

TCS for Law

Toward a Computational Theory of Legal Systems

Foundations Friday · May 23, 2025 · Corinna Coupette

What is law? The *lay* perspective

What is law? The *lay* perspective

Common Associations with Law



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Common Associations with Law



15 U.S. Code § 15 - Suits by persons injured

U.S. Code Notes

(a) AMOUNT OF RECOVERY; PREJUDGMENT INTEREST

Except as provided in subsection (b), any [person](#) who shall be injured in his business or property by reason of anything forbidden in the [antitrust laws](#) may sue therefor in any district court of the United [States](#) in the district in which the defendant resides or is found or has an agent, without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the cost of suit, including a reasonable attorney's fee. The court may award under this section, pursuant to a motion by such [person](#) promptly made, simple interest on actual damages for the period beginning on the date of service of such [person's](#) pleading setting forth a claim under the [antitrust laws](#) and ending on the date of judgment, or for any shorter period therein, if the court finds that the award of such interest for such period is just in the circumstances. In determining whether an award of interest under this section for any period is just in the circumstances, the court shall consider only—

- (1) whether such [person](#) or the opposing party, or either party's representative, made motions or asserted claims or defenses so lacking in merit as to show that such party or representative acted intentionally for delay, or otherwise acted in bad faith;
- (2) whether, in the course of the action involved, such [person](#) or the opposing party, or either party's representative, violated any applicable rule, statute, or court order providing for sanctions for dilatory behavior or otherwise providing for expeditious proceedings; and
- (3) whether such [person](#) or the opposing party, or either party's representative, engaged in conduct primarily for the purpose of delaying the litigation or increasing the cost thereof.

(b) AMOUNT OF DAMAGES PAYABLE TO FOREIGN STATES AND INSTRUMENTALITIES OF FOREIGN STATES

- (1) Except as provided in paragraph (2), any [person](#) who is a [foreign state](#) may not recover under subsection (a) an amount in excess of the actual damages sustained by it and the cost of suit, including a reasonable attorney's fee.
- (2) Paragraph (1) shall not apply to a [foreign state](#) if—
 - (A) such [foreign state](#) would be denied, under [section 1605\(a\)\(2\) of title 28](#), immunity in a case in which the action is based upon a [commercial activity](#), or an act, that is the subject matter of its claim under this section;
 - (B) such [foreign state](#) waives all defenses based upon or arising out of its status as a [foreign state](#), to any claims brought against it in the same action;

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15 U.S. Code § 15 - Suits by persons injured

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U.S. Code [Notes](#)

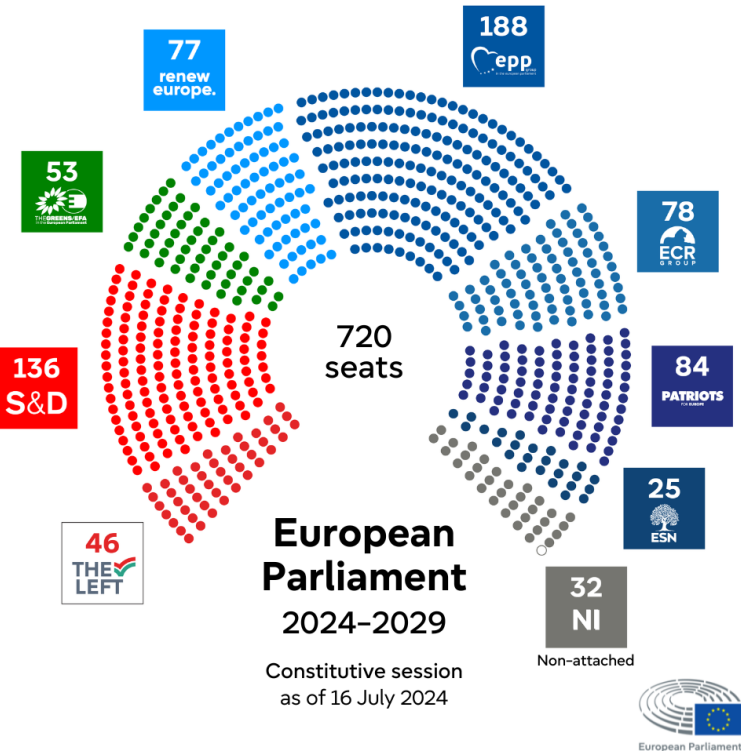
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Group	Seats
188 epp	188
77 renew europe.	77
53 THE GREENS	53
136 S&D	136
46 THE LEFT	46
78 ECR	78
84 PATRIOTS	84
25 ESN	25
32 NI	32
Non-attached	Non-attached

European Parliament 2024-2029
Constitutive session as of 16 July 2024

Corinna Coupette · TCS for Law

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What is law? The *lay* perspective

What is law? The *lay* perspective

Common Associations with Law

Institutions

Parliaments

Agencies

Courts

Companies

What is law? The *lay* perspective

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Procedures

Law-Making

Law Enforcement

Judicial Proceedings

Negotiations

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Effects

Definitions

Prohibitions

Obligations

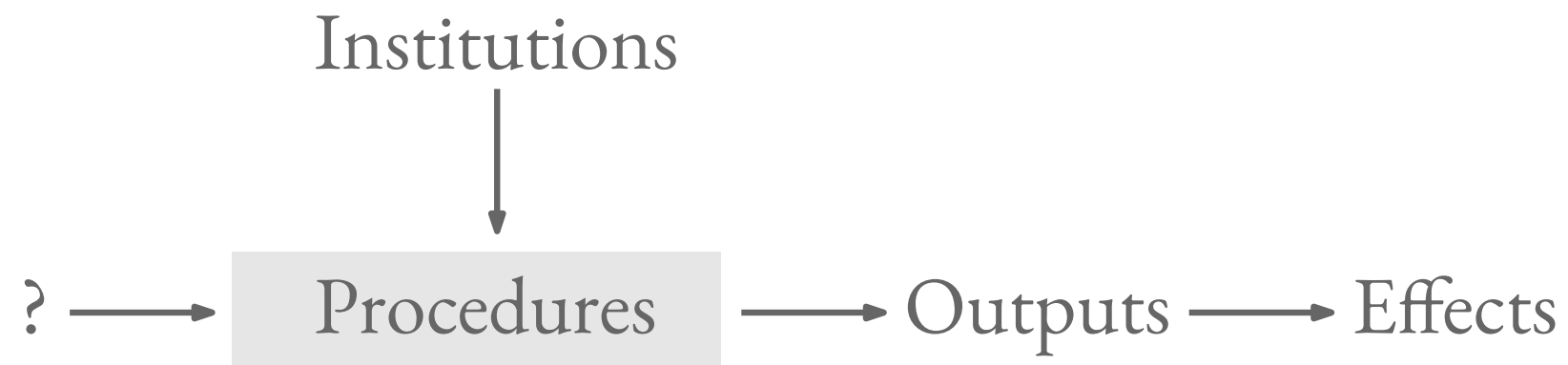
Rights

What is law? The *lay* perspective

Common Associations with Law

Institutions	Procedures	Outputs	Effects
Parliaments	Law-Making	Statutes	Definitions
Agencies	Law Enforcement	Fines	Prohibitions
Courts	Judicial Proceedings	Judgments	Obligations
Companies	Negotiations	Contracts	Rights

Plausible Perceived Computational Model

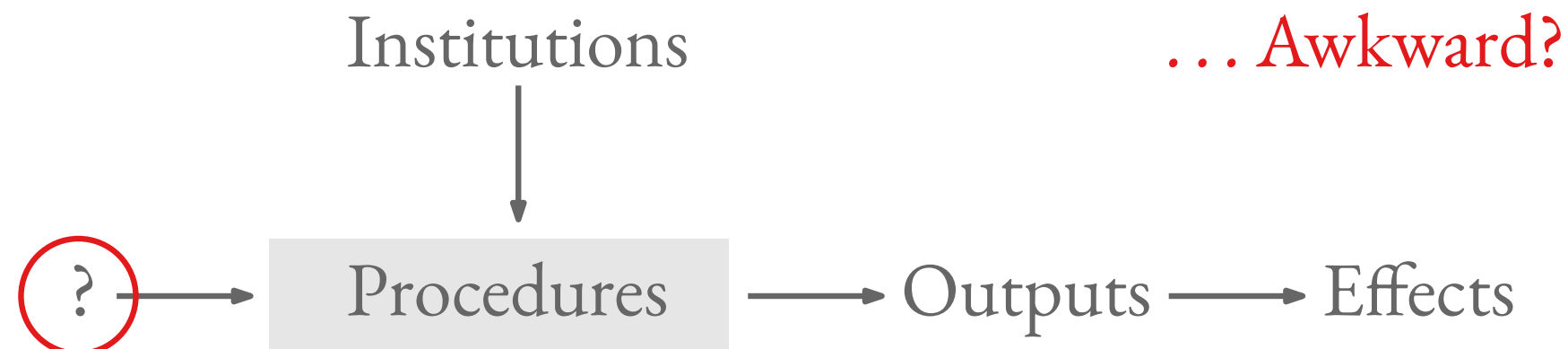


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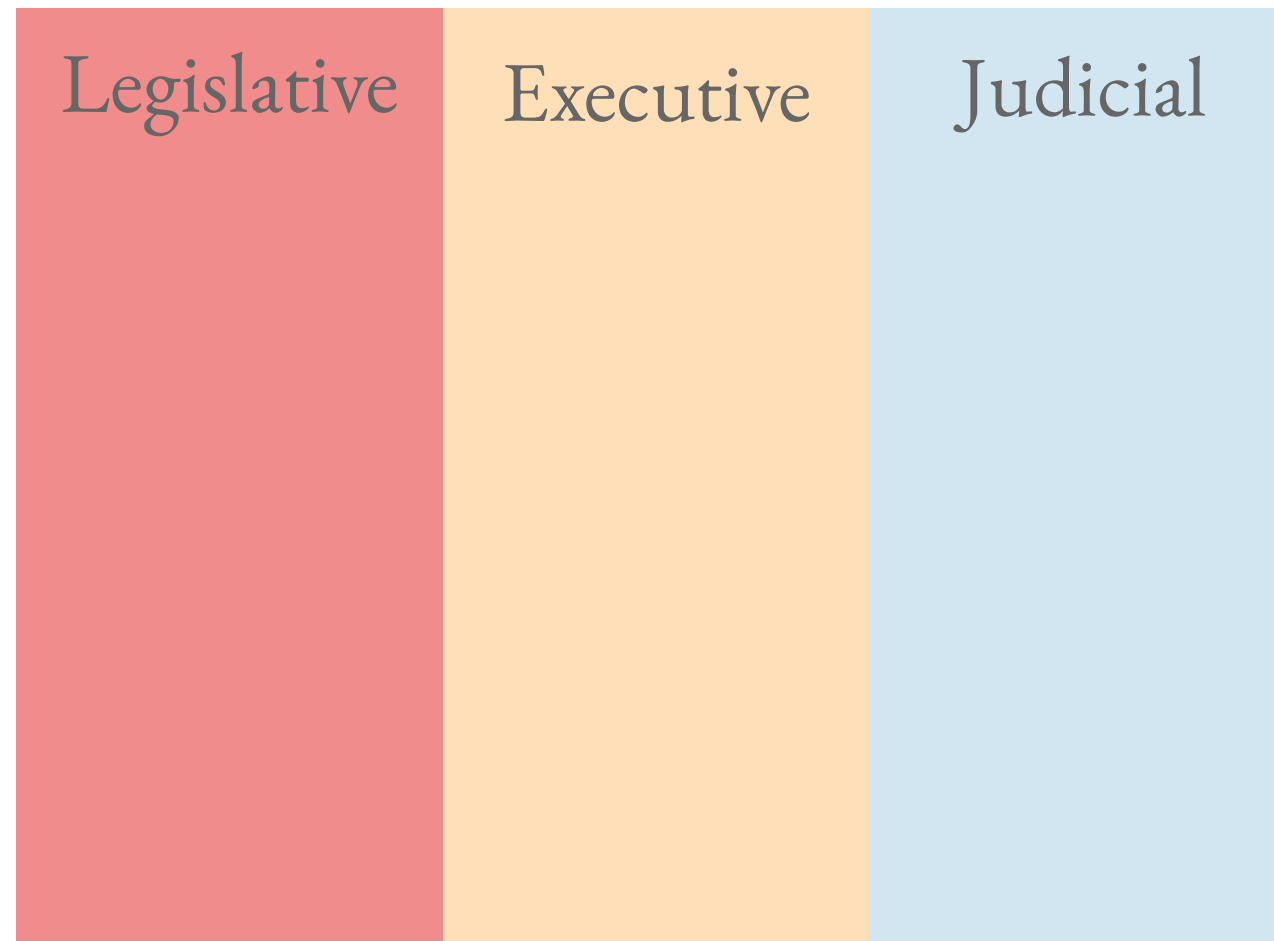
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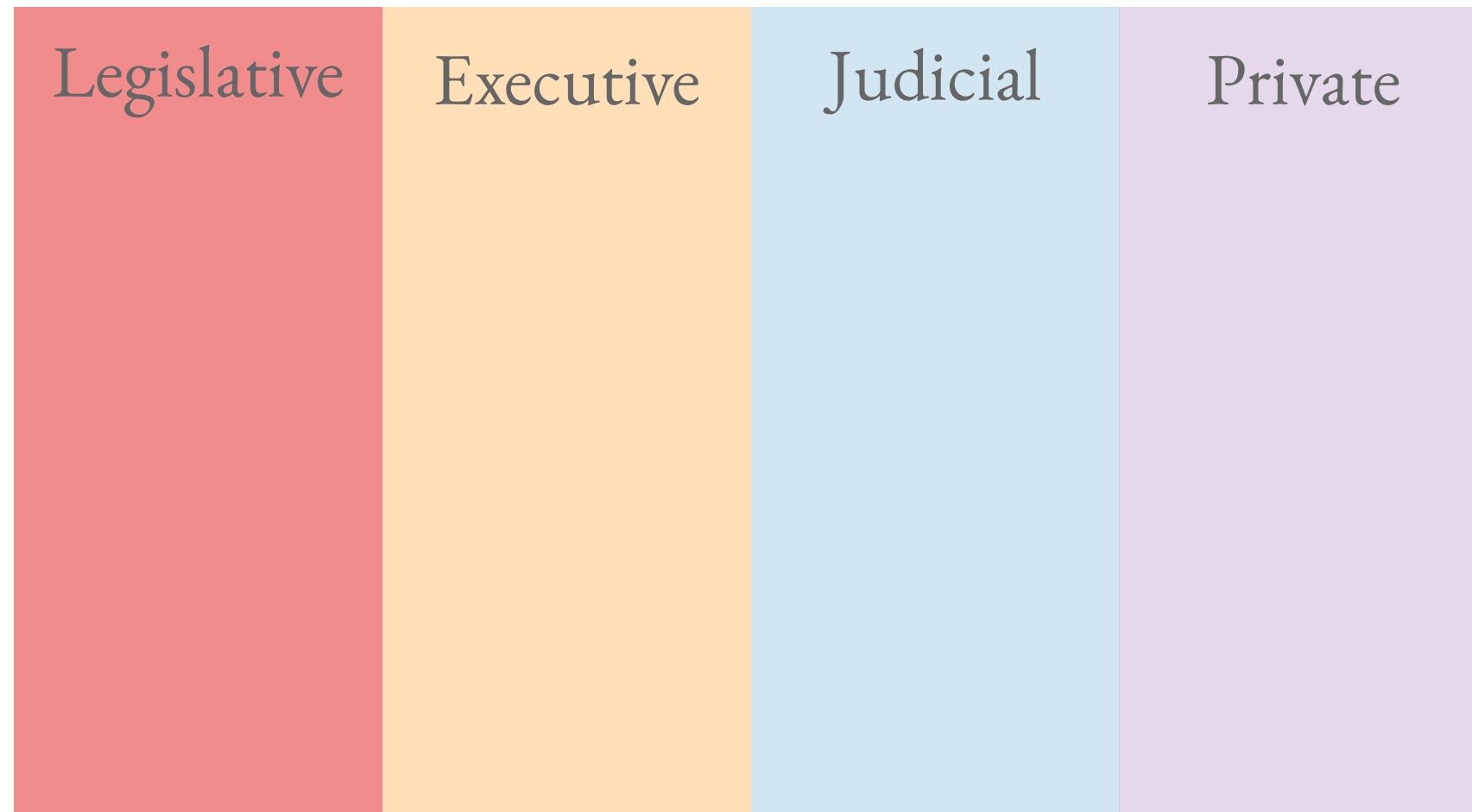


What is law? The *systemic* perspective

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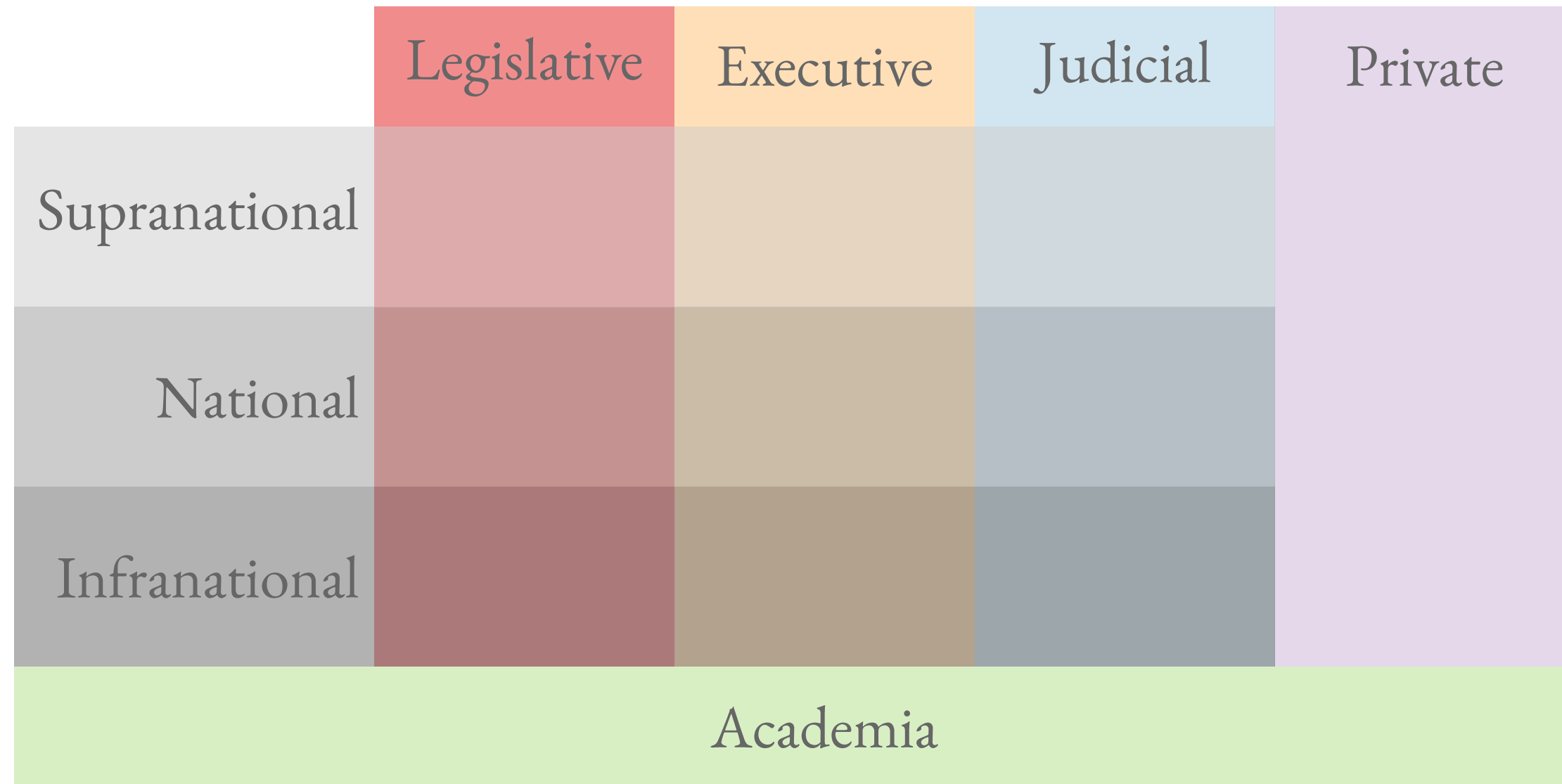
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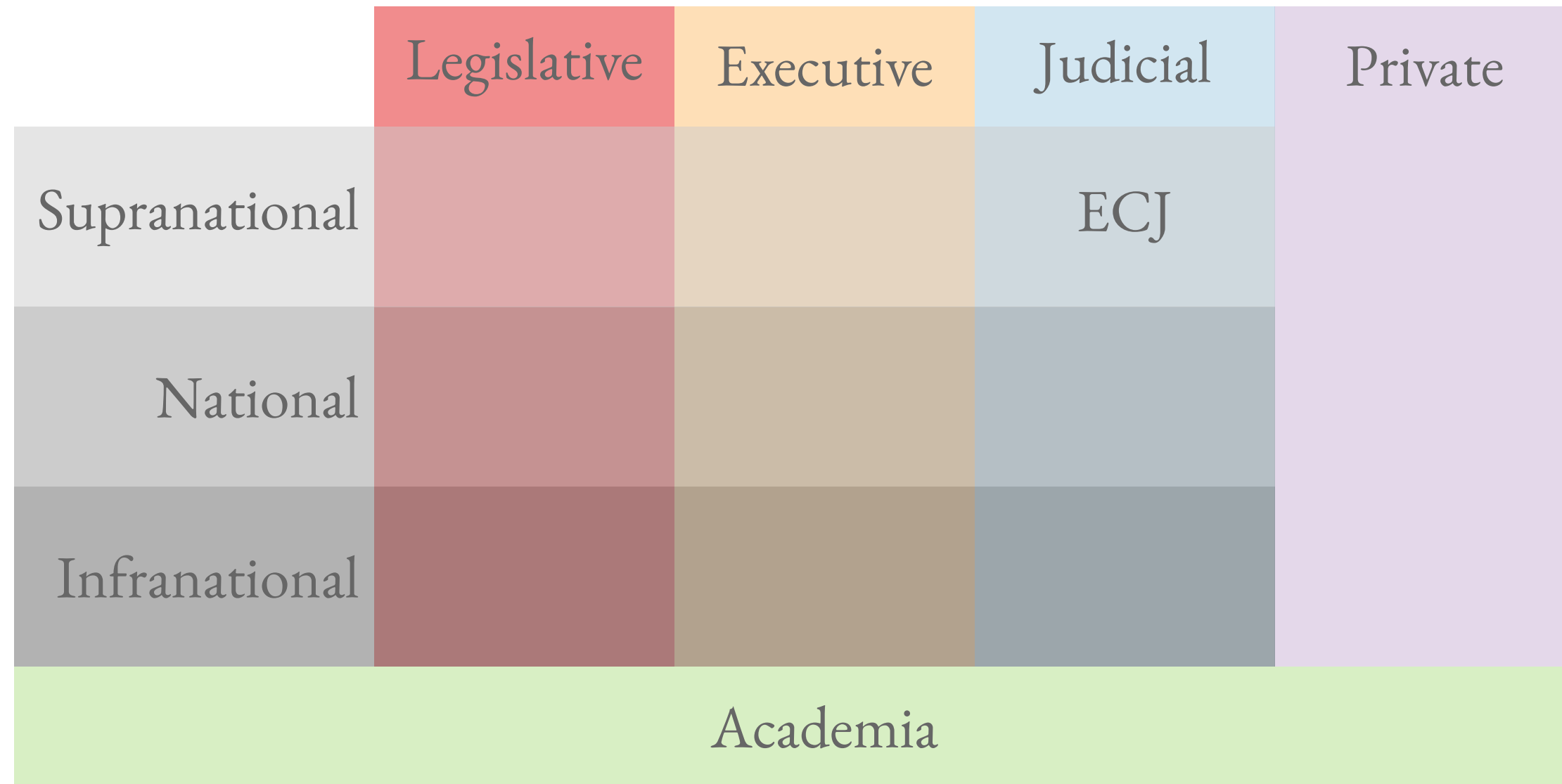
What is law? The *systemic* perspective

	Legislative	Executive	Judicial	Private
Supranational				
National				
Infranational				

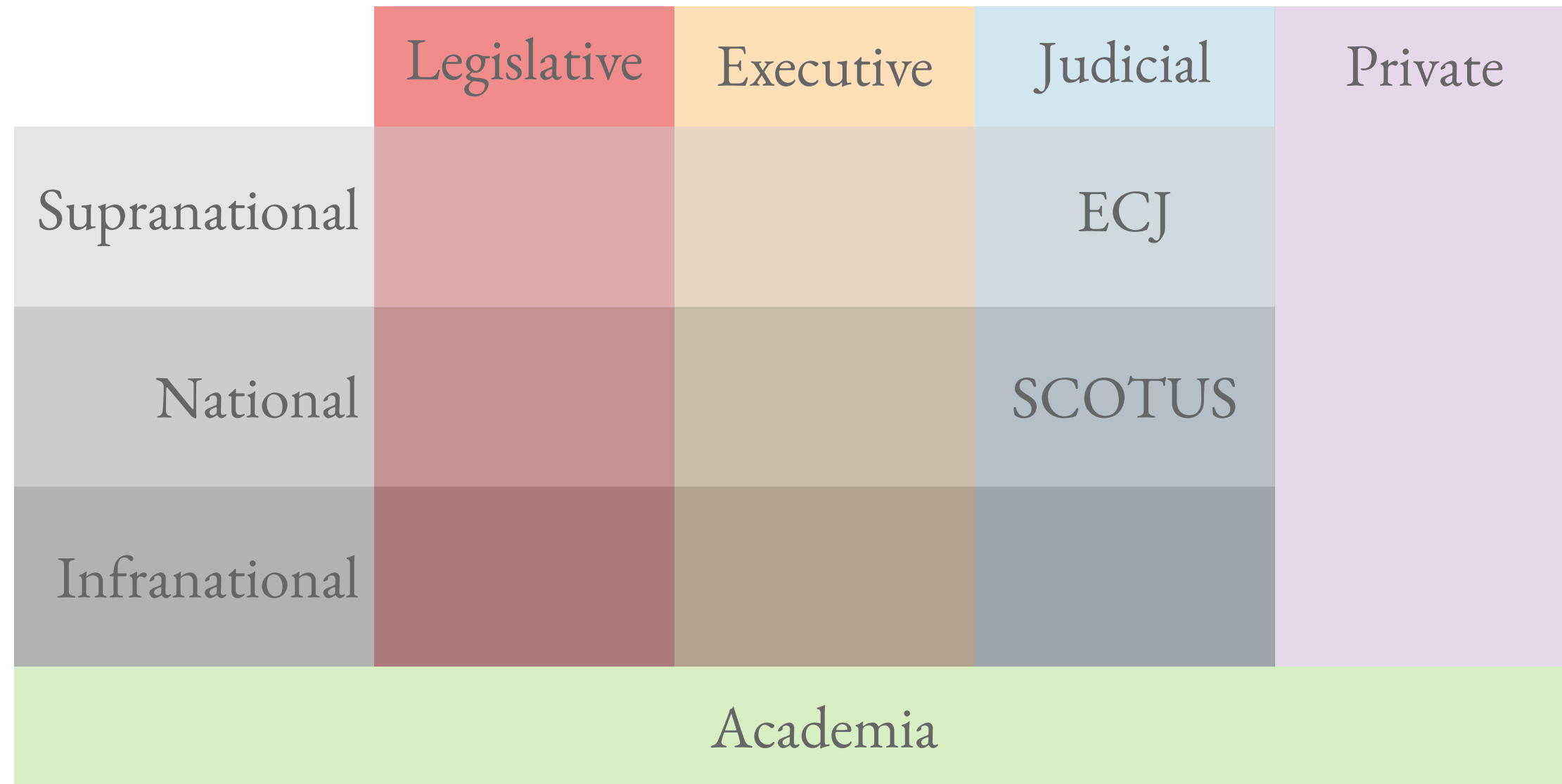
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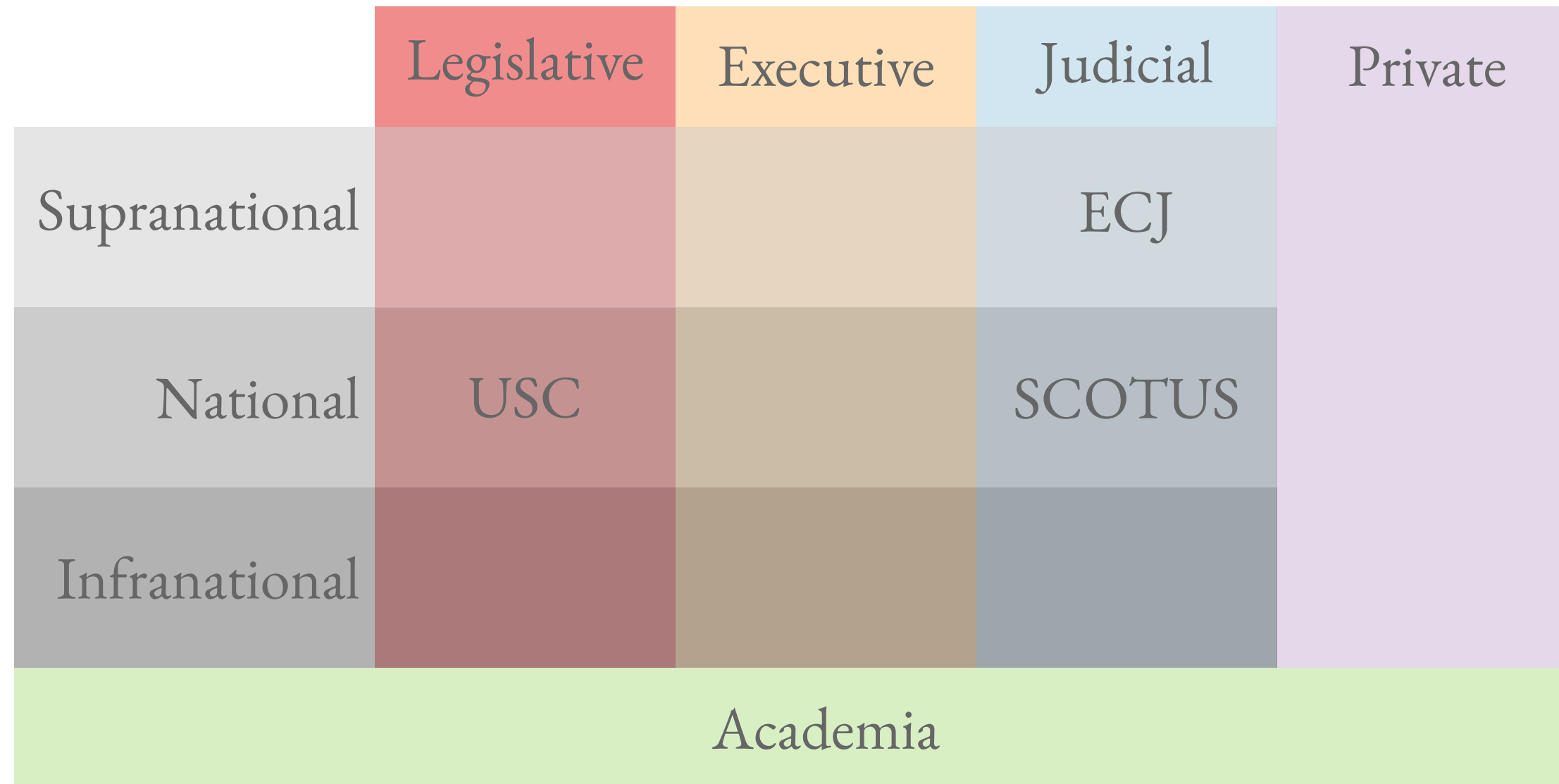
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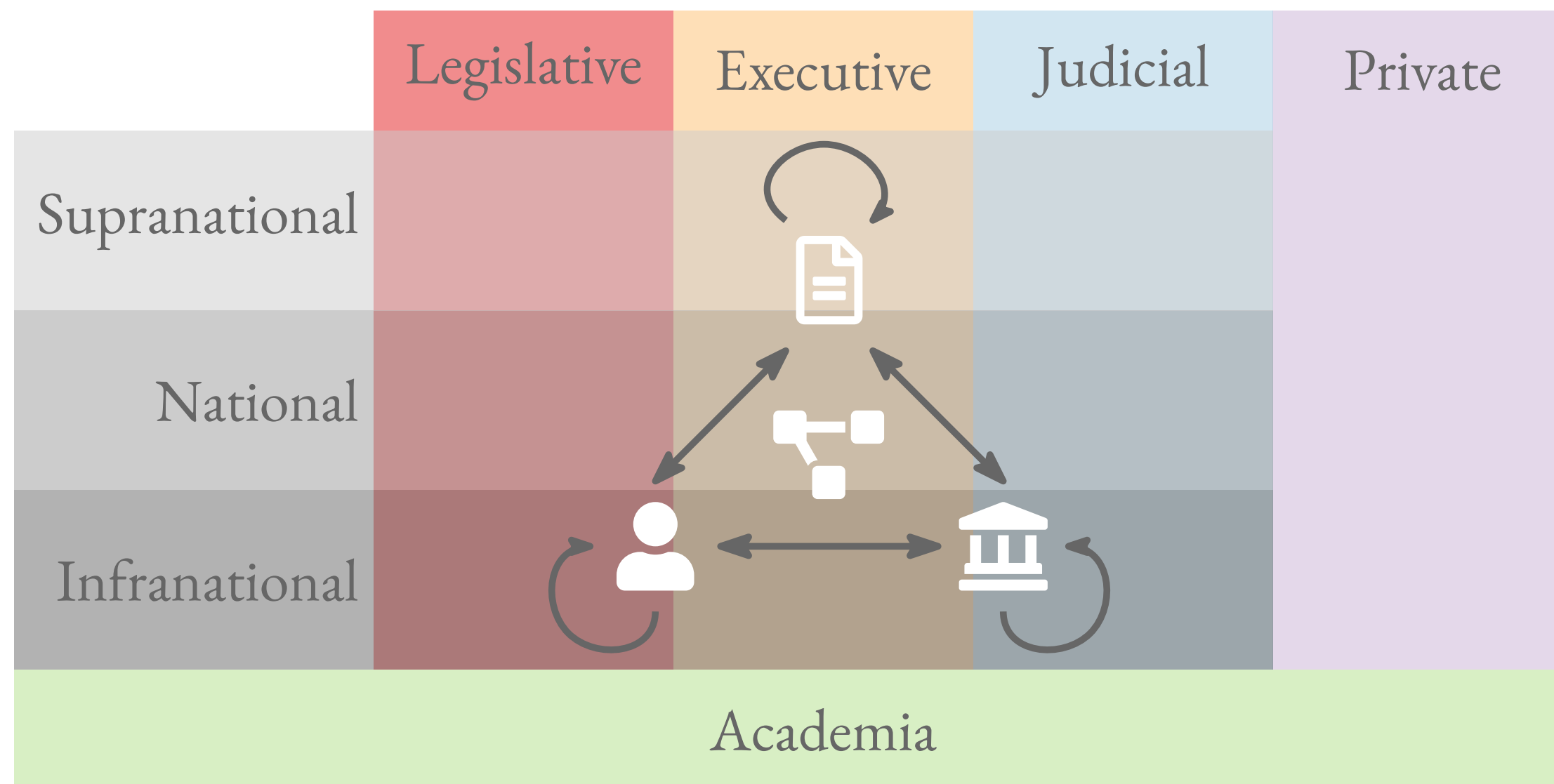
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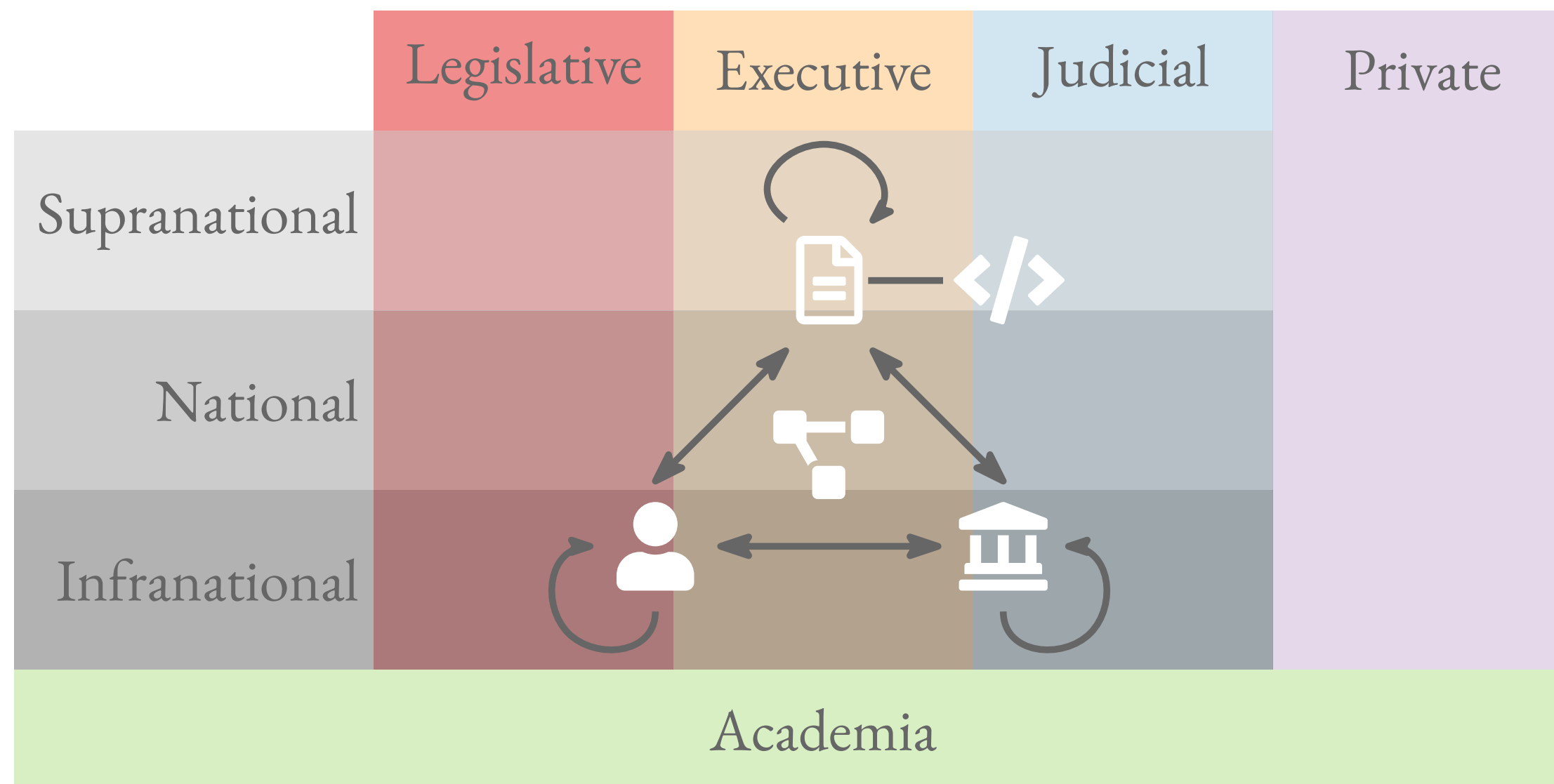
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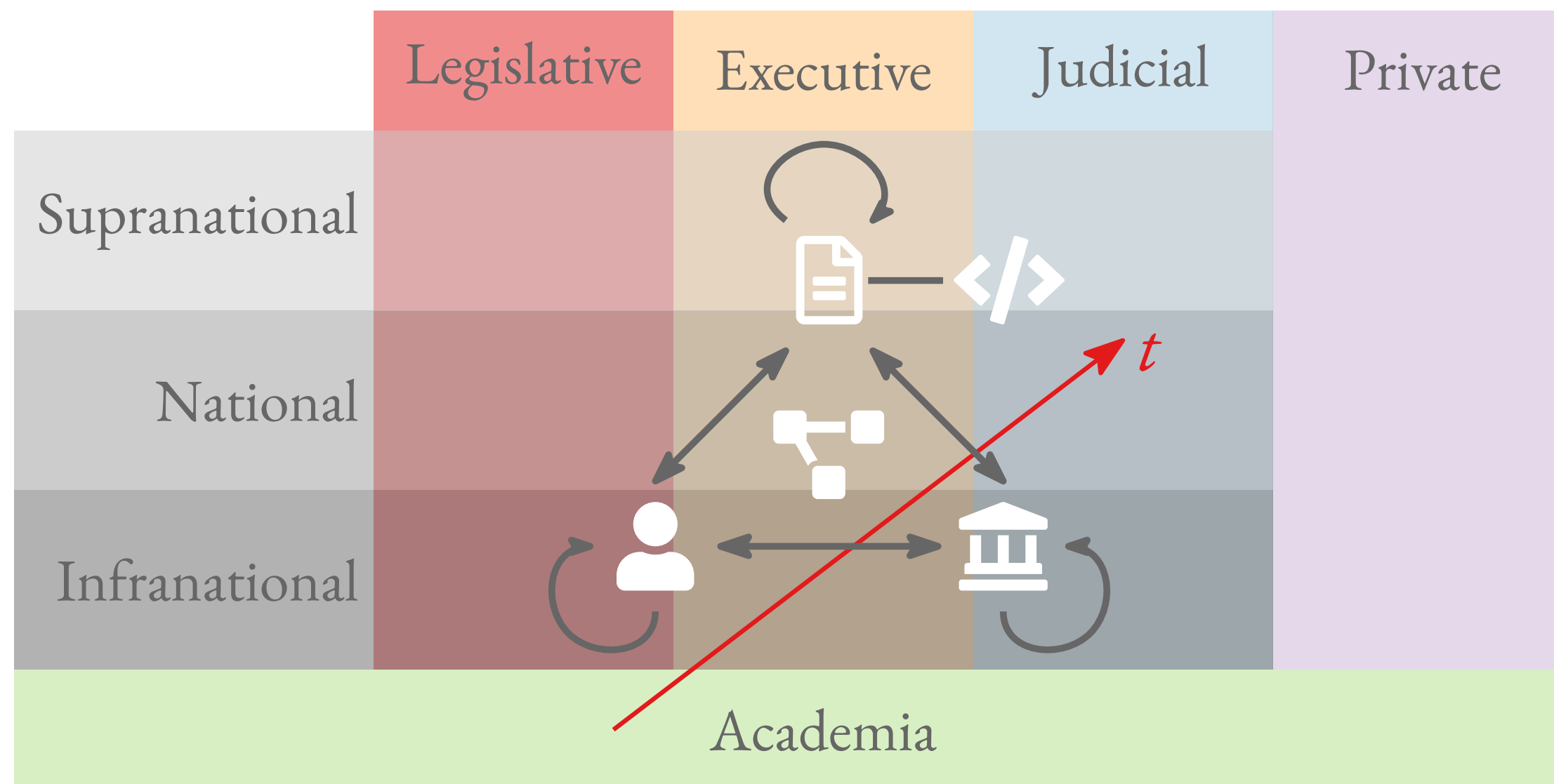
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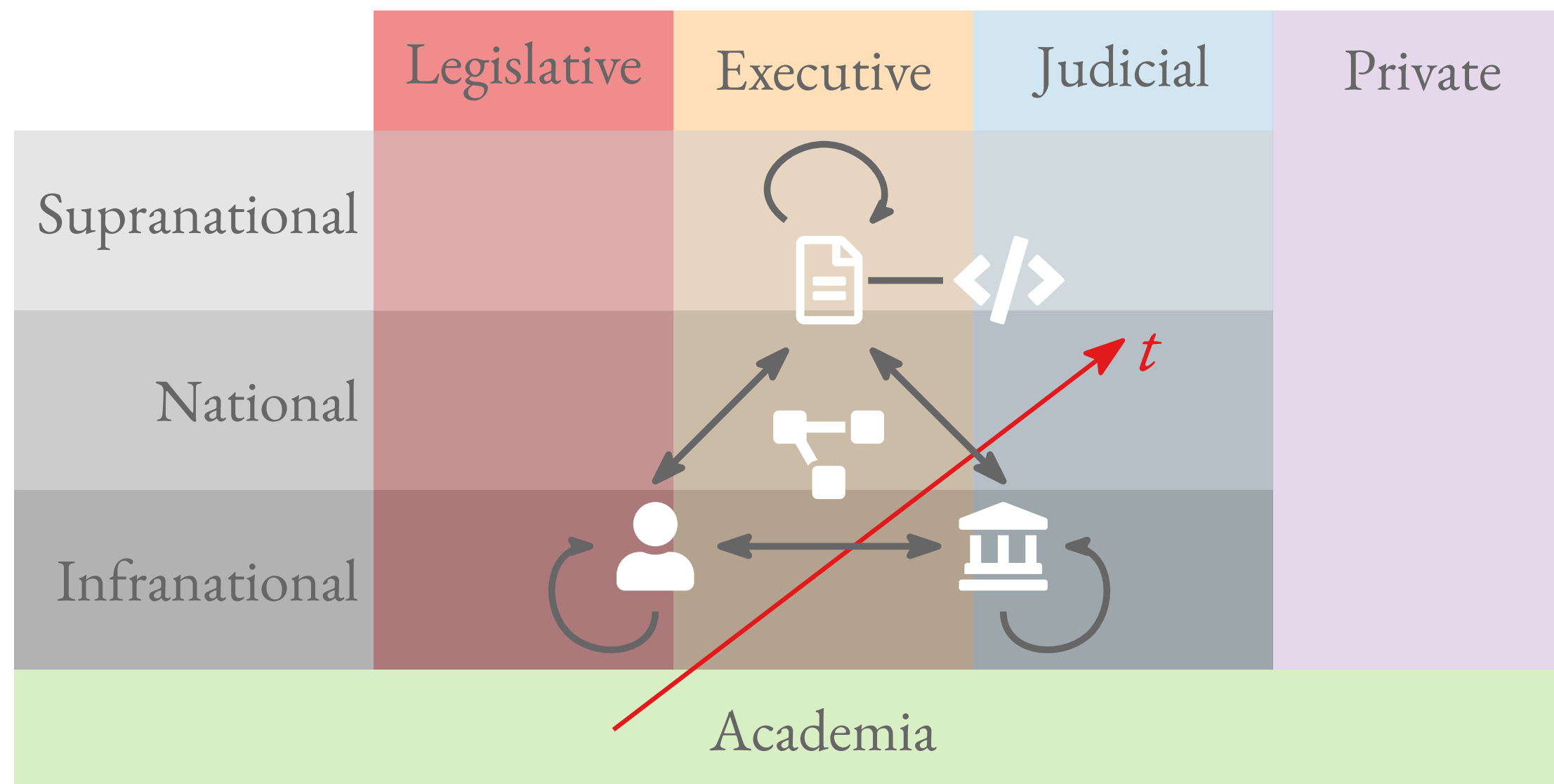
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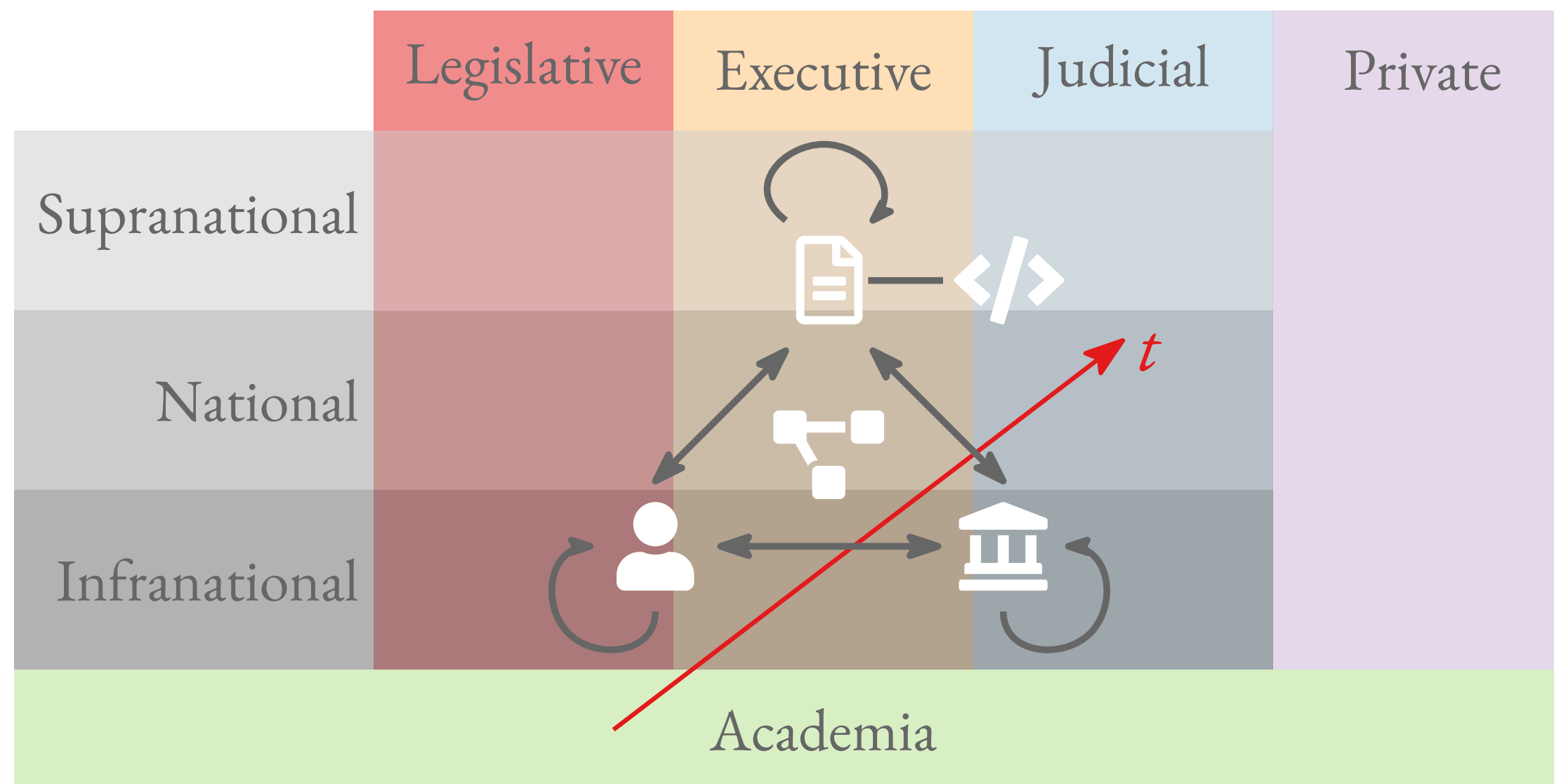


What is law? The *systemic* perspective



What is going on here, computationally?

What is law? The *systemic* perspective



What is going on here, computationally? Seems like a TCS question...

... Wait, what about *legal* theory?

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Prominent perspectives

- Law as a reflection of “natural” values

- Law as a system of rules

- Law as a societal practice

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“Flavor”

Law as a reflection of “natural” values	<i>normative</i>
Law as a system of rules	<i>analytical</i>
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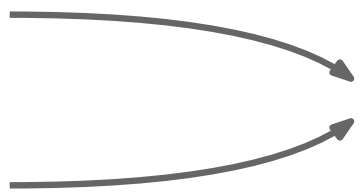
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Law as a reflection of “natural” values *normative*

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 ... *computational?*

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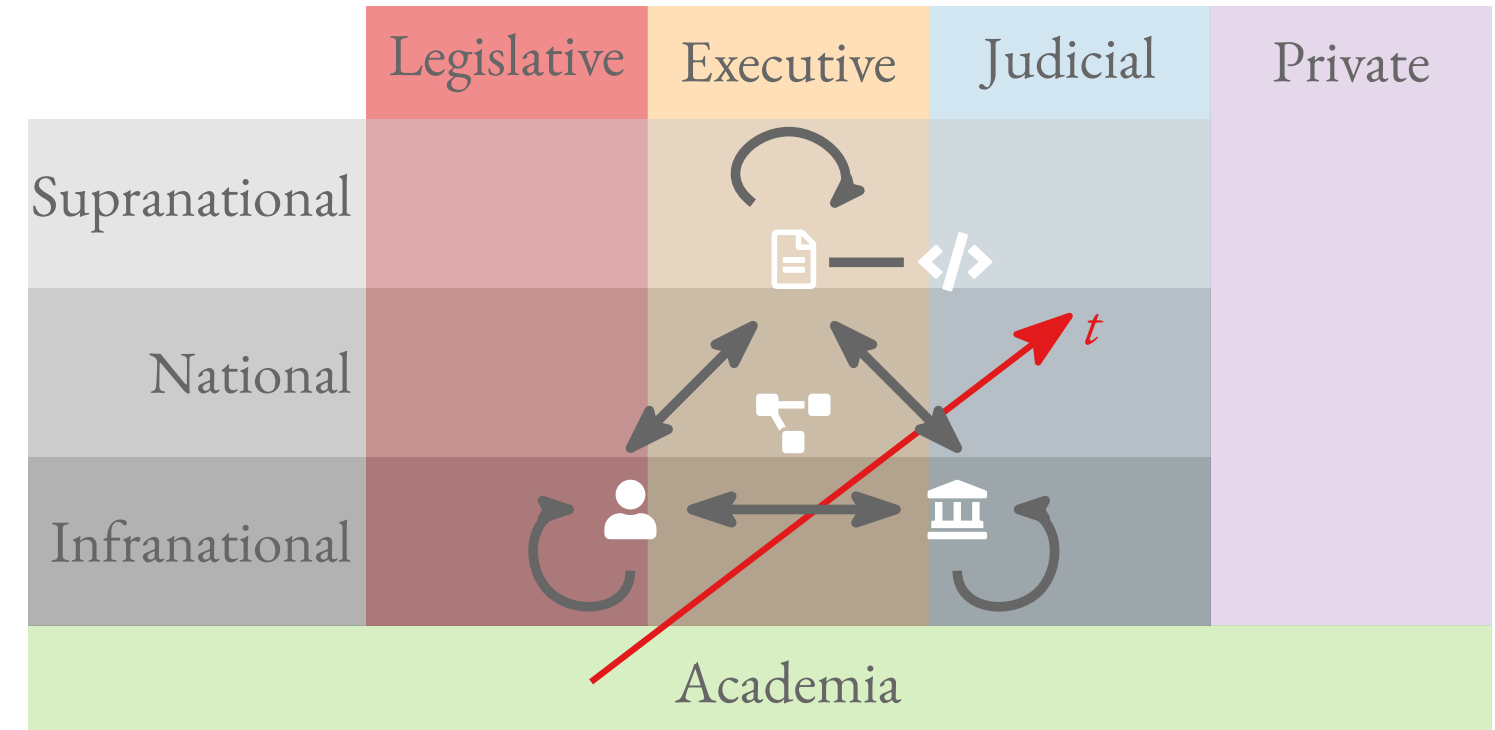
Law as a societal practice

empirical

Some inspiration,
some shared terminology,
very different perspective

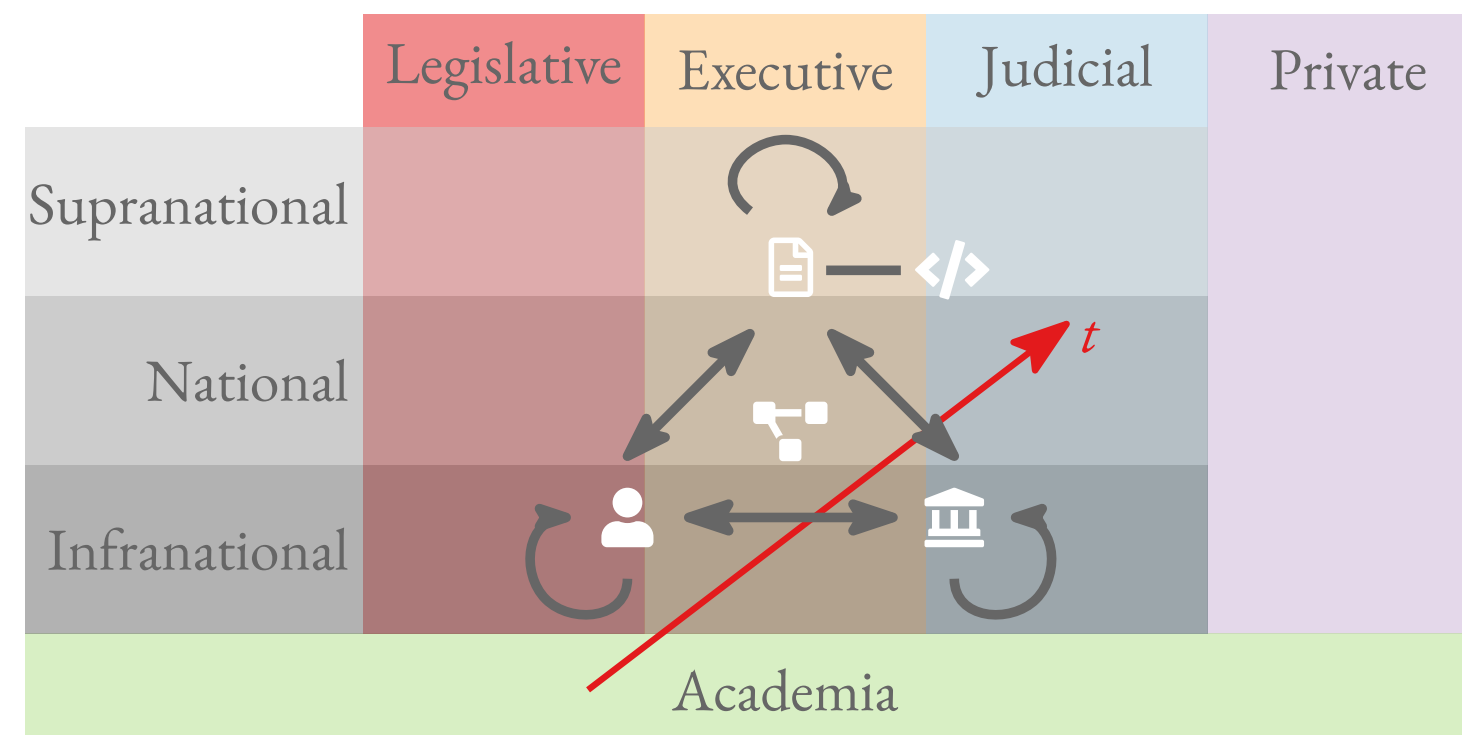


Guiding questions for *Computational Legal Theory* (CLT)



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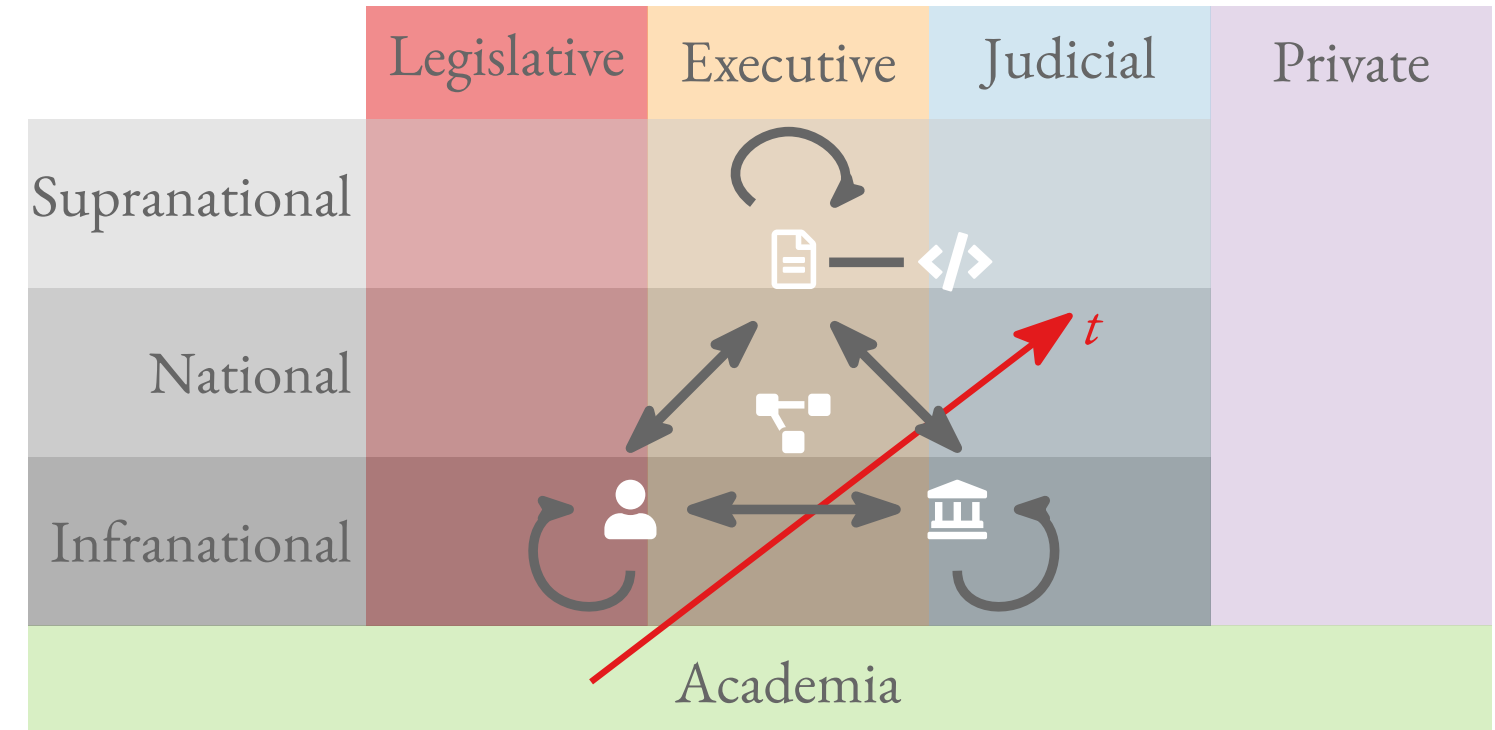
What *is* legal computation?



Guiding questions for *Computational Legal Theory* (CLT)

What *is* legal computation?

That is: *What* and *how* do legal systems compute?

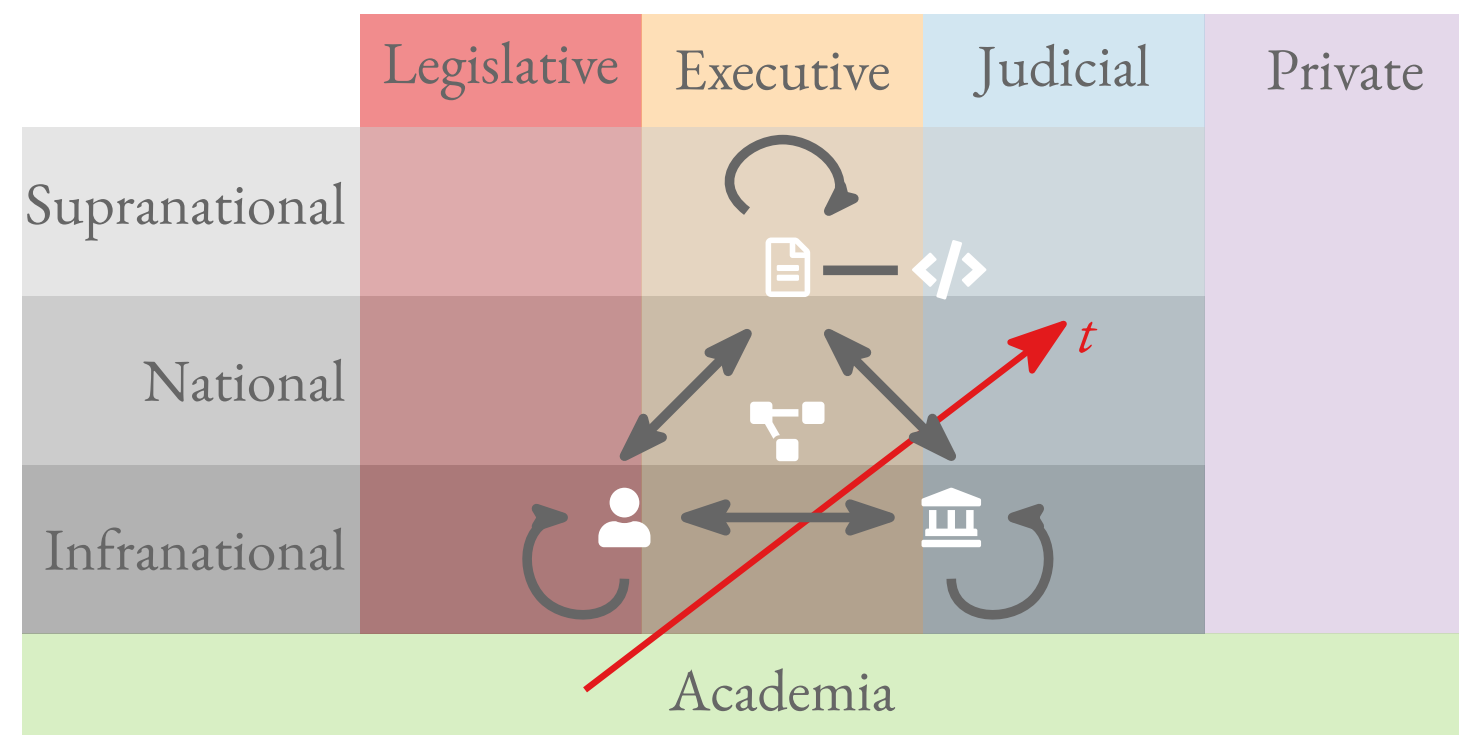


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Starting point: What is an *adequate computational model*?



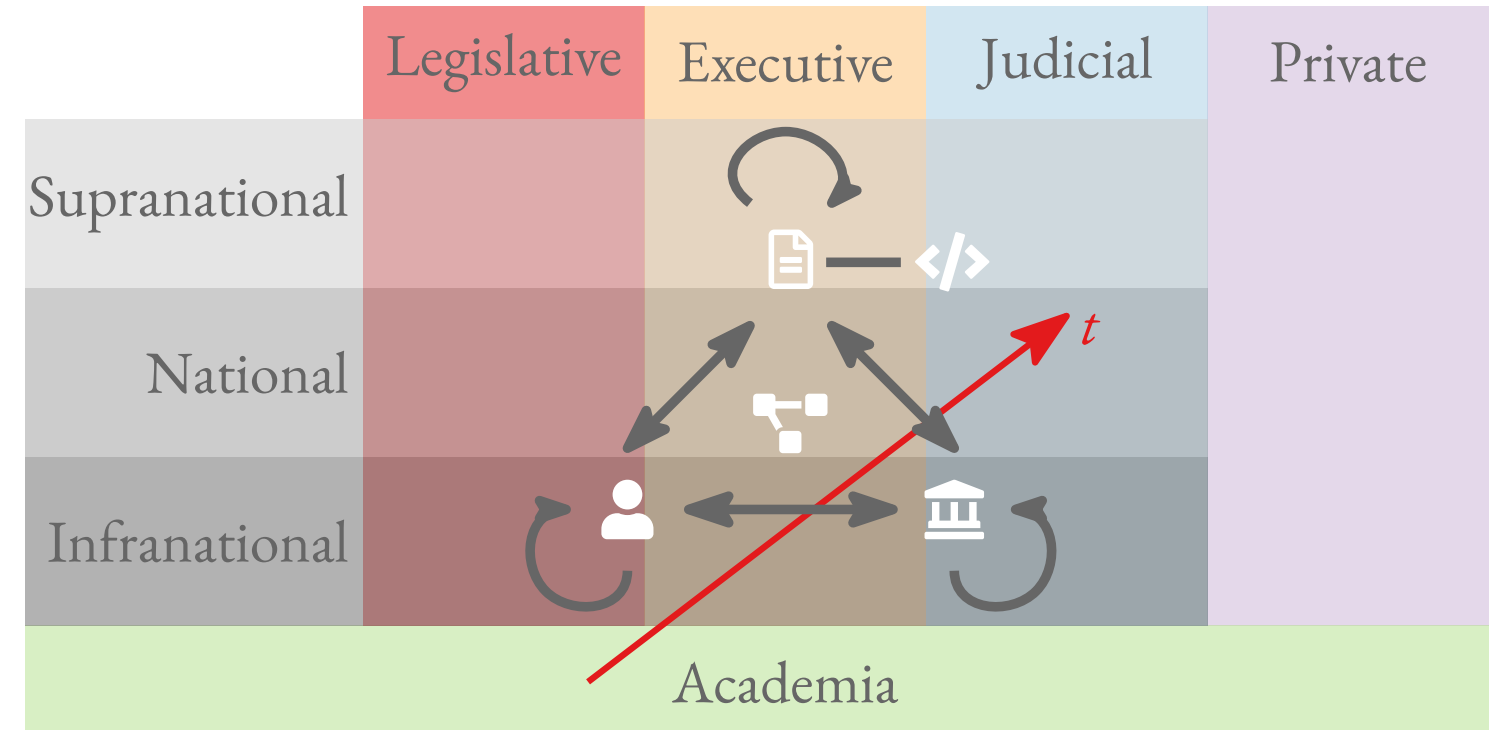
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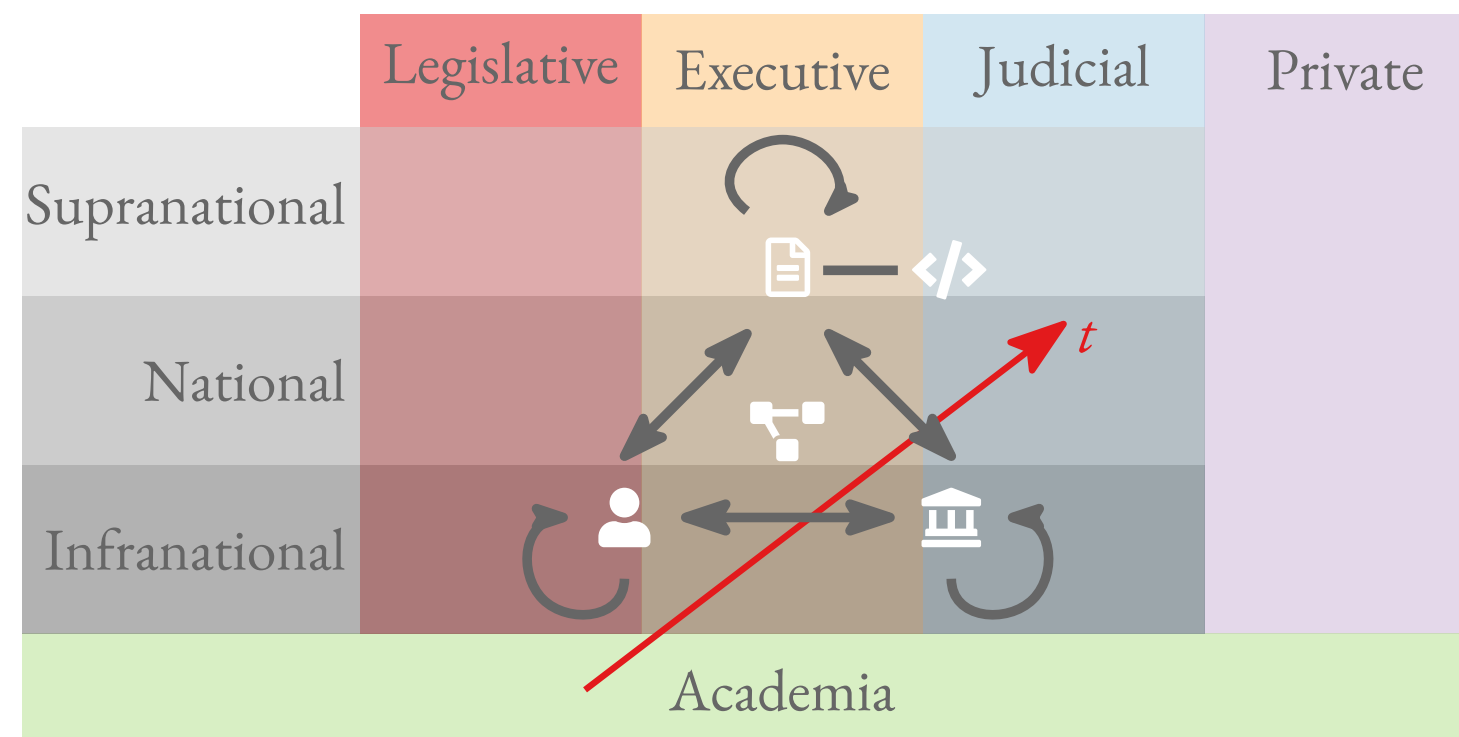
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Current strategy: Start by repurposing and adapting existing concepts from TCS, informed by knowledge of legal systems



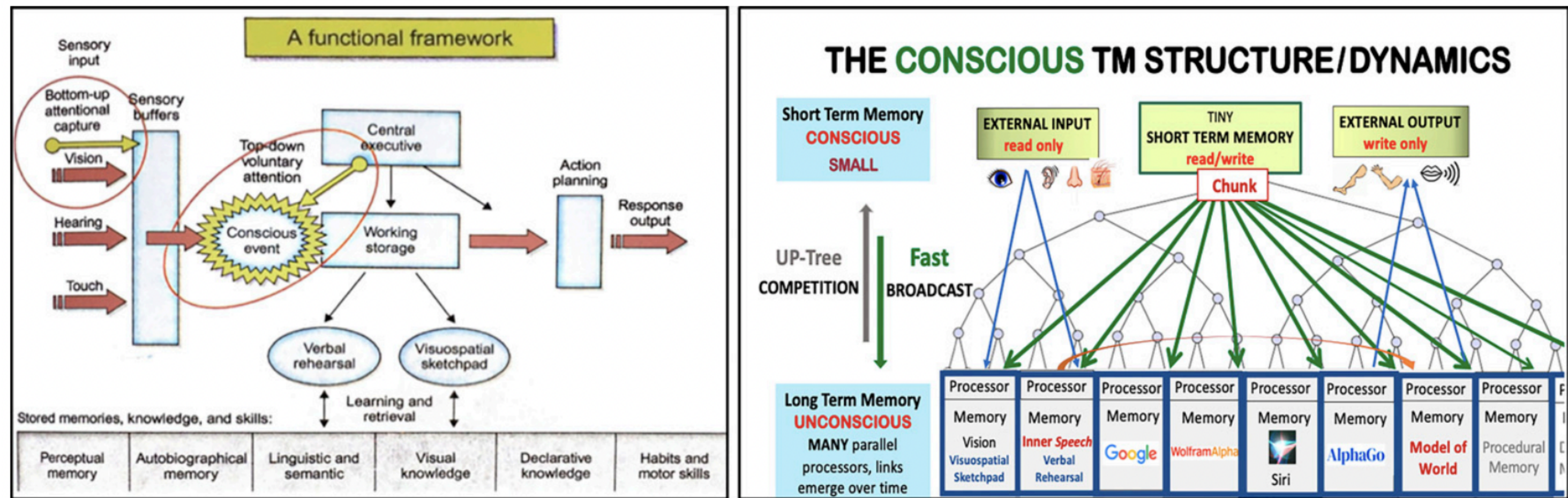
Meta-Inspiration: The Conscious Turing Machine

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A TCS approach to consciousness, informed by cognitive neuroscience

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A TCS approach to consciousness, informed by cognitive neuroscience

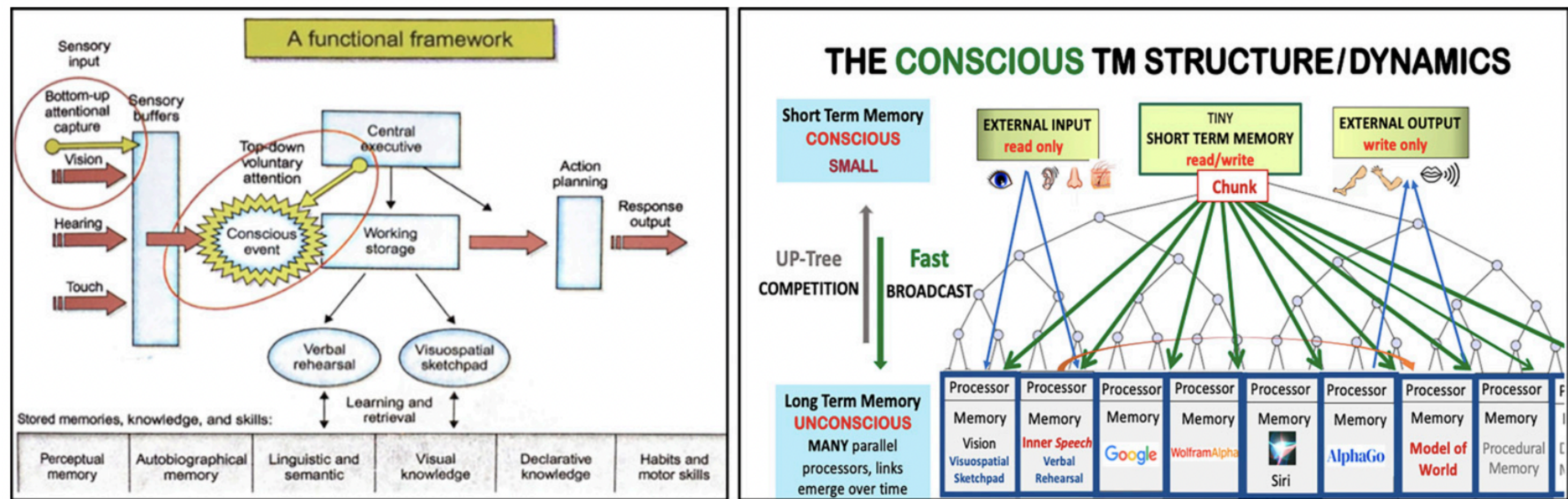


Global Workspace Theory

Conscious Turing Machine

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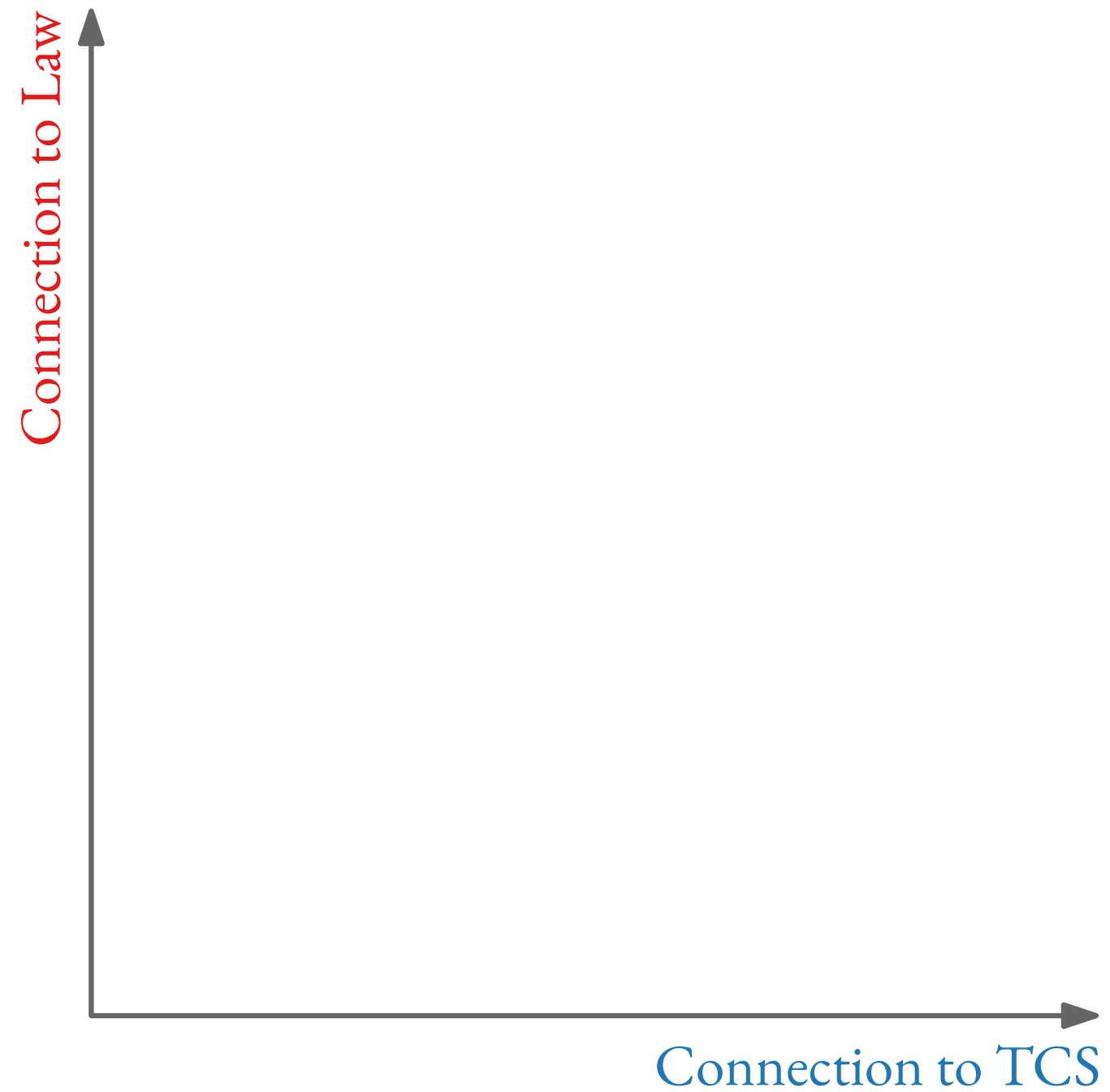
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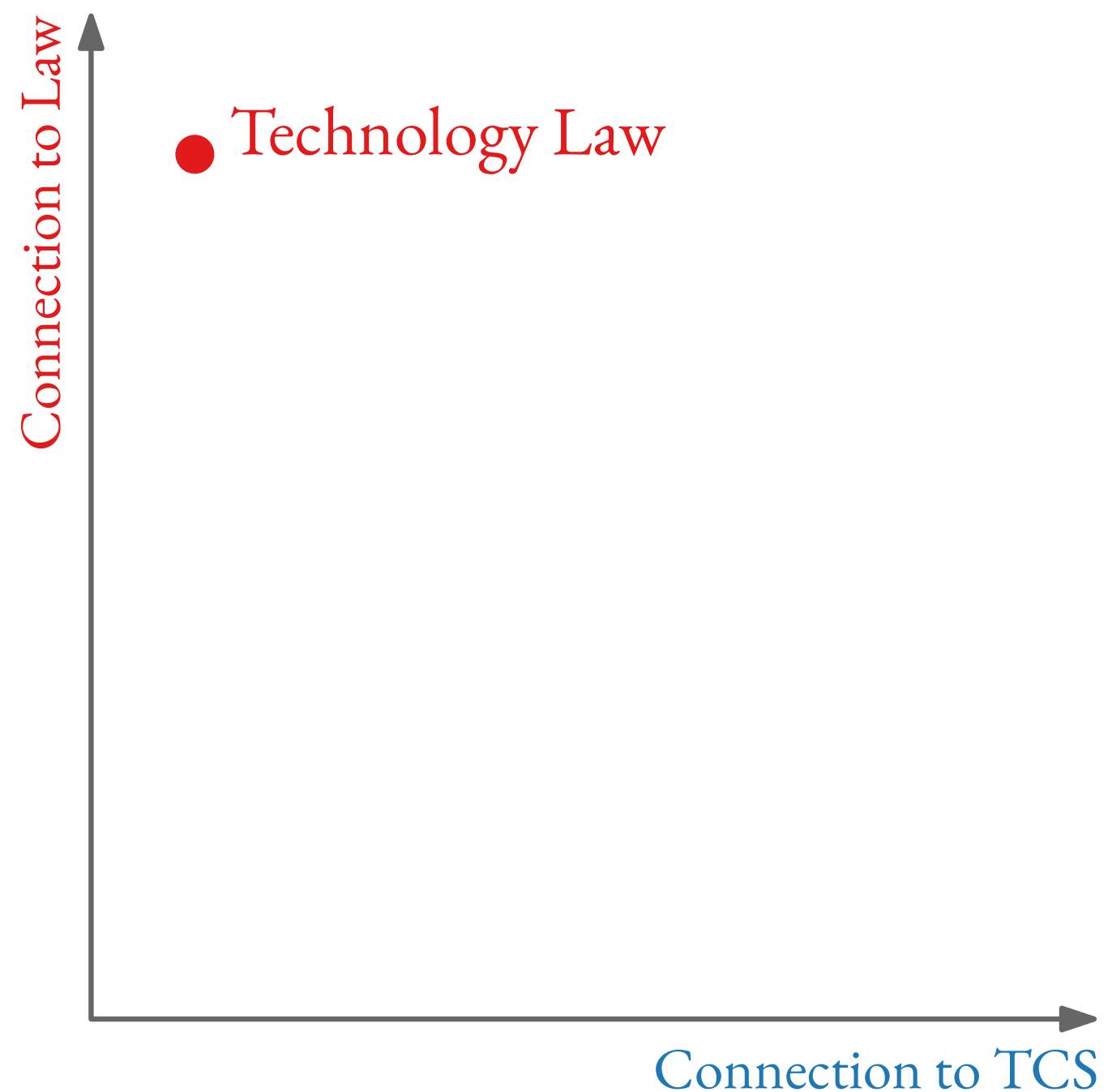
Meta-message (to me): Funky models are allowed

Connecting TCS and law: *Status quo and limitations*

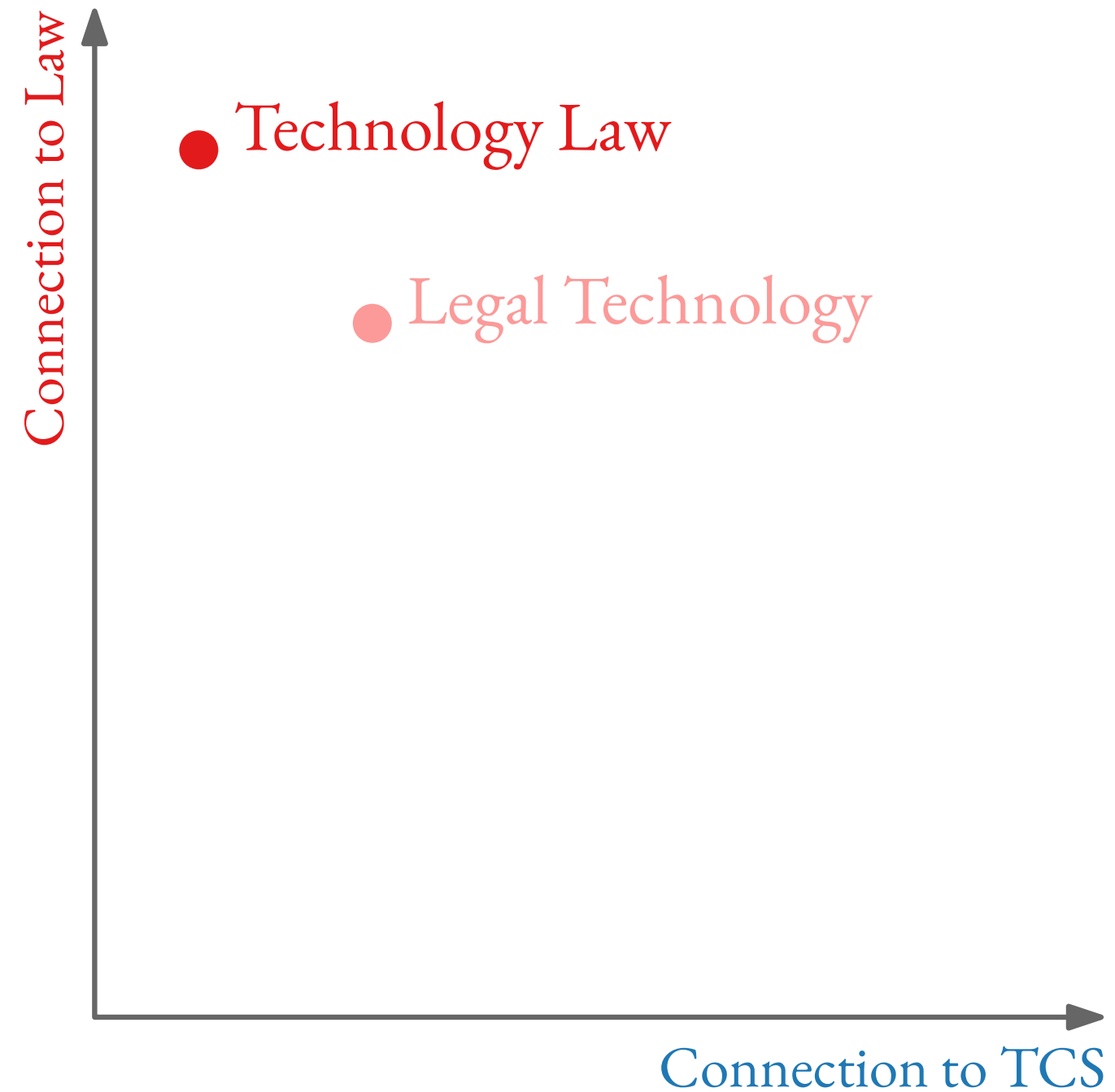
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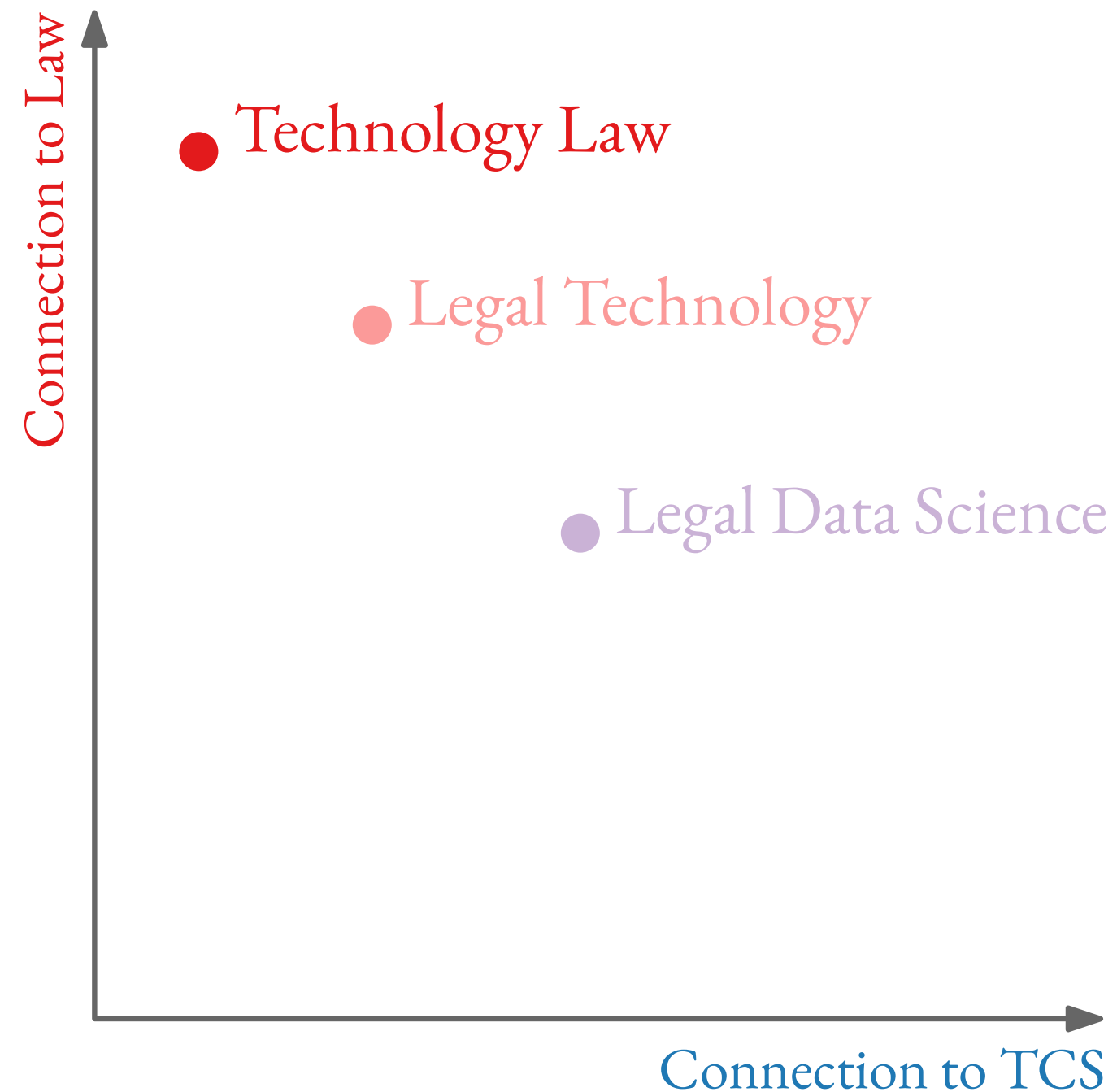
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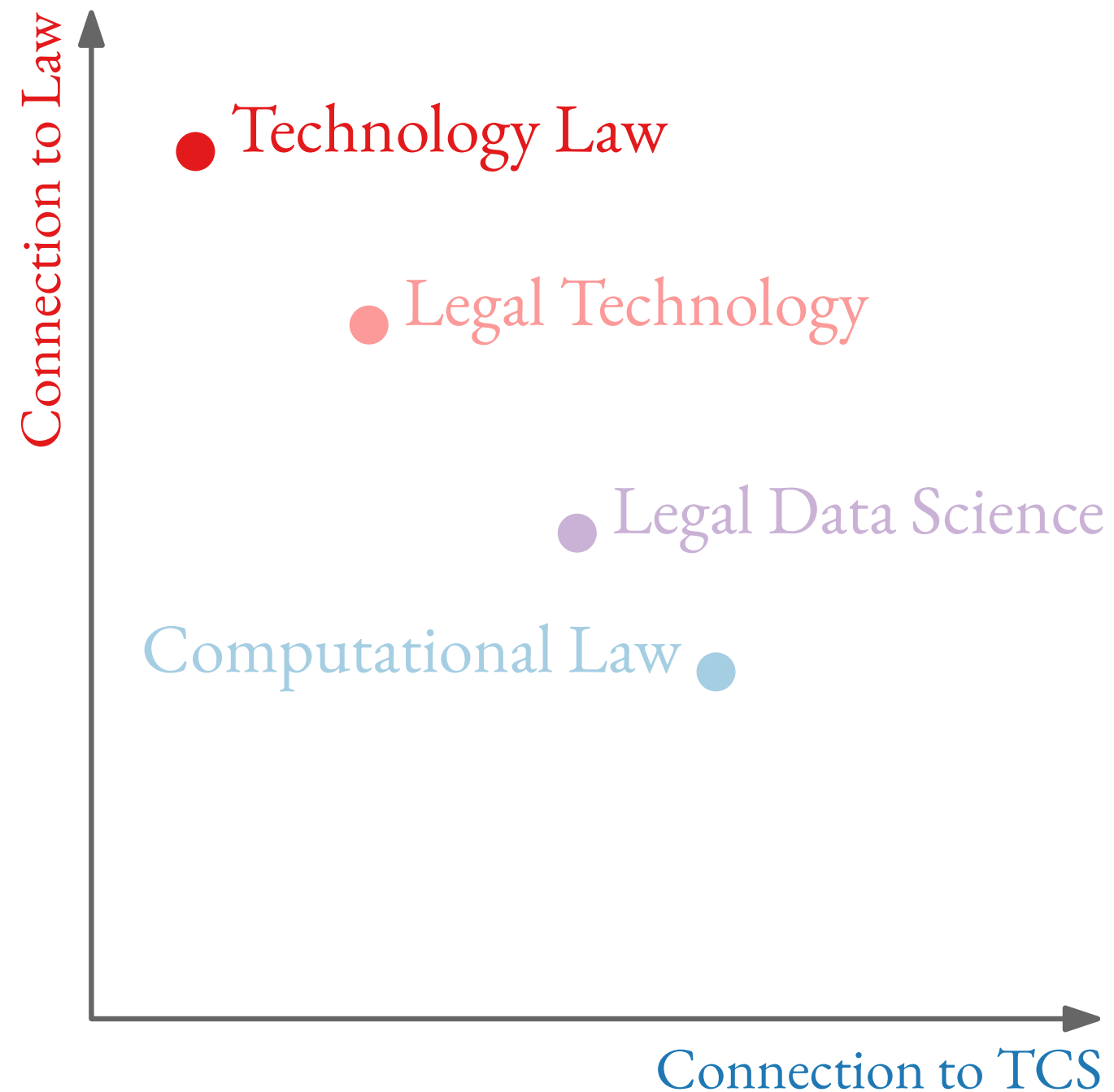
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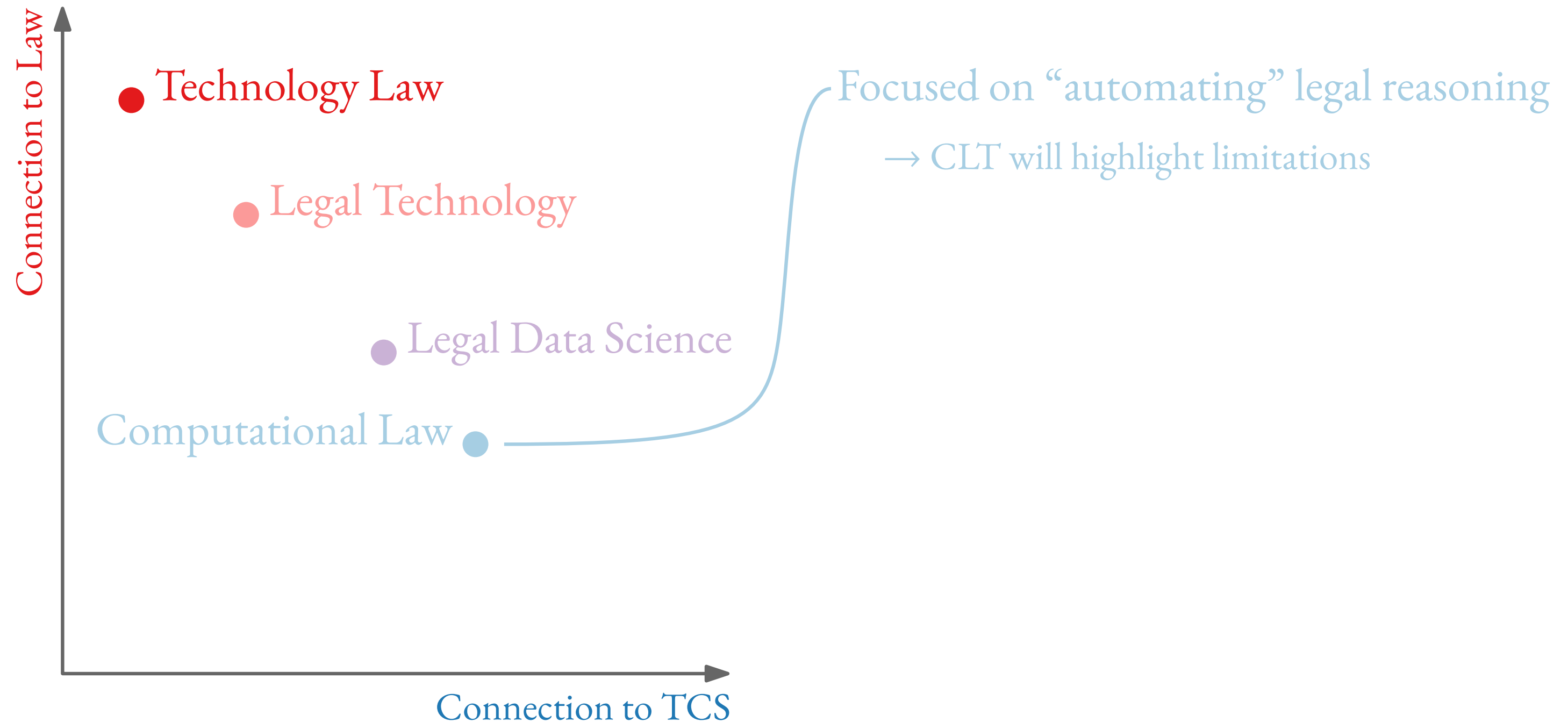
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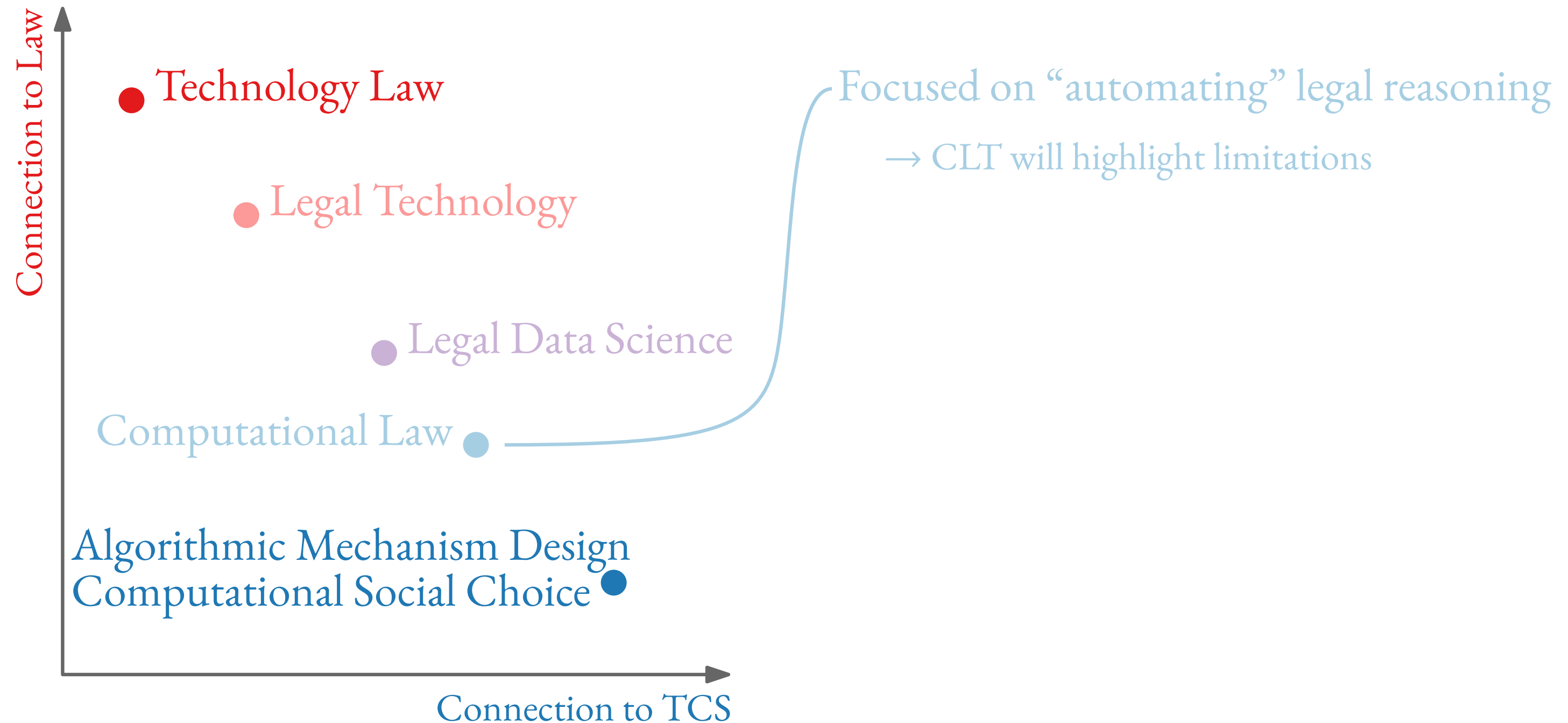
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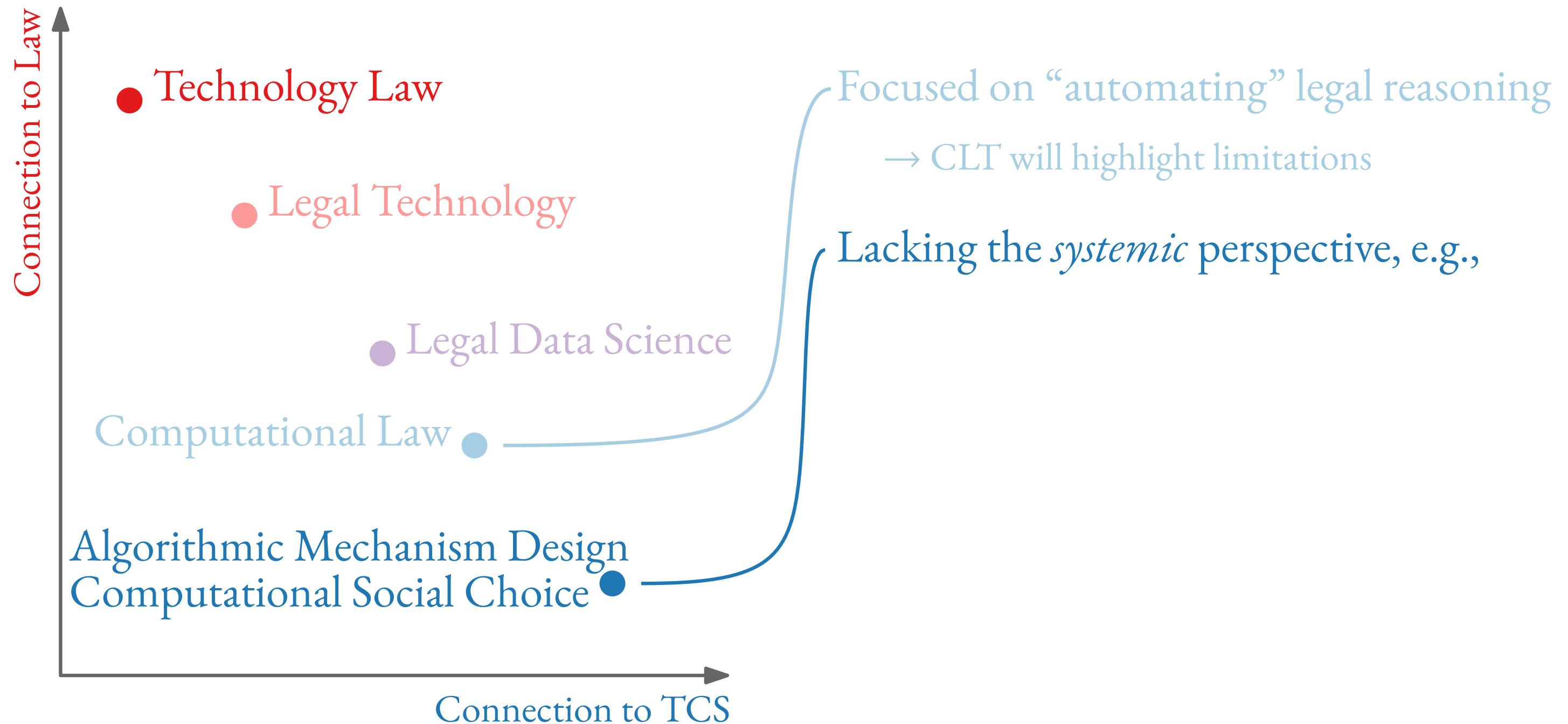
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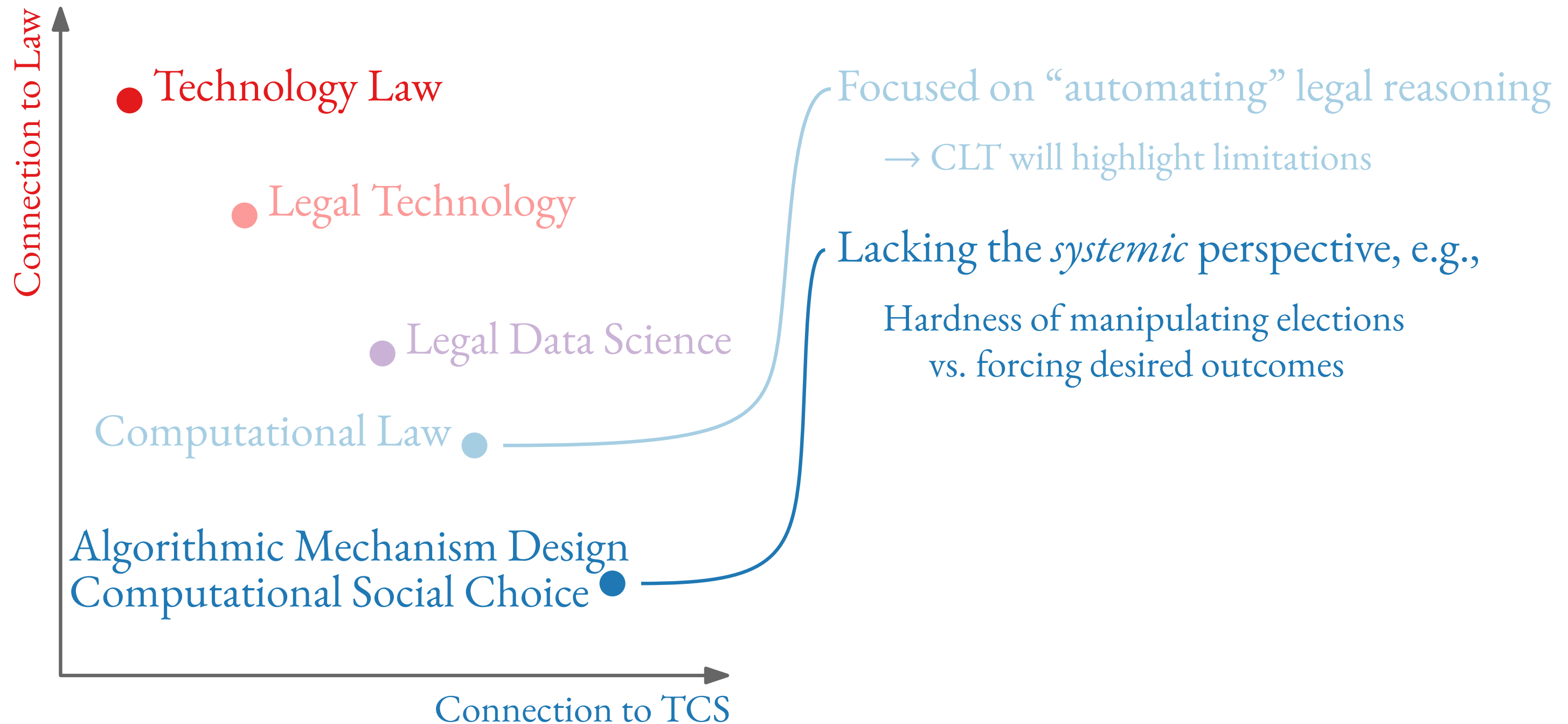
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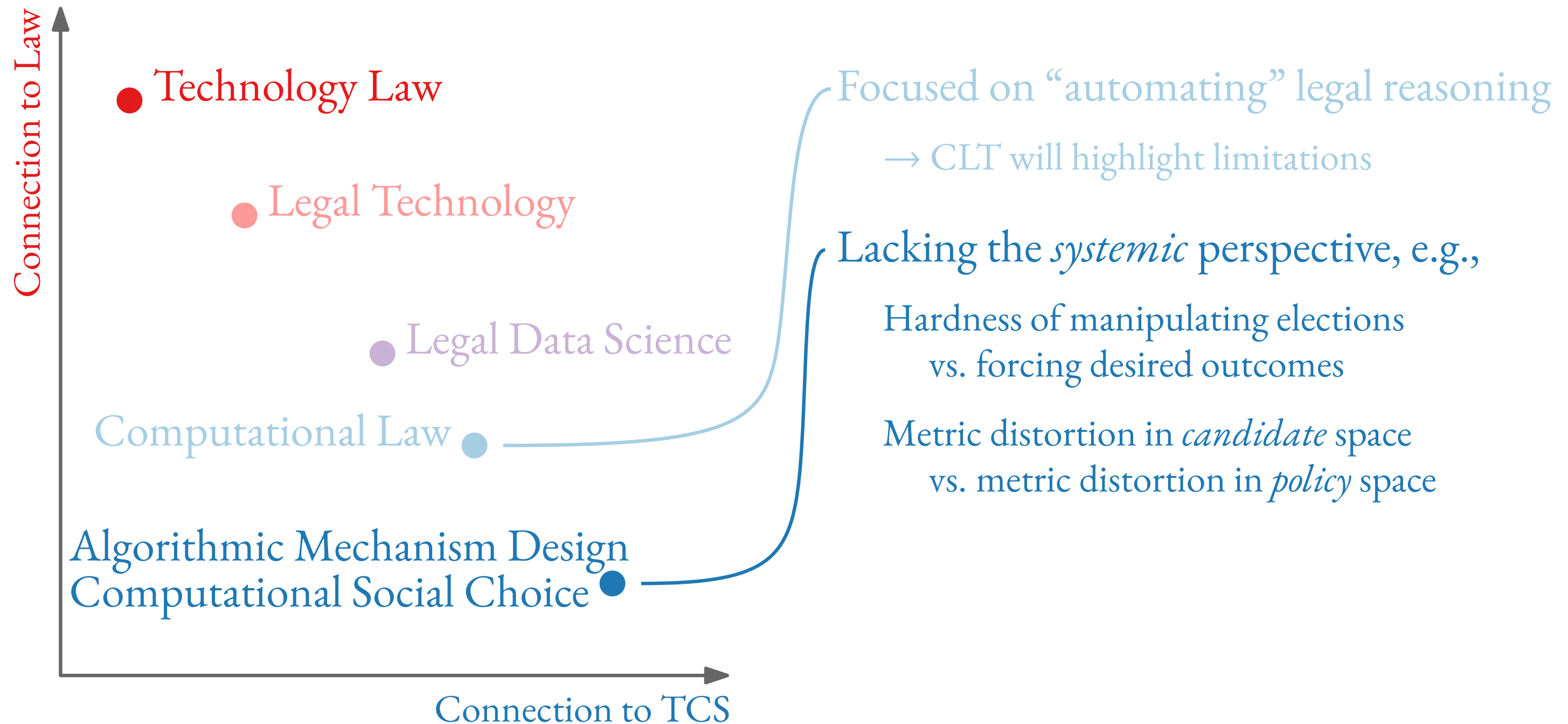
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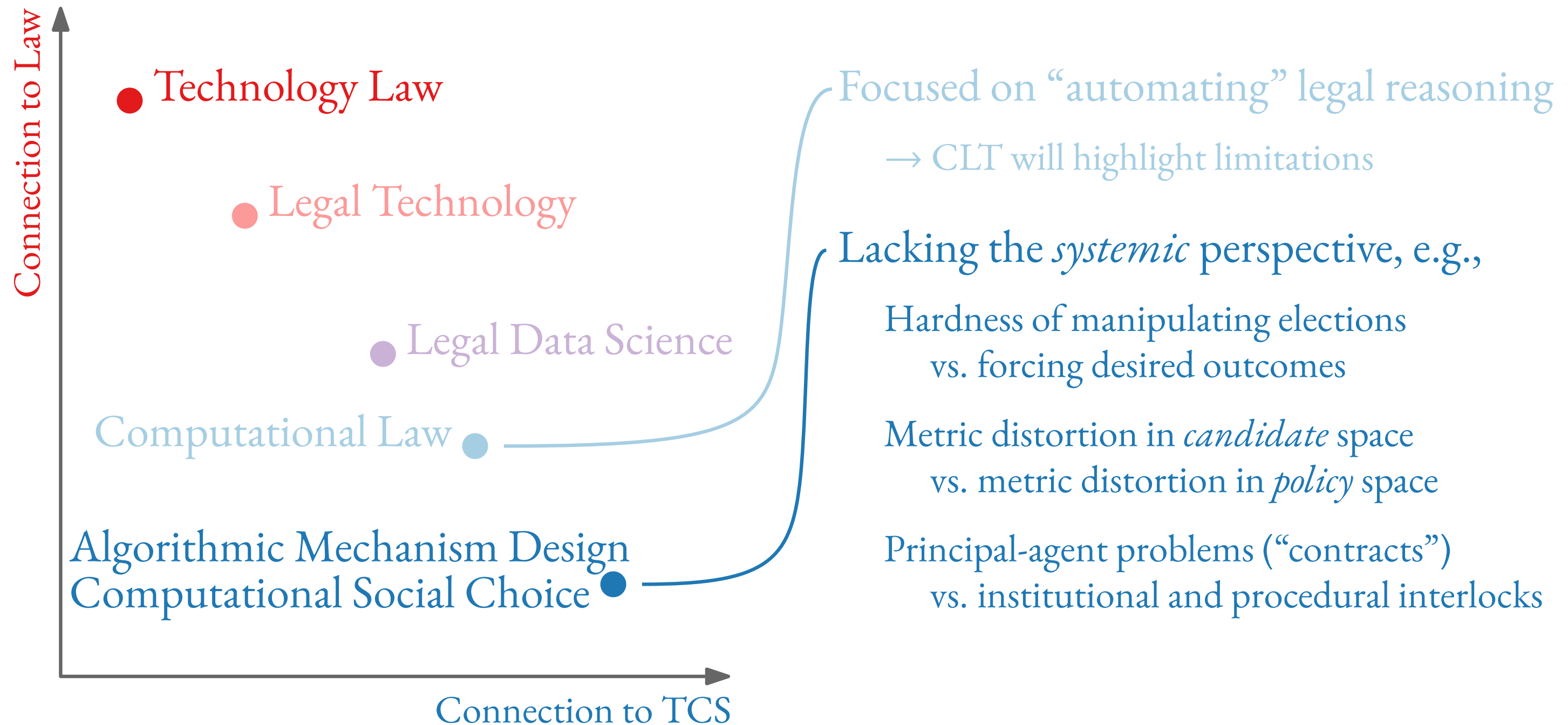
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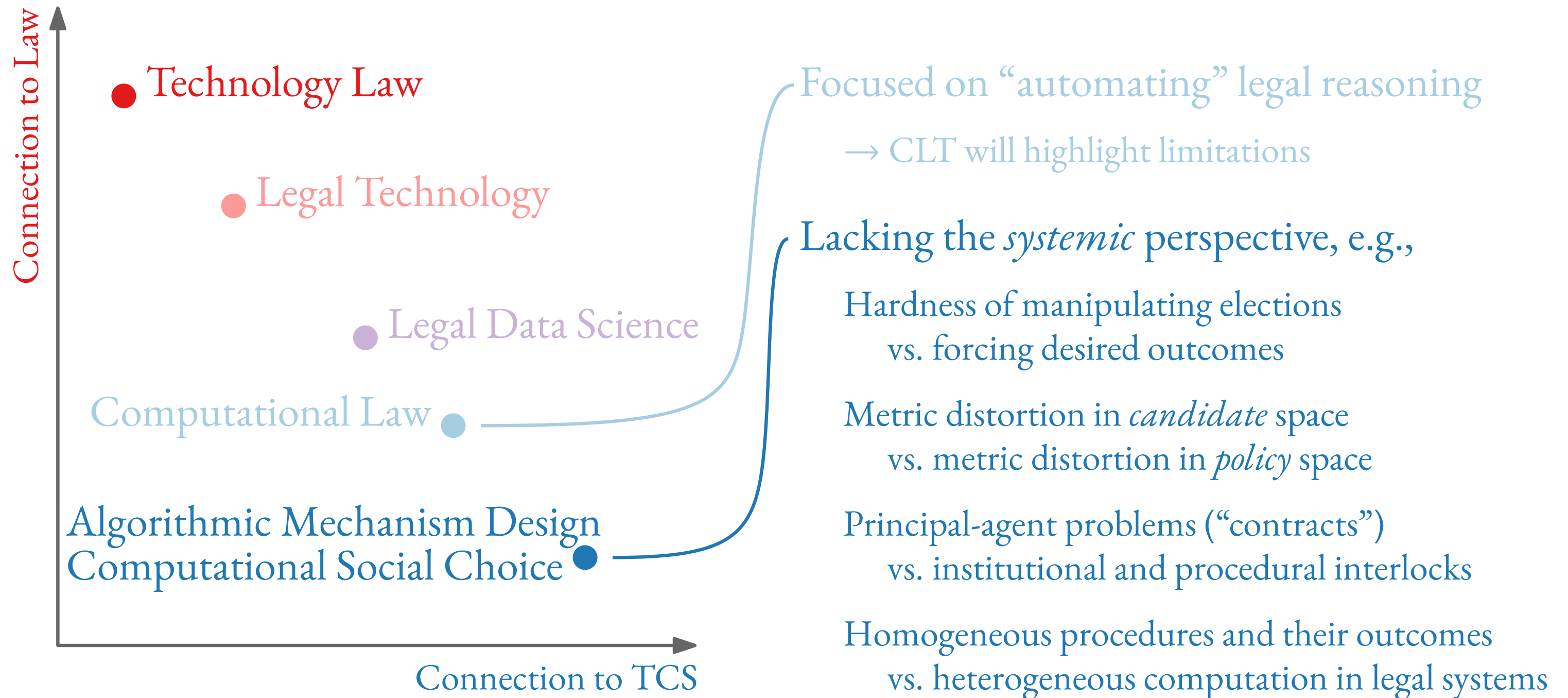
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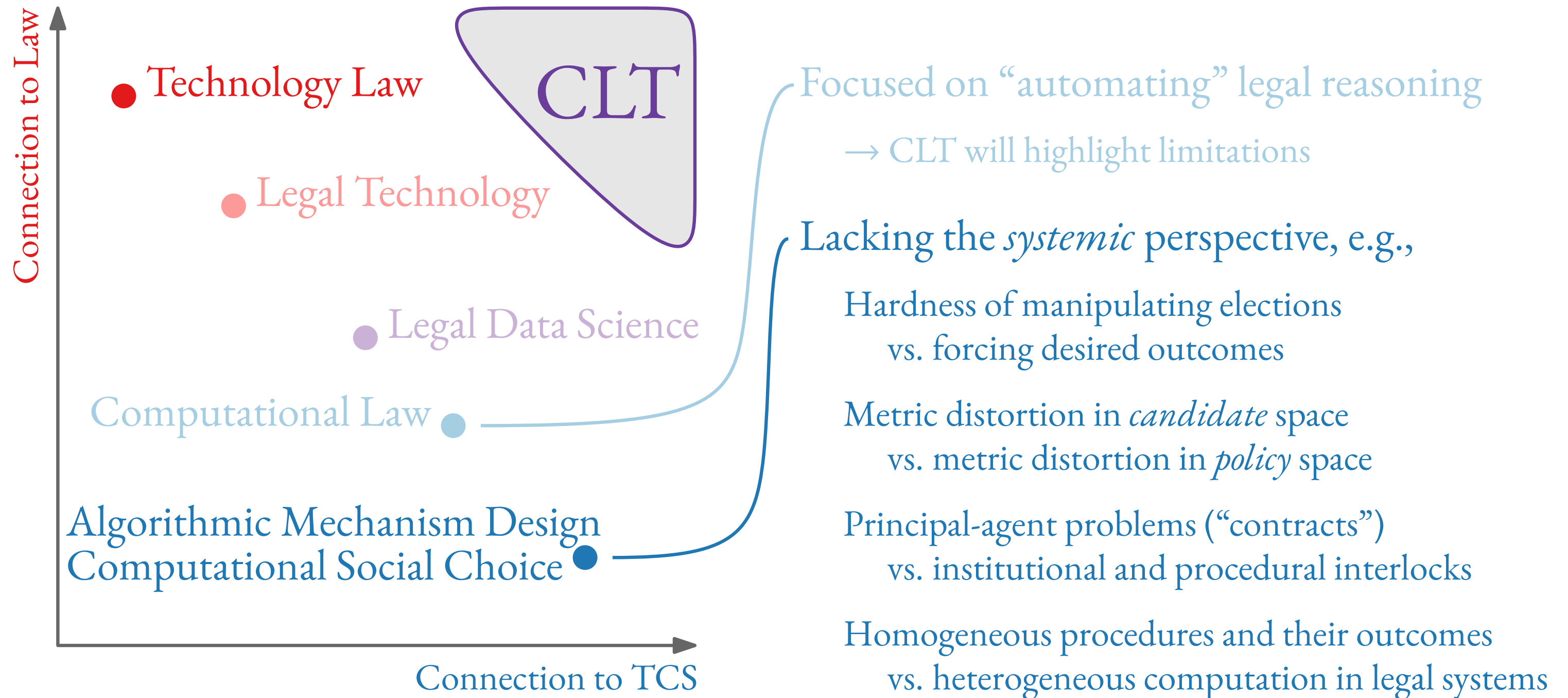
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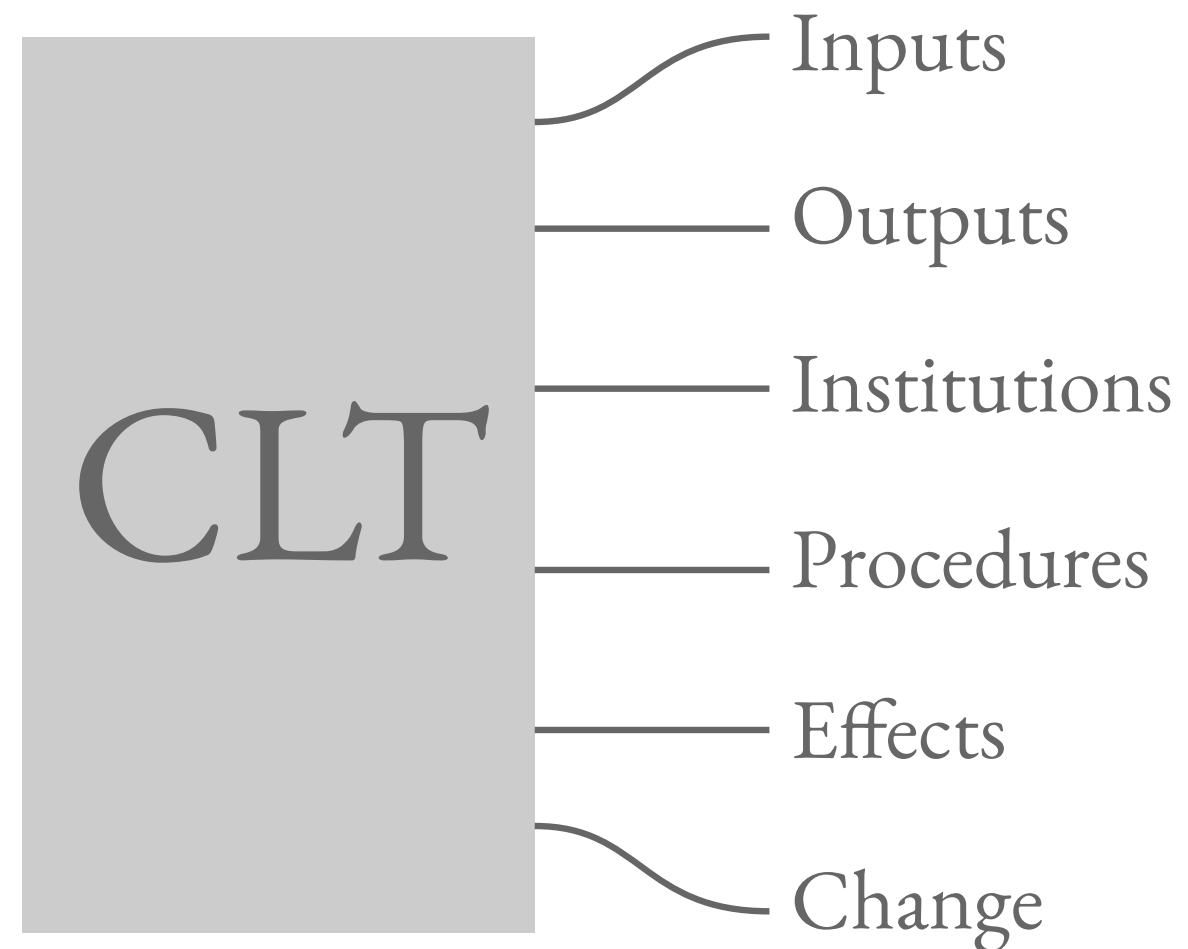


Connecting TCS and law: *Charting the territory*

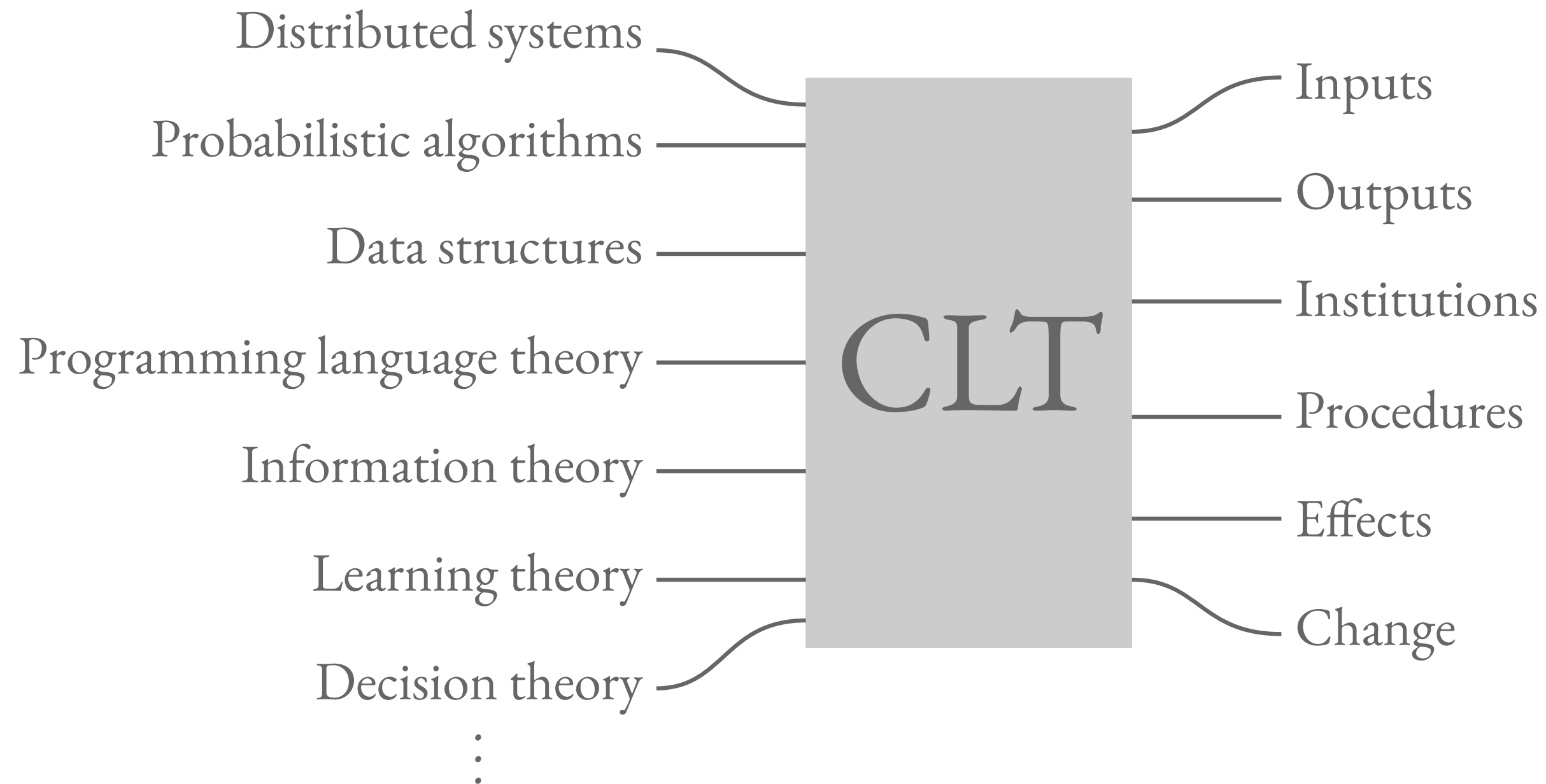


CLT

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Toy Models of Legal Systems: *A Simple Setup*

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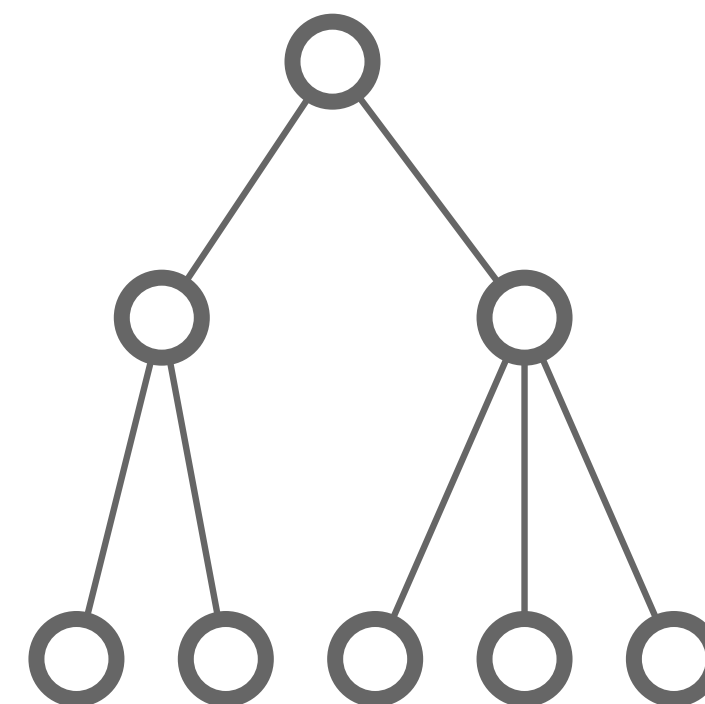
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Toy Models of Legal Systems: A Simple Setup

Assume single-issue cases with ground truth **black** and alternative **red**

Tree of nodes represents court hierarchy



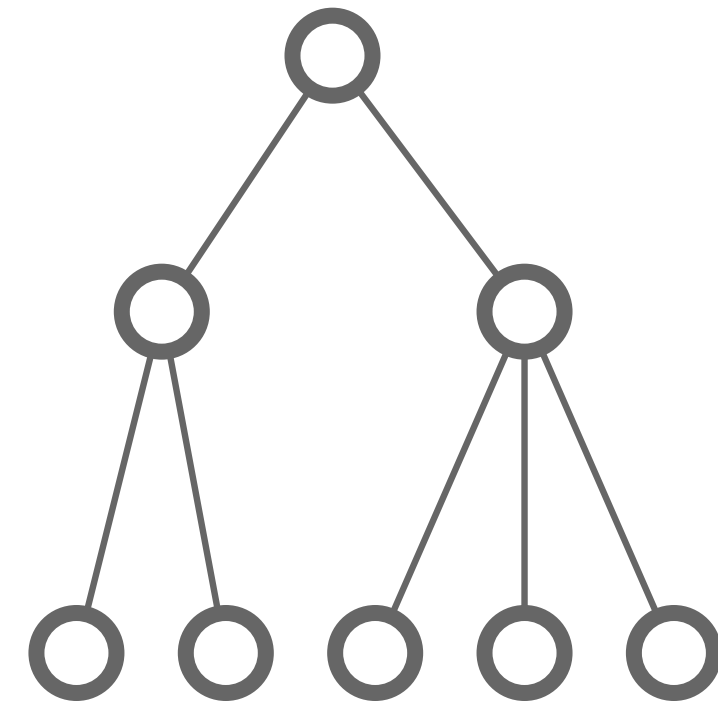
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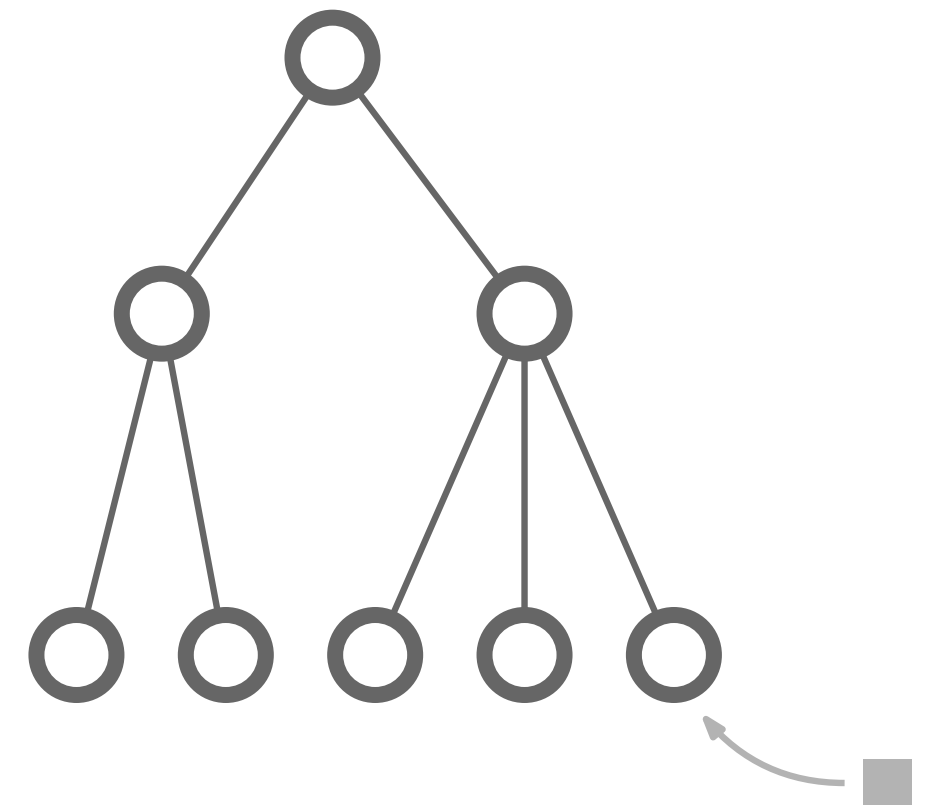
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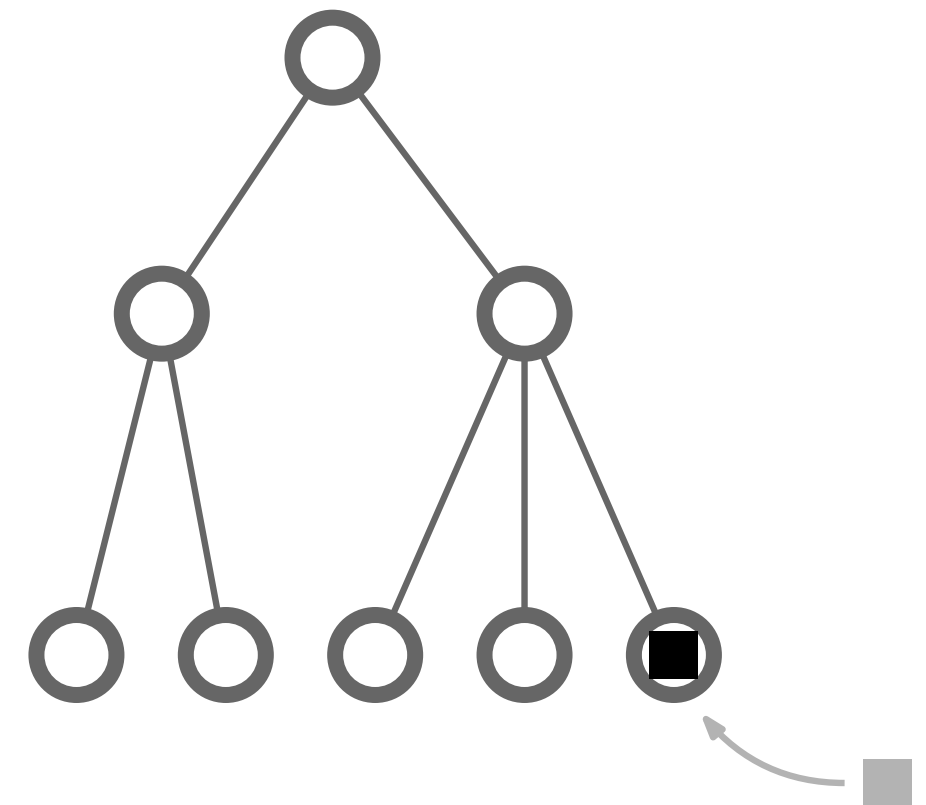
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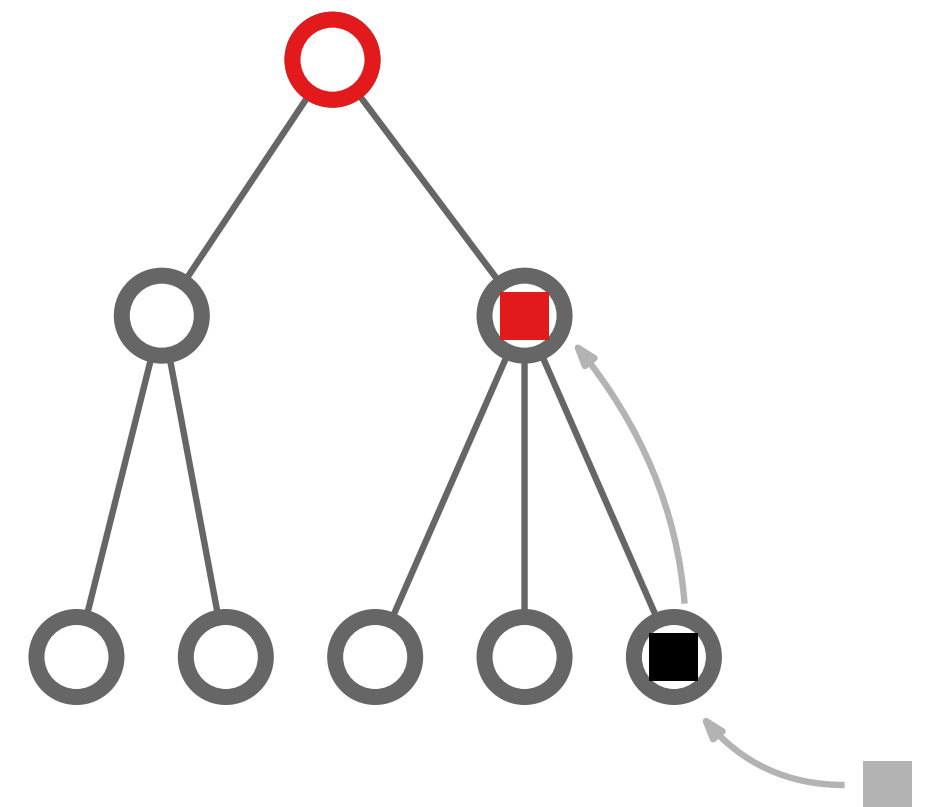
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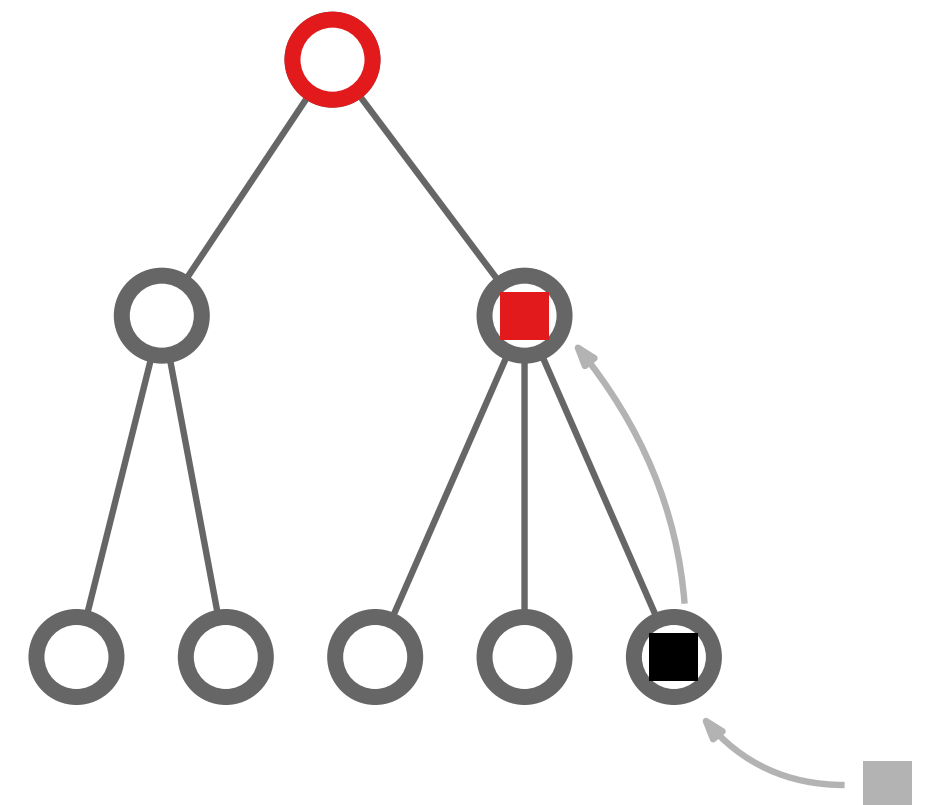
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Toy Models of Legal Systems: More Uncertainty

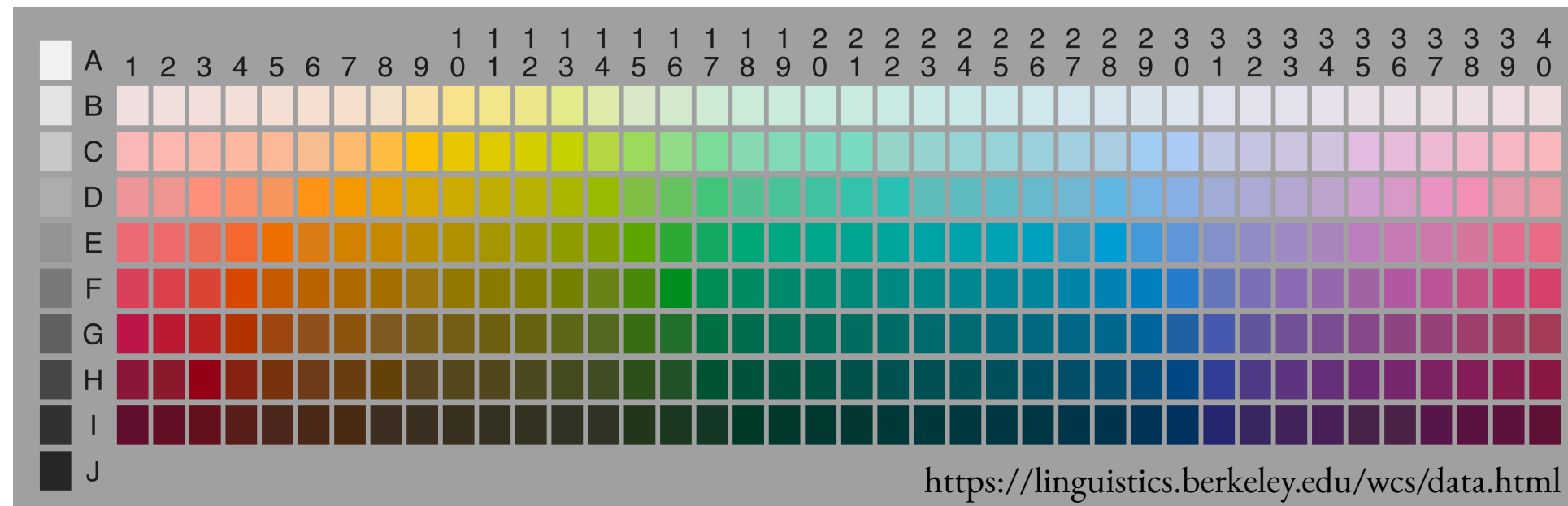
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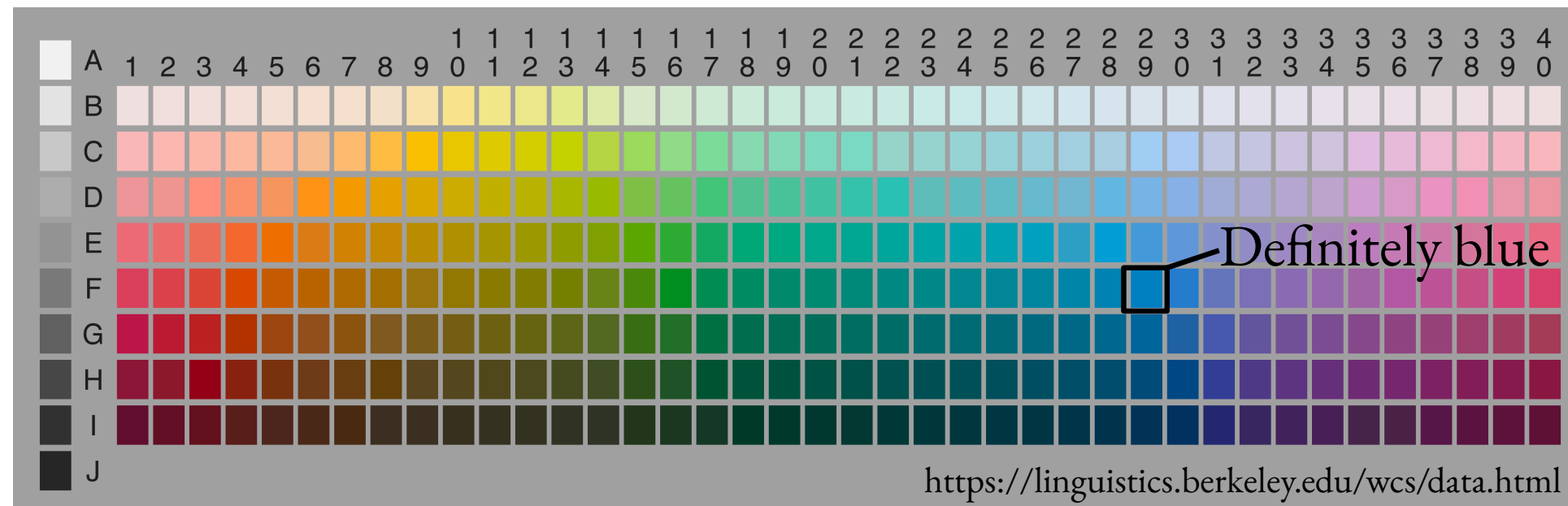
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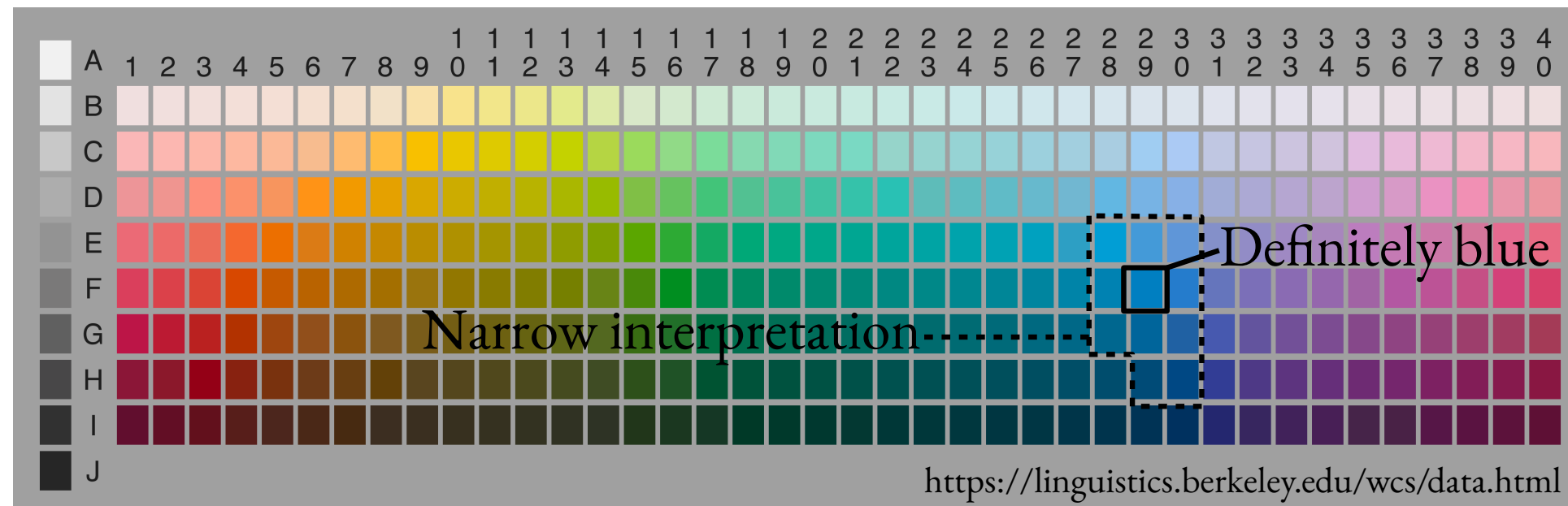
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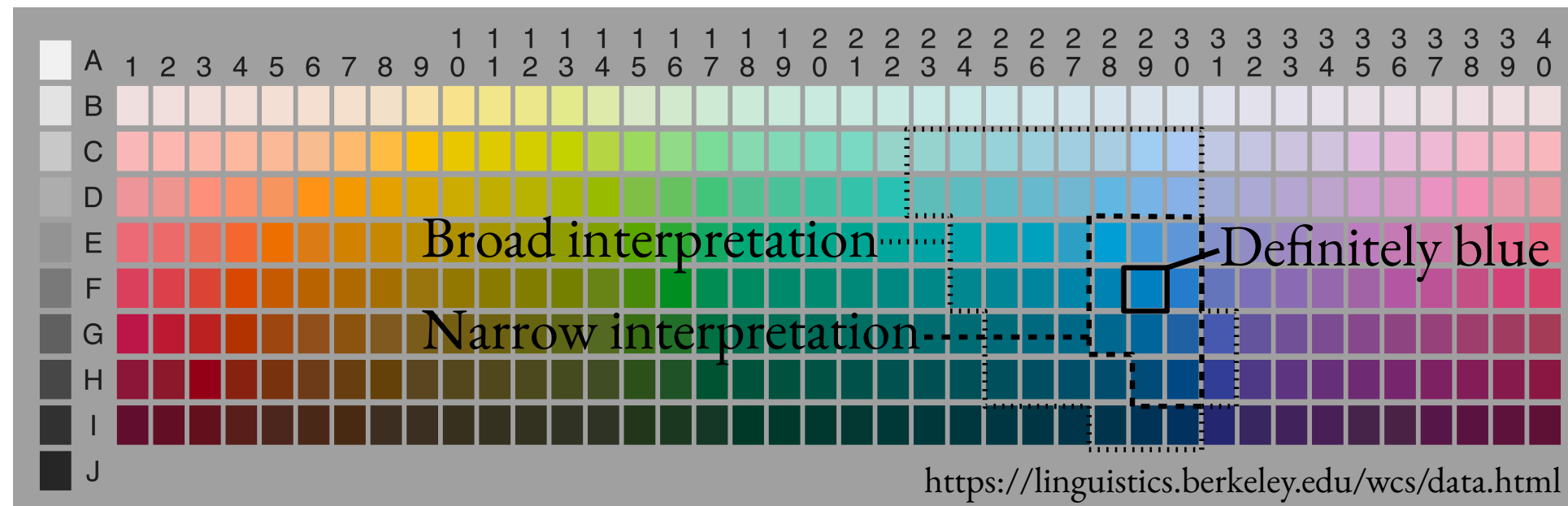
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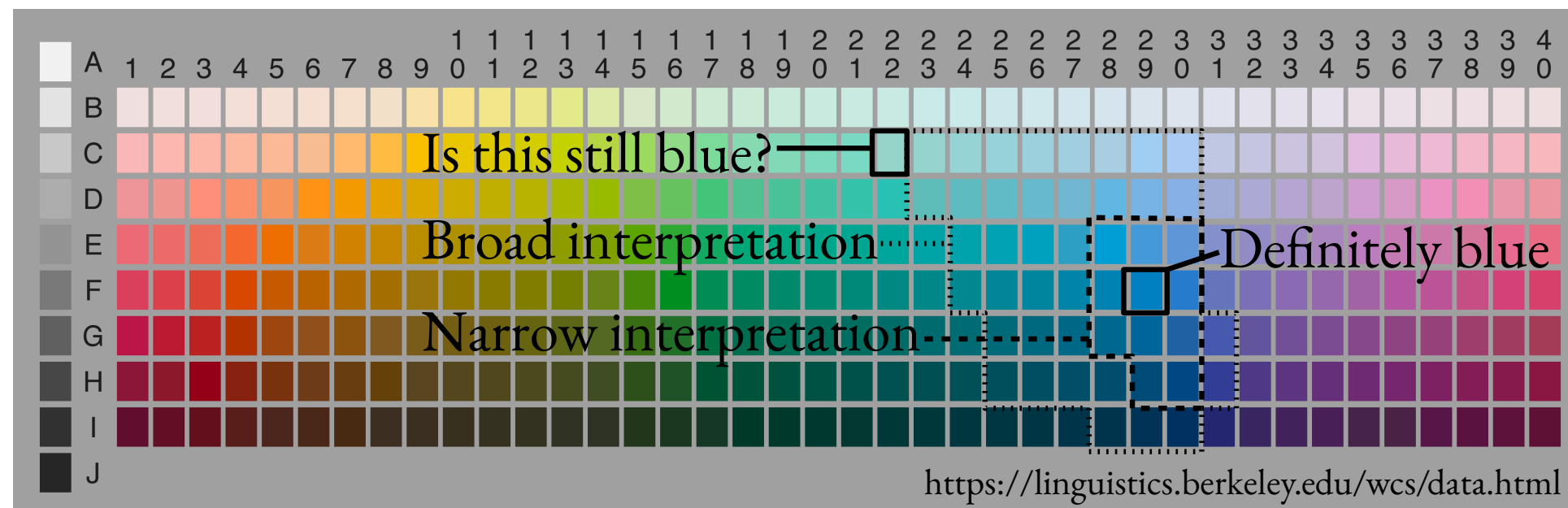
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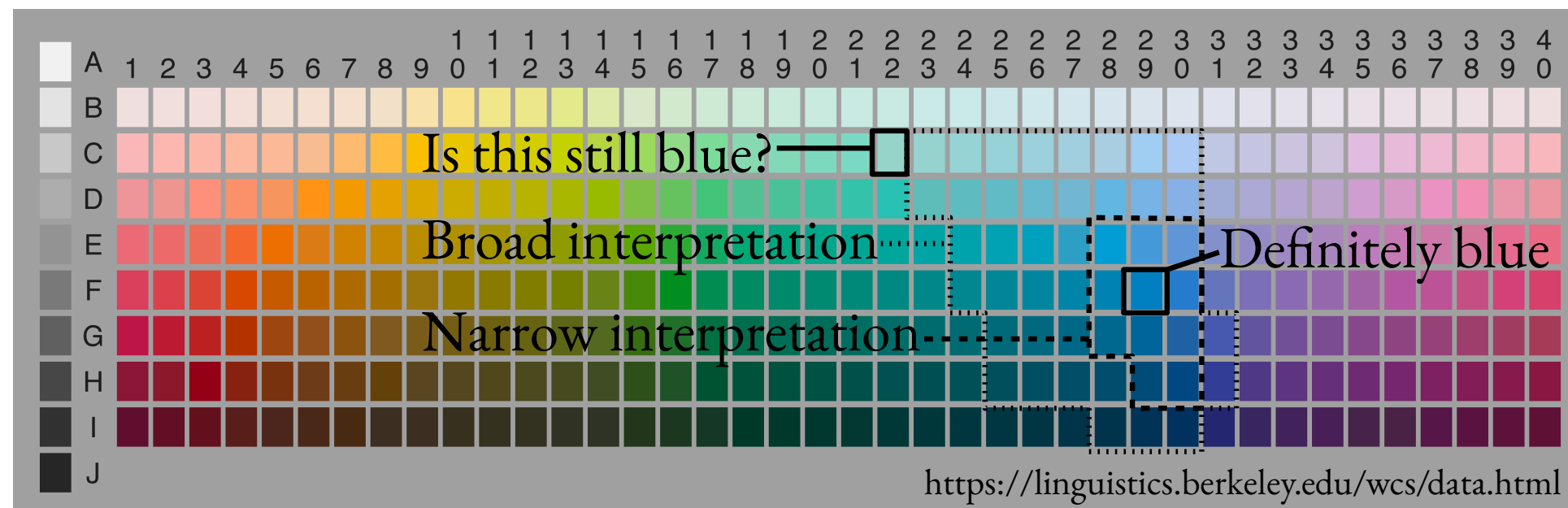
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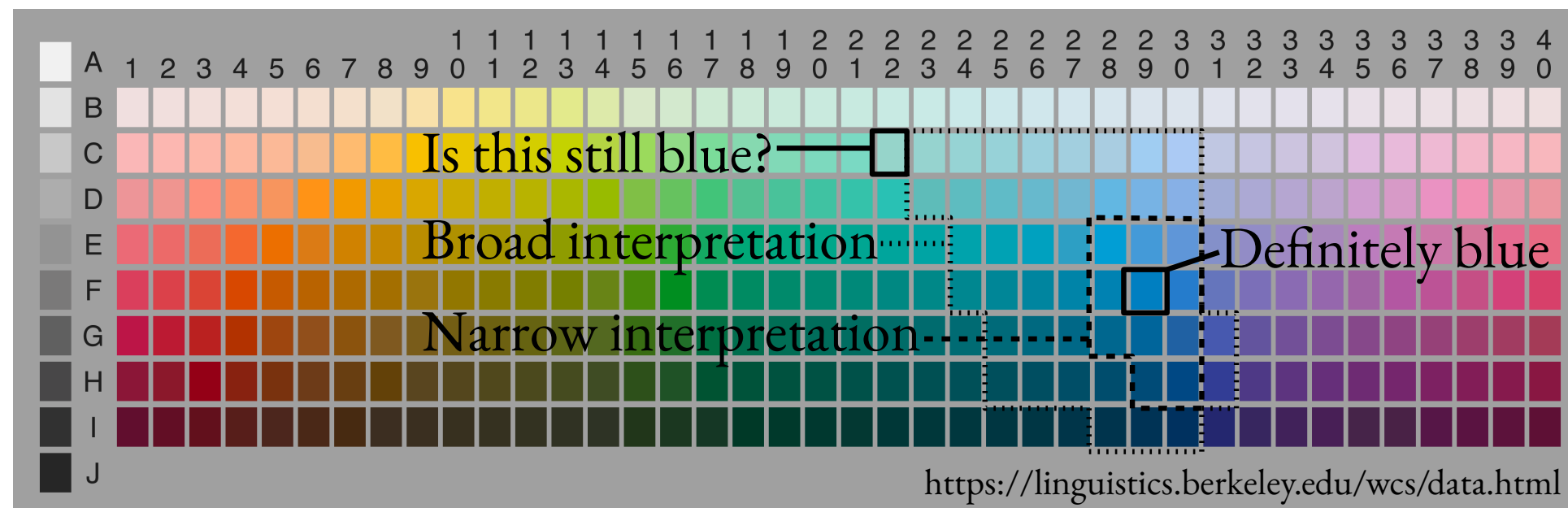


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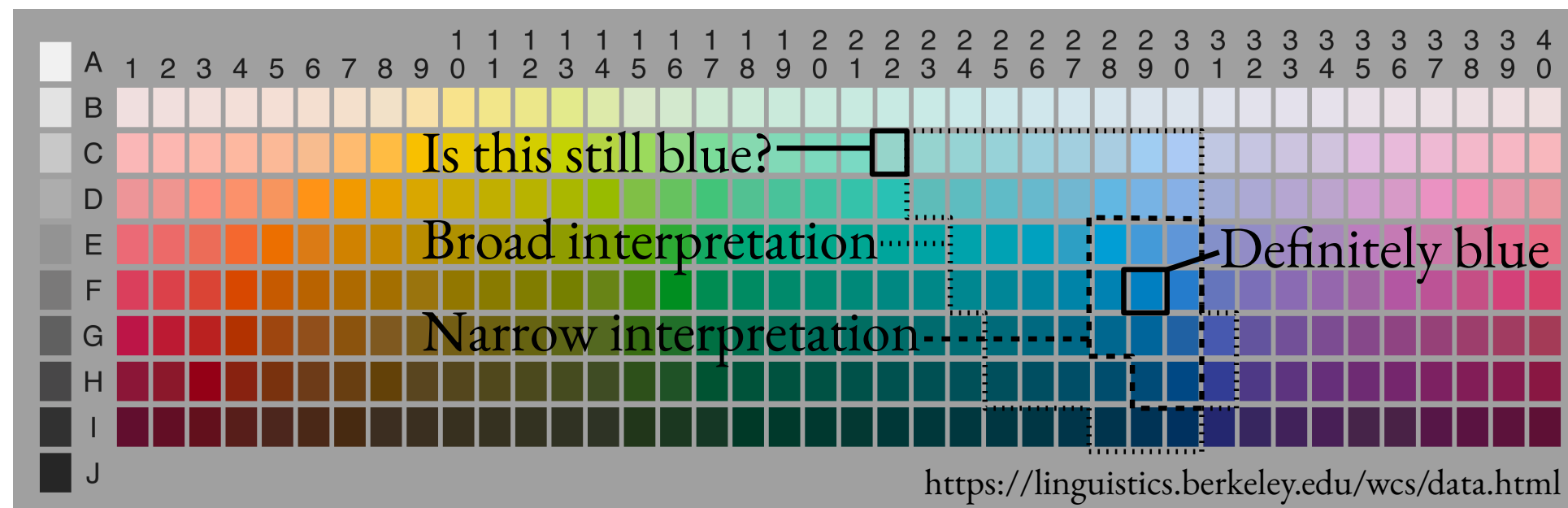
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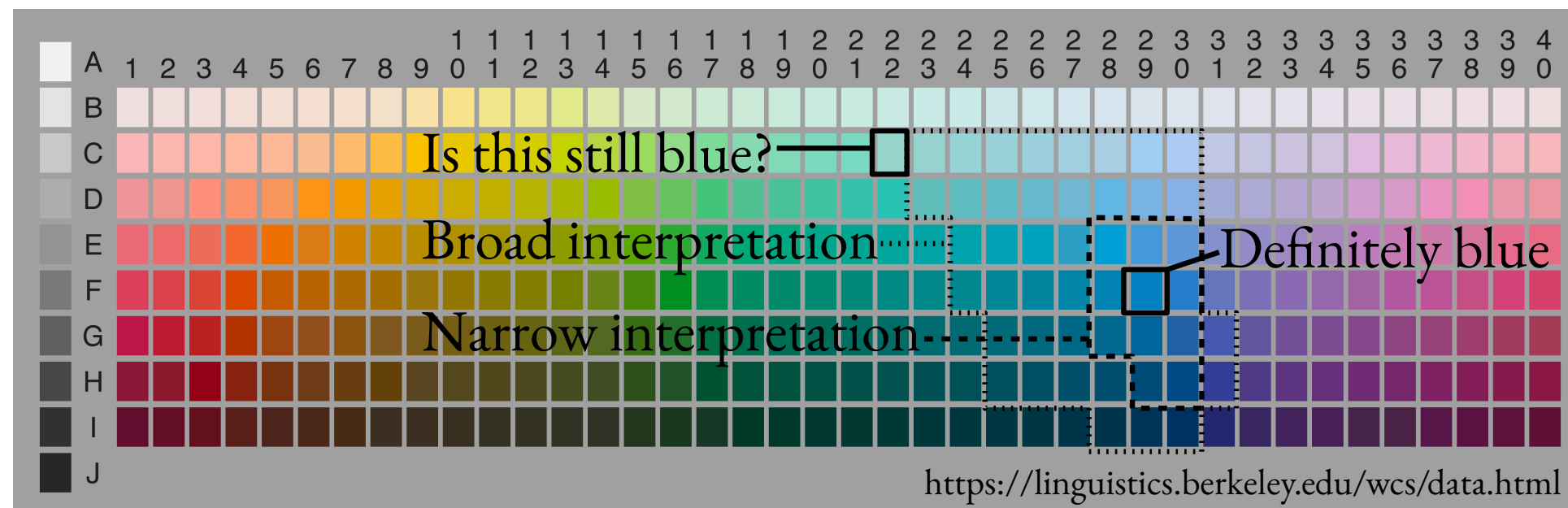
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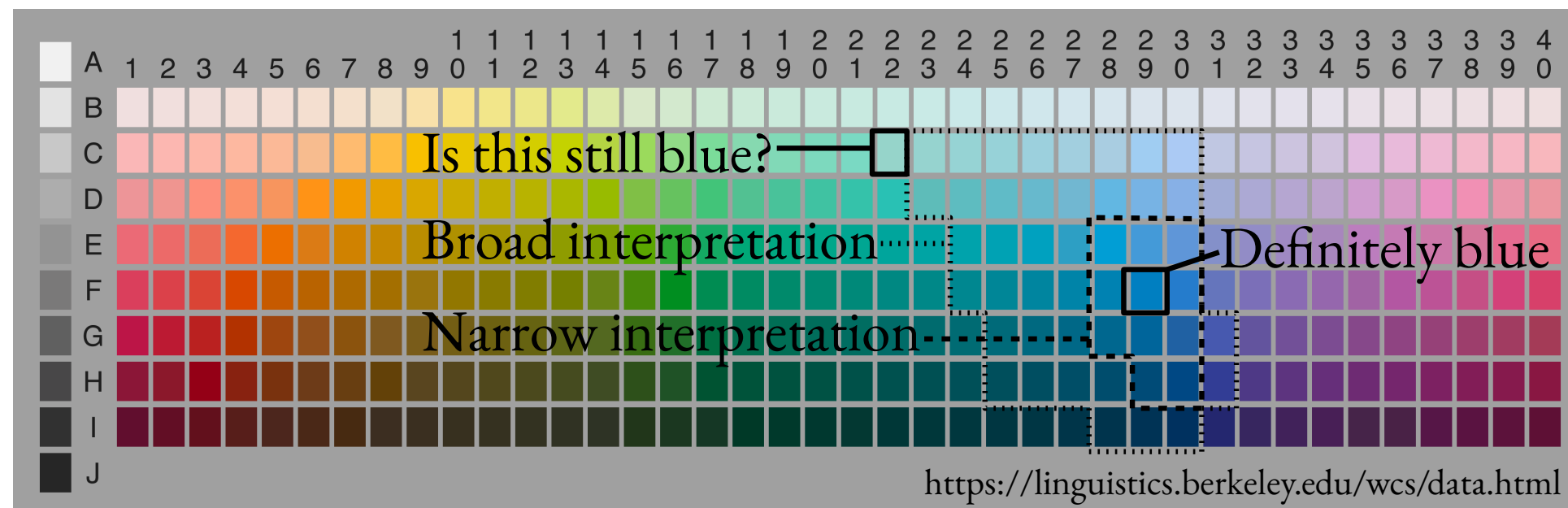
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This requires a broader computational theory of legal systems.

Thank you! ... Does this make sense at all?

Comments?

Questions?

