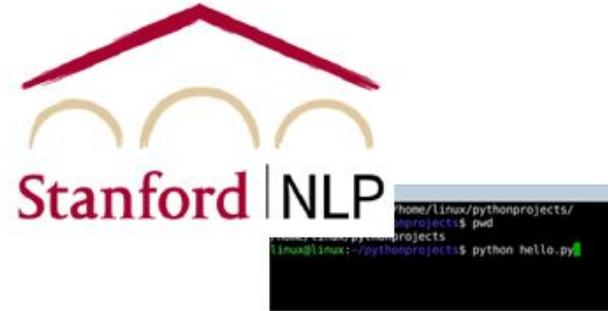
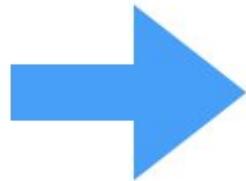


Tools from Computational Syntax and Semantics

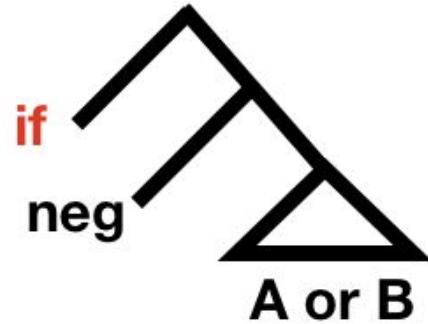
Legal Interpretation @ NASSLI 2025: Day 4



US Federal Code Corpus
(Tobia et al., 2023)



Constituency Parser *
(Qi et al. 2020)



* *No robust evals for legal text parsing.
(Motivates Legal-CGEL project).*

What's the search space?

TITLE 7—AGRICULTURE

Chap.		Sec.
1.	Commodity Exchanges	1
2.	Cotton Standards	51
3.	Grain Standards	71
4.	Naval Stores	91
5.	Importation of Adulterated Seeds [Repealed]	111
6.	Insecticides and Environmental Pesticide Control	121
6A.	National Laboratory Accreditation	138



(3) Reapportionment

(A) In general

The Secretary of Agriculture shall reapportion amounts withheld under paragraph (2) for a fiscal year among the States satisfying the matching requirement for that fiscal year.



(B) Matching requirement

Any reapportionment of funds under this paragraph shall be subject to the matching requirement specified in paragraph (1).

United States Legislative Markup (USLM)

--	Element	Description
1	<lawDoc>	The document root for a legislative document.
2	<document>	The document root for a loosely-structured non-legislative document.
3	<meta>	An optional container at the start of the document for metadata.
4	<property>	A piece of metadata, usually in the <meta> block.
5	<set>	A set of metadata, usually containing properties.
6	<toc>	A table of contents.
7	<tocItem>	An item within a table of contents.
8	<main>	The primary container for the body of the document.
9	<statement>	Any statement at the start of the document.
10	<preamble>	A collection of recitals, ending with an enacting formula at the start of the document.
11	<recital>	A clause within the preamble.
12	<enactingFormula>	The enactment words at the end of the preamble or found in place of a preamble if the preamble is omitted.
13	<level>	A hierarchical item within the document.

Legal-CGEL: Analyzing Legal Text in the CGELBank Framework

Brandon Waldon Micaela Wells Devika Tiwari Meru Gopalan Nathan Schneider
Georgetown University

- Eventual goal: sound *quantitative* claims about legal language structure!
- ... in an accessible (ish) formalism!
- ... focusing on ‘primary’ statutory text (via USLM)!
- In the meantime: annotation work is ongoing.

Gun Control Act (GCA, codified at 18 USC § 921, et seq.)

As used in this chapter – The term “firearm” means

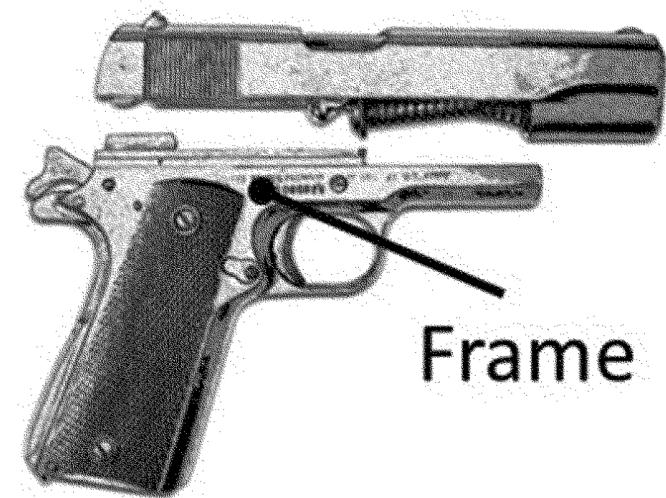
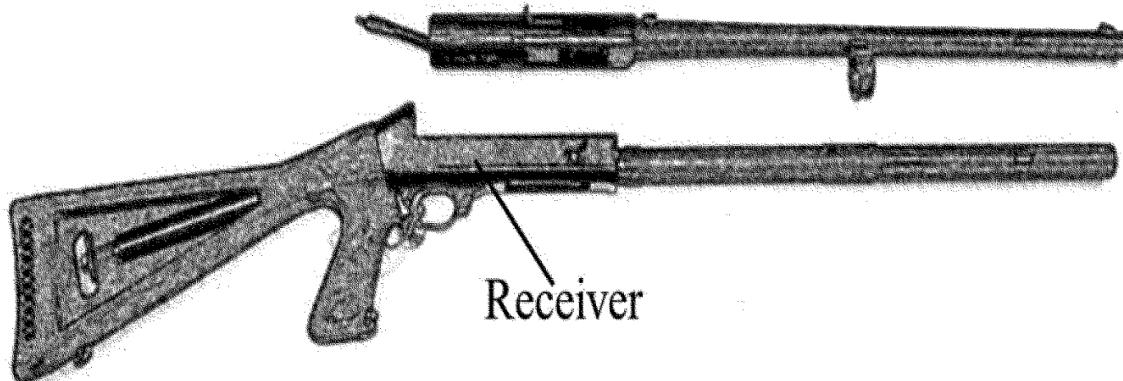
- (A) any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;**
- (B) the frame or receiver of any such weapon;**
- (C) any firearm muffler or firearm silencer; or**
- (D) any destructive device.**



“[F]rame” means the part of a handgun... that provides housing or a structure for the component... designed to hold back the hammer, striker, bolt, or similar primary energized component prior to initiation of the firing sequence

27 C.F.R. § 478.12(a)

“Receiver” ~ the ‘frame’ of a rifle



- “Gun parts kits” have allowed purchasers/sellers to avoid age and background check requirements.
- Since 2019: >150 shootings involving kit guns; many involve teen shooters.
- Typically unserialized (making them difficult to trace)
- Convertible into ‘ready to shoot’ objects in as little as thirty minutes.





Geisler Defence Model 1917 (Glock® 19x Compatible) 80% Frame

SKU: GD-1917-BLANK-BLK

Availability: Out of Stock

Was: \$99.99

Now: \$89.99

 2 reviews

Color: (*)





= *firearm* subject to regulation

27 C.F.R. 478.11



= *frame/receiver* subject to regulation

27 C.F.R. 478.12(c)

Questions presented in *Bondi v. VanDerStok**

*fka *Garland v. VanDerStok*

1. Whether “**a weapon parts kit** that is designed to or may readily be completed, assembled, restored, or otherwise converted to expel a projectile by the action of an explosive” is a *firearm* regulated by the GCA.

2. Whether “**a partially complete, disassembled, or nonfunctional frame or receiver**” that is “designed to or may readily be completed, assembled, restored, or otherwise converted to function as a frame or receiver” is a *frame or receiver* regulated by the GCA.

Summary of litigation

- VanDerStok et al. challenged ATF interpretation in a Texas district court
- District court holds: ATF exceeded its statutory authority (Fifth Circuit upheld)
- SCOTUS granted cert; oral argument was 10/8
- SCOTUS ruled 7-2 in favor of government (Alito and Thomas dissenting)

**Can ghost guns be regulated as firearms?
The Supreme Court will decide**

OCTOBER 8, 2024 · 5:00 AM ET

HEARD ON [MORNING EDITION](#)

BREAKING

**What Are ‘Ghost Guns’? What To
Know As Supreme Court Hears
Case Today.**

POLITICS

**Supreme Court takes the bench with
ghost guns, a capital case and
transgender rights on the docket**



U.S. INTERNATIONAL CANADA ESPAÑOL 中文

Wednesday, March 26, 2025

Today's Paper

The New York Times

U.S. ▾ World ▾ Business ▾ Arts ▾ Lifestyle ▾ Opinion ▾ | Audio ▾ Games ▾ Cooking ▾

LIVE

Public Media Hearing 1m ago

Signal Text Leak 7m ago

Supreme Court Upholds Biden Administration's Limits on 'Ghost Guns'

The administration had tightened regulations on kits that can be easily assembled into nearly untraceable firearms.

2 MIN READ

What Are 'Ghost Guns' and Why Has There Been a Fight Over Them?

5 MIN READ

FROM 2021

'Ghost Guns': Firearm Kits Bought Online Fuel Epidemic of Violence

11 MIN READ



Kenny Holston for The New York Times

No. 23-852

IN THE
Supreme Court of the United States

MERRICK B. GARLAND, ATTORNEY GENERAL, *et al.*,
Petitioners,
v.

JENNIFER VANDERSTOK, *et al.*,
Respondents.

ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE FIFTH CIRCUIT

**BRIEF FOR PROFESSORS AND SCHOLARS
OF LINGUISTICS AND LAW AS AMICI CURIAE
IN SUPPORT OF PETITIONERS**

Reading Law with Linguistics: The Statutory Interpretation of Artifact Nouns

Harvard Journal on Legislation, Volume 62 (forthcoming 2025)

72 Pages • Posted: 22 Jul 2024

[Brandon Waldon](#)

Georgetown University

[Cleo Condoravdi](#)

Stanford University

[James Pustejovsky](#)

Brandeis University

[Nathan Schneider](#)

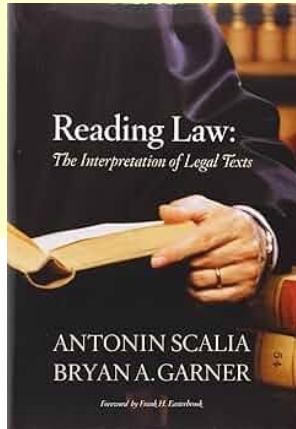
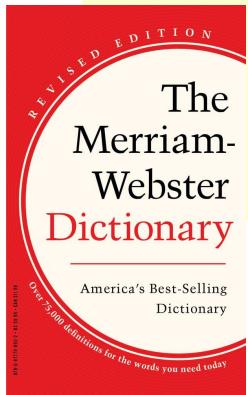
Georgetown University

[Kevin Tobia](#)

Georgetown University Law Center; Georgetown University - Department of Philosophy

Date Written: July 01, 2024

“What matters to the textualist is how the ordinary English speaker—one unacquainted with the peculiarities of the legislative process—would understand the words of a statute”



Justice Amy Coney Barrett
Congressional Insiders and Outsiders
(U. Chi. L. Rev., 2017)

Summary of argument

The justices will interpret the law under the framework of “textualism” — the philosophy that legal disputes should be resolved by considering what ordinary speakers of English would understand the text of the law.

The Court should augment the “traditional textualist toolkit” (e.g., hypotheticals, dictionary definitions) w/ formal linguistic theory and empirical linguistic methods.

Both linguistic theory and empirical linguistic data support the ATF’s interpretation of *firearm* and *frame/receiver*.

The “weapon” counterargument

The term “firearm” means

(A) any **weapon** (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;



Not a “weapon”.

The “meaningful omission” counterargument

The term “firearm” means

- (A) any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;
- (B) the frame or receiver of any such weapon;

Omission of ‘designed’ / ‘readily... converted’ in (B) is meaningful.

How ‘unordinary’ is the definition (and ATF’s interpretation)?

When a statute “includes an explicit definition,” the Court “must follow that definition,’ even if it varies from a term’s ordinary meaning.” (Digital Realty Tr., Inc. v. Somers)

“[A] firearm parts kit qualifies as a firearm **as a matter of ordinary usage... An ordinary speaker of English** would recognize that a company in the business of selling kits that can be assembled into firearms in minutes... is in the business of selling firearms.” (Gov’t stay app.)

“The district court correctly held that [the ATF]... extend[s] the definitions of “firearm” and “frame or receiver” in federal law **beyond any reasonable understanding of those terms.**” (Response in opposition to stay app.)

The ‘ordinary meaning’ of *firearm*

Firearm, weapon, frame, & receiver are **artifact nouns** (e.g., *table, bicycle*).

Artifact nouns “denote[] entities of human invention and/or entities that, through some assimilative procedure, come to serve some human-intended function”

(Waldon, Levin, Condoravdi, & Degen, 2023: 675)

Qualia structure:

“The essential attributes of an object as defined by the lexical item.”

(Pustejovsky 1991: 419)

Nominal qualia structure

1. The **Constitutive** facet: the relationship between an object and its constituents, or proper parts;
2. The **Formal** facet: that which distinguishes the object in the larger domain;
3. The **Potential** facet: the potential of an object to fulfill some function or purpose
4. The **Design** facet: factors involved in the origin or ‘bringing about’ of an object.

James Pustejovsky, *The Generative Lexicon* (1991, 1995)

```
novel(*x*)
  Const: narrative(*x*)
  Form: book(*x*), disk(*x*)
  Telic: read(T,y,*x*)
  Agentive: artifact(*x*), write(T,z,*x*)
```

This structures our basic knowledge about the object: it is a narrative; typically in the form of a book; for the purpose of reading (whose event type is a *transition*); and is an artifact created by a *transition* event of writing. Observe how this structure differs minimally, but significantly, from the qualia structure for the noun *dictionary* in Example 41.

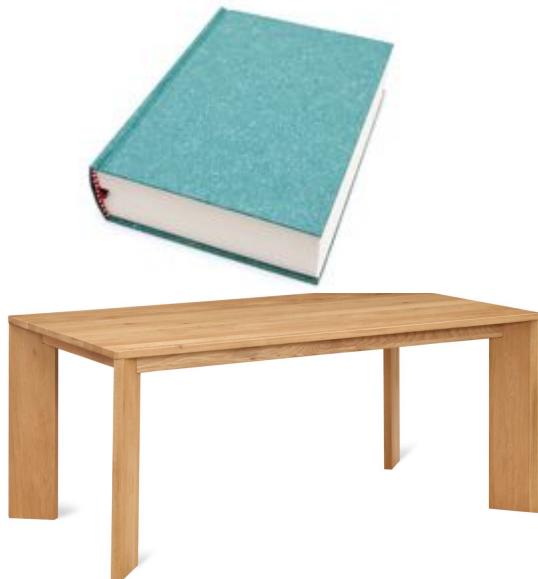
```
dictionary(*x*)
  Const: alphabetized-listing(*x*)
  Form: book(*x*), disk(*x*)
  Telic: reference(P,y,*x*)
  Agentive: artifact(*x*), compile(T,z,*x*)
```

Notice the differences in the values for the *constitutive* and *telic* roles. The purpose of a dictionary is an activity of referencing, which has an event structure of a *process*.

“The book **on the table** is very interesting.”

(formal)

(functional potential)



??John's at a bank, and so is Jill.



→ two senses of “bank”.

Context dependence of artifact noun interpretation

In context, only select facets of nominal meaning may be relevant.

(1) Noel began a novel.

- ‘begin-to-read’ interpretation invokes ‘Potential’ facet
- ‘begin-to-write’ interpretation invokes ‘Design’ facet

Out of context, (1) does not have a stable interpretation.

The vagueness of ‘Potential’

The Potential facet reflects potential capabilities, rather than exhibited behaviors.



The line between ‘capable’ and ‘incapable’ vis-à- vis function is vague and heavily dependent on context (and the artifact noun under consideration).

A bicycle is still a bicycle even if it lacks pedals, a chain, or some other component needed to render it complete or **allow it to function**. So too if the bicycle is shipped with plastic guards attached to the gears or brakes that must be removed **before operation**, or with a seat tube that the user must cut to length before installing. No one would deny that a company selling and shipping products in any of those conditions was engaged in selling ‘bicycles’”.

(Gov’t stay app. in *Garland v. VanDerStok*)



... to resolve the indeterminacy
of *firearm*, we must look to
context.

(Part A of the definition). *Firearm* includes

1. “any weapon ... which will ... expel a projectile by the action of an explosive”;
2. **DESIGN facet** “any weapon ... which is designed to ... expel a projectile by the action of an explosive”; and
3. **POTENTIAL facet** “any weapon ... which may readily be converted to expel a projectile by the action of an explosive.” [note: ‘readily’ is vague]

No conflict between the ordinary meaning of *firearm* and this part of the definition.

The “weapon” counterargument

The term “firearm” means

(A) any **weapon** (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;



Not a “weapon”.

Superordinate artifact nouns

Weapon, like *firearm*, is an artifact which encodes an inherently vague notion of functional potential as part of its basic meaning.

Artifact superordinates tend to identify entities that have common potential-related properties; however, there may be few (if any) common perceptual attributes that characterize the superordinate category.
(Rosch et al., 1976; *inter alia*)

→ “Weapon” harmonizes with the rest of (A), which explicitly **emphasizes the role of potential while downplaying the relevance of physical characteristics**.

Interim conclusion

From a linguistic perspective, Congress's definition of *firearm* in (A) is best understood not as an instruction to disregard or embellish the noun's ordinary meaning but as an attempt to provide sufficient context to **resolve an indeterminacy that is inherent to its ordinary meaning.**



Empirical data on the meaning of “firearm”



AR-40 4.5" Billet MOD1 Upper Receiver Pistol Build Kit

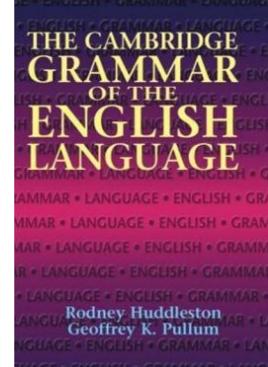
CONDITION: New

MINIMUM PURCHASE: 1 unit

SHIPPING: Free Shipping

\$354.89

CURRENT STOCK: 2



criptive NP supplement

Introducing the AR-40 4.5" MOD1 Billet Upper Receiver Pistol Build Kit, a powerful and compact firearm designed to deliver outstanding performance in the dynamic world of pistol builds. This meticulously crafted kit combines precision engineering with top-notch materials to offer a reliable and accurate shooting experience. Here's a detailed look at its features, listed in numbered order:

UPPER COMES ASSEMBLED

...

Restricted Context

Imagine that a U.S. court is deciding a dispute between two parties

Firearm

about the meaning of the term "firearm" in a law.

Table

about the meaning of the term "table" in a law.

Bicycle

about the meaning of the term "bicycle" in a law.

The law includes a definitions section, which states:
"The term "[**firearm** / **table** / **bicycle**]" means

any weapon which will expel a projectile by the action of an explosive."

any piece of furniture which will provide a level surface on which objects can be placed."

any vehicle which will propel a rider forward through the rider's pedaling."

Full Context

any weapon which will or is designed to or may readily be converted to expel a projectile by the action of an explosive."

any piece of furniture which will or is designed to or may readily be converted to provide a level surface on which objects can be placed."

any vehicle which will or is designed to or may readily be converted propels a rider forward through the rider's pedaling."

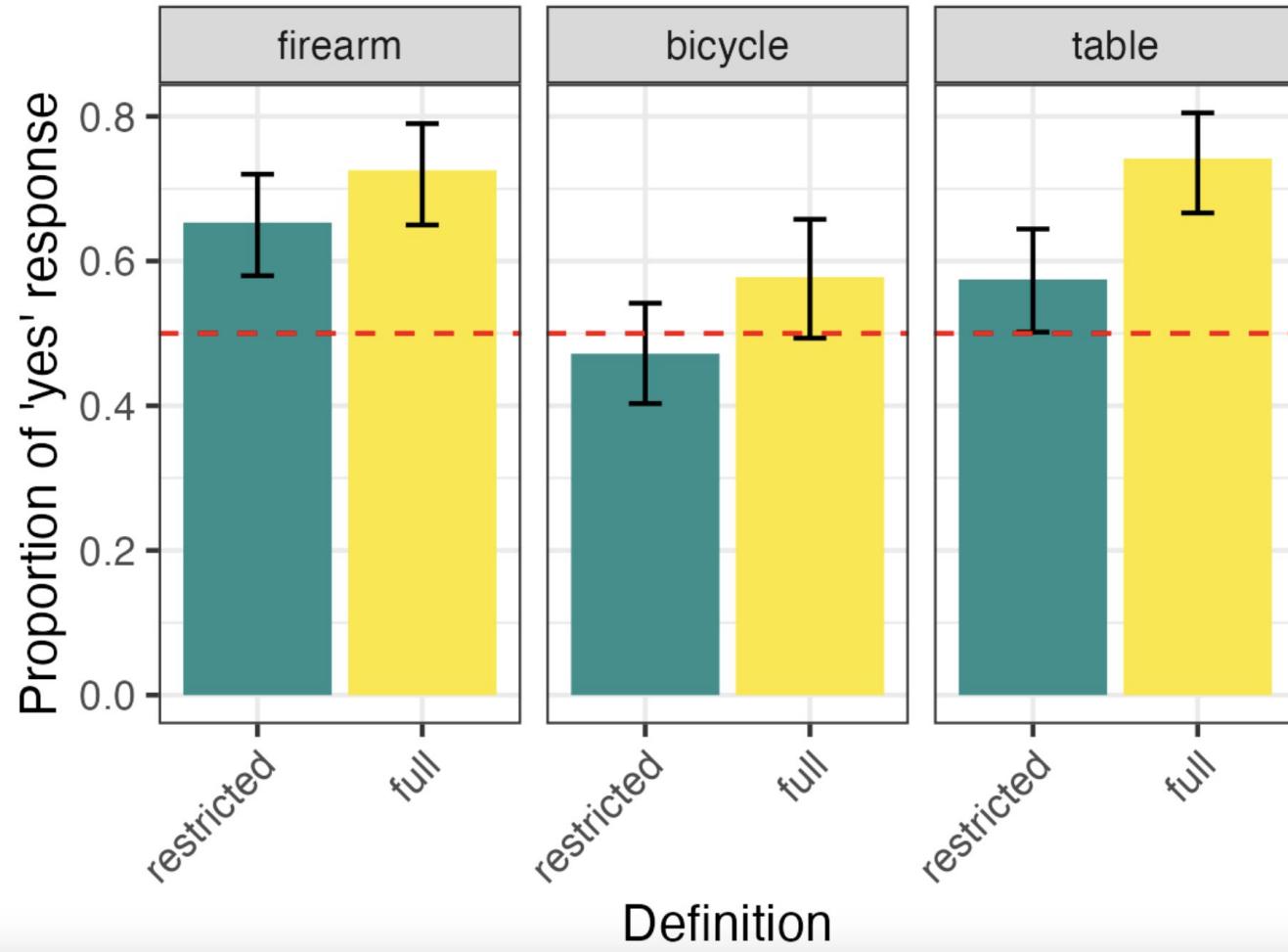
The disagreement concerns whether [**firearm** / **table** / **bicycle**] parts kits are included in the law. These parts kits are packages of [**firearm** / **table** / **bicycle**] parts that a person can order online. To create a functional [**firearm** / **table** / **bicycle**], the buyer must combine the elements of the parts kit. Most people could combine the parts in one or two hours with the right tools.

Question

In your view,
does the law's
definition of
"firearm" include
firearm parts
kits?

In your view,
does the law's
definition of
"table" include
table parts
kits?

In your view,
does the law's
definition of
"bicycle" include
bicycle parts
kits?



Returning to *frame* & *receiver*

The “meaningful omission” counterargument

The term “firearm” means

- (A) any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;
- (B) the frame or receiver of any such weapon;

Omission of ‘designed’ / ‘readily... converted’ in (B) is meaningful.

“Meaningful omission” response 1: consistency pressures

Where available, interpreters tend to apply contextual information broadly to resolve indeterminacies consistently.

Noel is a prolific **writer**. Last week, he started a new **novel**.
A few days later, his friend Liz finished a **nonfiction book**.

Noel is an avid **reader**. Last week, he started a new **novel**.
A few days later, his friend Liz finished a **nonfiction book**.

As used in this chapter – The term “firearm” means

(A) any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;

[Design and Potential]

(B) the frame or receiver of any such weapon; [???

(C) any firearm muffler or firearm silencer; [???] or

(D) any destructive device. [???

“The terms “firearm silencer” and “firearm muffler” ... includ[e] **any combination of parts, designed or redesigned, and intended for use** in assembling or fabricating a firearm silencer or firearm muffler.” (§921(a)(25))

“The term “destructive device” means... (B) any type of weapon... which **will, or which may be readily converted to, expel a projectile by the action of an explosive or other propellant**... and (C) any combination of parts either designed or intended for use in converting any device into any destructive device... and from which a destructive device may be readily assembled.” (§921(a)(4))

As used in this chapter – The term “firearm” means

(A) any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;

[Design and Potential]

(B) the frame or receiver of any such weapon; **[???**

(C) any firearm muffler or firearm silencer; **[Design and Potential]** or

(D) any destructive device. **[Design and Potential]**

“Meaningful omission” response 2: role of anaphora

The term “firearm” means

- (A) any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;
- (B) the frame or receiver of **any such weapon**;

(B) describes frames and receivers of **such weapons** that will, are designed to, or may readily be converted to expel a projectile by means of an explosive.

Any such weapon connects (A) and (B) such that they are best read as sharing a context in which Design and Potential are salient.

The term “boardgame” means:

- (A) any object which will or is designed to or may readily be converted to be played as a game by placing or moving pieces on a board;
- (B) **the board** of any such object.



Syllabus

NOTE: Where it is feasible, a syllabus (headnote) will be released, as is being done in connection with this case, at the time the opinion is issued. The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See *United States v. Detroit Timber & Lumber Co.*, 200 U. S. 321, 337.

SUPREME COURT OF THE UNITED STATES

Syllabus

**BONDI, ATTORNEY GENERAL, ET AL. *v.*
VANDERSTOK ET AL.**

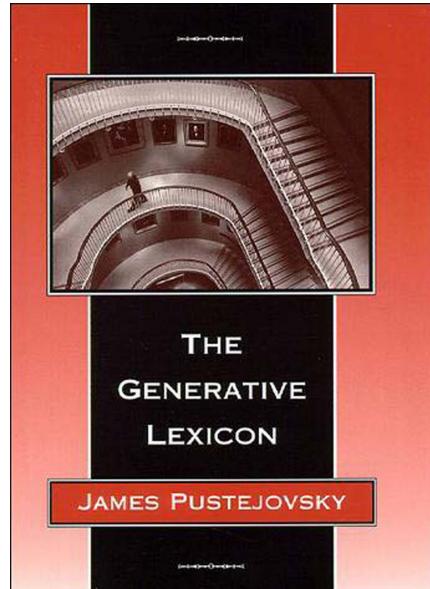
**CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR
THE FIFTH CIRCUIT**

No. 23–852. Argued October 8, 2024—Decided March 26, 2025

Our brief's role in the 7-2 majority opinion

- Cited in opinion (2 out of 25 briefs cited)
- “Artifact noun” mentioned ~30 times
- Thomas dissent: majority “draw[s] heavily... from an amicus brief” (ours) in its analysis... ;)

"[E]veryday speakers sometimes use artifact nouns to refer to unfinished objects—**at least when their intended function is clear**... A friend might speak of the table he just bought at IKEA, even though hours of assembly remain ahead of him." (Majority opinion p. 11)



Artifact Nouns: Reference and Countability*

Scott Grimm & Beth Levin

University of Rochester & Stanford University

Start with a heap of sand and begin removing grains; at some point, a heap no longer exists. **That problem attends many artifact nouns...** at some point a kit may be so incomplete or cumbersome to assemble that it can no longer fairly be described as a “weapon” capable of “read[y] . . . conver[sion]” into a working firearm. (Majority opinion p. 13)



Vague predicates give rise to the *sorites* paradox (Kennedy 2007)

“[Any such weapon] refers us back to weapons encompassed by subsection (A)... [which] encompasses some things that are not yet fit for effective use in combat, including... certain weapon parts kits” containing unfinished frames/receivers.

The term “firearm” means

- (A) any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive;**
- (B) the frame or receiver of any such weapon;**

“[T]he fact that Congress used one artifact noun (“weapon”) in... (B) to reach some unfinished articles suggests it used two other artifact nouns (“frame” and “receiver”) in the same way in the same provision.”

VanDerStok – a (quantifiably) exceptional outcome

LingBriefs dataset (Brooks 2025, linked on syllabus)

- 33 briefs “including least one.. linguist” (p. 4)
- Typically, court does not cite.
- “[S]everal of the citations... are neutral or unfavorable” (p. 5)
- Dataset includes “contents of each citation and commentary on individual cases” (*ibid*)

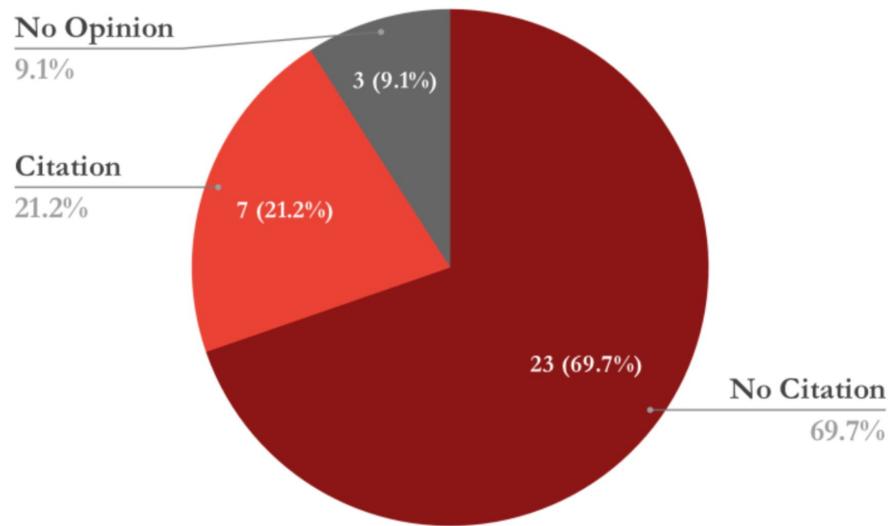


Figure 1. SCOTUS does not cite most linguistics amicus briefs

Linguistics at the Supreme Court: Current challenges and potential solutions

Tilden “Tilly” Brooks*

- “[L]imited understanding of linguistics, the nature of non-governmental amicus filings, and the division of factual and legal issues contribute to this lack of engagement” (p. 1)
- Brooks “propose[s] three measures to advance this goal: research collaboration, scholarly communication, and pedagogy” (p. 7)

Possible avenues for impact (beyond briefs)

The Supreme Court's blockbuster gun case is a shot at redemption

BY KEVIN TOBIA, NATHAN SCHNEIDER AND BRANDON WALDON, OPINION CONTRIBUTORS - 10/15/24
9:30 AM ET



UNITED STATES
SENTENCING COMMISSION

[GUIDELINES](#)

[RESEARCH](#)

[POLICYMAKING](#)

[EDUCATION](#)

[ABOUT](#)

[BY TOPIC](#)

PUBLIC COMMENT ON 2025 PROPOSED AMENDMENTS

PARTICIPANTS, CHECKS

EXTRAS

- Methods, exclusions, and analyses for this study were pre-registered through the Open Science Foundation, available at <https://osf.io/8m5vh/>. Data and code are available at the same link.
- We recruited 1250 participants from Prolific, a widely-used online crowdsourcing platform. We recruited a U.S.-based sample, with a minimum 99% approval rating, 50% men and 50% women, and 50% Republican-identified, 50% Democrat-identified, <1% Independent, Other or No Preference. We preregistered three comprehension check questions and one CAPTCHA (to screen out bots). There were 988 participants who completed all checks correctly and were included in the analysis (50% male, 49% female, 1% non-binary; 49% Republican, 47% Democrat, 3% Independent, <1% Other or No Preference). Participants were paid \$1.00, and median completion time was 3 minutes and 53 seconds, for a median compensation rate of \$15.44/hour.

STUDY RESULTS

EXTRAS

In total, 262 participants ($\approx 21\%$) met at least one exclusion criterion or exited the study early, leaving data from 988 participants for analysis.

A majority of participants (69%; 95% CI = [63%, 74%]) considered firearm parts kits to be firearms. This trend held in both the legal context (64%; 95% CI = [56%, 71%]) and the ordinary context (74%; 95% CI = [67%, 80%]), regardless of whether firearm received a restricted definition (65%; 95% CI = [58%, 72%]) or full definition (73%; 95% CI = [65%, 79%]).

STUDY RESULTS

EXTRAS

To investigate Noun (reference level firearm), Domain (reference level “legal”), and Definition (reference level “restricted”), we conducted a binary logistic regression predicting log odds of “Yes” response from fixed effects of these three variables and all possible interactions.

None of the interaction terms were significant predictors of the outcome variable, so we dropped these terms from the model and conducted a second regression with only the additive fixed effects of the three variables.

Relative to firearm trials, the likelihood of “Yes” response was significantly lower on bicycle trials ($\beta = -0.7073$, SE = 0.1637, $z = -4.319$, $p = 1.56e-05$) but not on table trials ($\beta = -0.1626$, SE = 0.1671, $z = -0.973$, $p = 0.330611$).

Moreover, we found no evidence of an effect of Domain ($\beta = 0.1096$, SE = 0.1338, $z = 0.819$, $p = 0.412656$).

However, there was evidence of significant positive effect of Definition ($\beta = 0.5136$, SE 0.1359, $z = 3.780$, $p = 0.000157$).

STUDY DEMOGRAPHICS

[EXTRAS](#)

Men (50%), Women (50%)

Democratic Party (49%), Republican Party (47%), Other (3%)

Age (M=40.7, SD = 13.3)

Race: White (74%), Black (11%), Native American (1%), Asian (6%), Other (2%), Prefer not to say (1%), Multiple Races (5%); Hispanic or Latino (10%)