigrant," and that "new," "legal," "undocumented," "American" and "other" appear more frequently with "immigrant" than with "alien." Thus, we speak of "undocumented immigrants," and "illegal aliens."

Similarly, Gales (2009) has demonstrated that congressional debate about "diversity" in the context of immigration law reform is replete with negative markers, suggesting very mixed feelings about adjusting immigration policy to promote diversity, even among those who purport to support such initiatives. In other instances, such analysis can differentiate among the genres with which legal actors express themselves. For example, contracts and legislation, while both authoritative legal documents, do not typically use the same vocabulary or syntactic style (Goźdź-Roszkowski, 2011).

These are important issues that have received a great deal of attention. I devote little spaced to them here not because I believe them to be unimportant, but rather because the focus of this article is on interpretive issues.

5. Patterns in the Law's Application

By the same token, the application of laws may reveal patterns – not all of them reflecting positively on a particular legal system. Because these patterns do not necessarily involve issues of language, I will comment on them only briefly here.

To take one example, studies in the United States show that the death penalty is meted out disproportionally to offenders convicted of killing white victims. In 1987, the United States Supreme Court held in *McCleskey v. Kemp* (481 U.S. 279 [1987]) that studies demonstrating that the death penalty is not applied evenly in the state of Georgia were not sufficient to lead to the reversal of McCleskey's death sentence for armed robbery and murder because the studies could not demonstrate that McCleskey himself received an unfair trial. Thus, the murder and capital punishment laws are written as rules, but the application of the law formed a pattern that reflected racism in the legal system.

Such problems are not linguistic in nature except to the extent that they involve the construal of laws to license the conduct. Surely, however, such practices as racial profiling in policing the highways, and the more gruesome example involving the death penalty are not about battles over the interpretation of particular laws, even if in both instances the law is applied properly to those who are prosecuted, but otherwise discriminatorily.

6. Conclusion

The principal goal of this article has been to illustrate how much statutory analysis in law is based on the notions of central tendency and goal orientation, two considerations that do not fit into rule-based analysis. When the law chooses to privilege central tendency, generally called "ordinary meaning" in legal contexts, and prototype in linguistics, corpus analysis can be useful, as both scholars and judges have recognized. Corpus analysis cannot solve all of the legal system's interpretive puzzles. But when the legal system commits to rendering judgments based on the kind of information that a corpus contains, use of the corpus is far superior than hoping for judges to resolve conflicting information about the distribution of meaning across a population.

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