

6.898
**Notions & Notations
of the Semantic Web**

Law, Rules & Reasoning

K. Krasnow Waterman

September 22, 2005

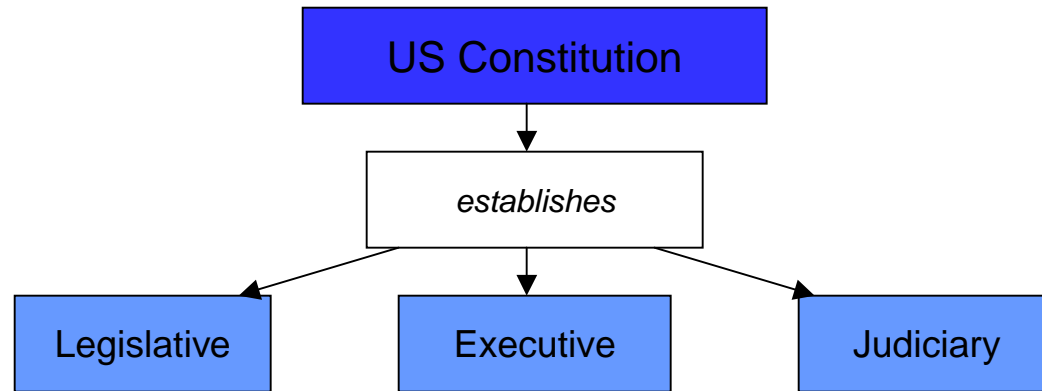
Law is like one of those strategy games.
The rules are 60,000 pages long and
anyone who's willing to read them
can play.

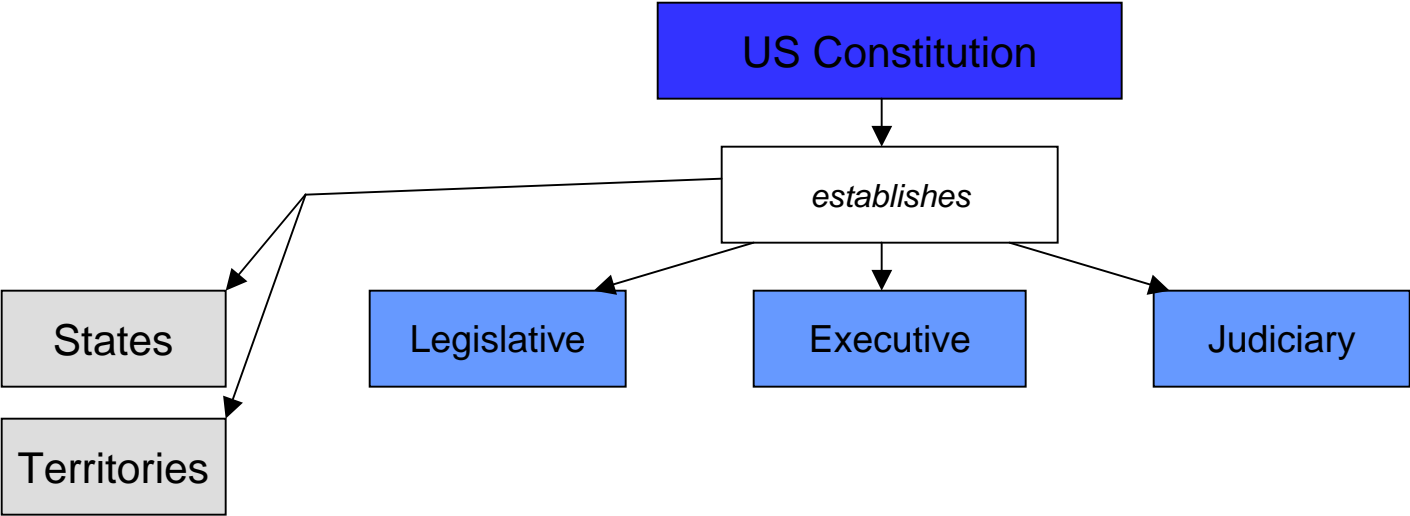
paraphrased from
How Can You Defend Those People?
James Kunen

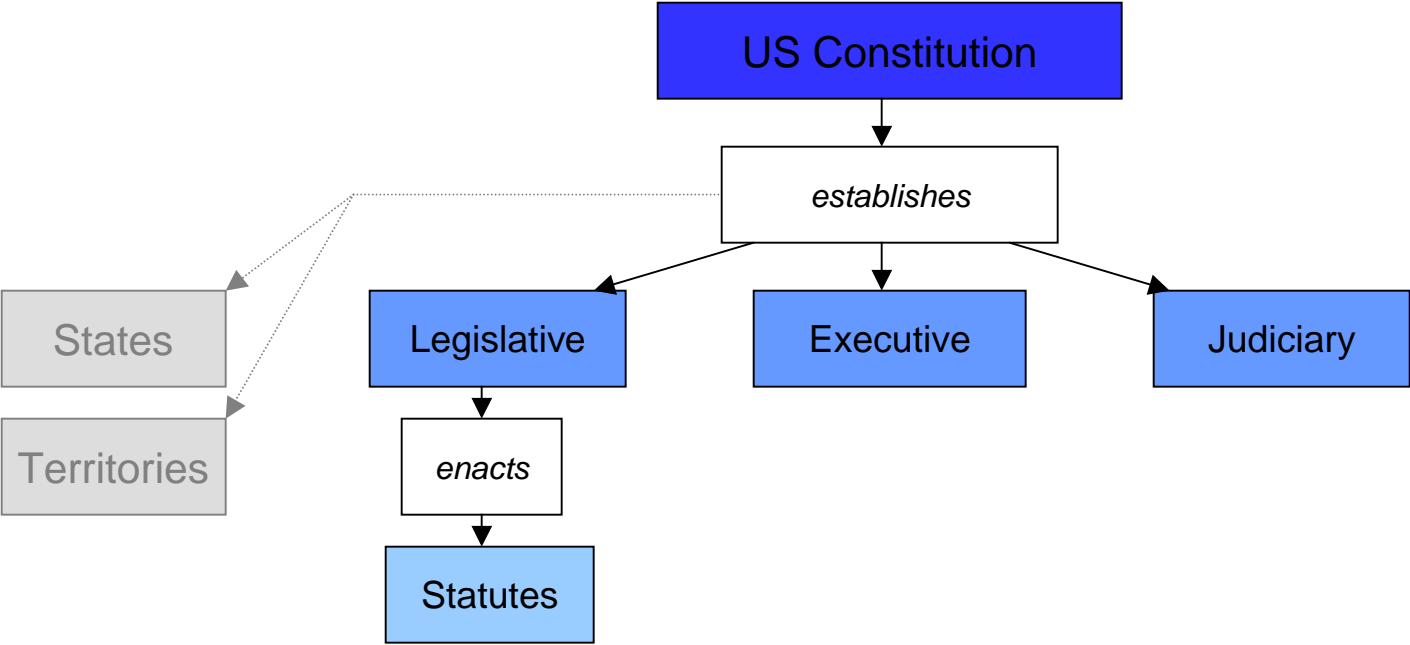
Syllabus

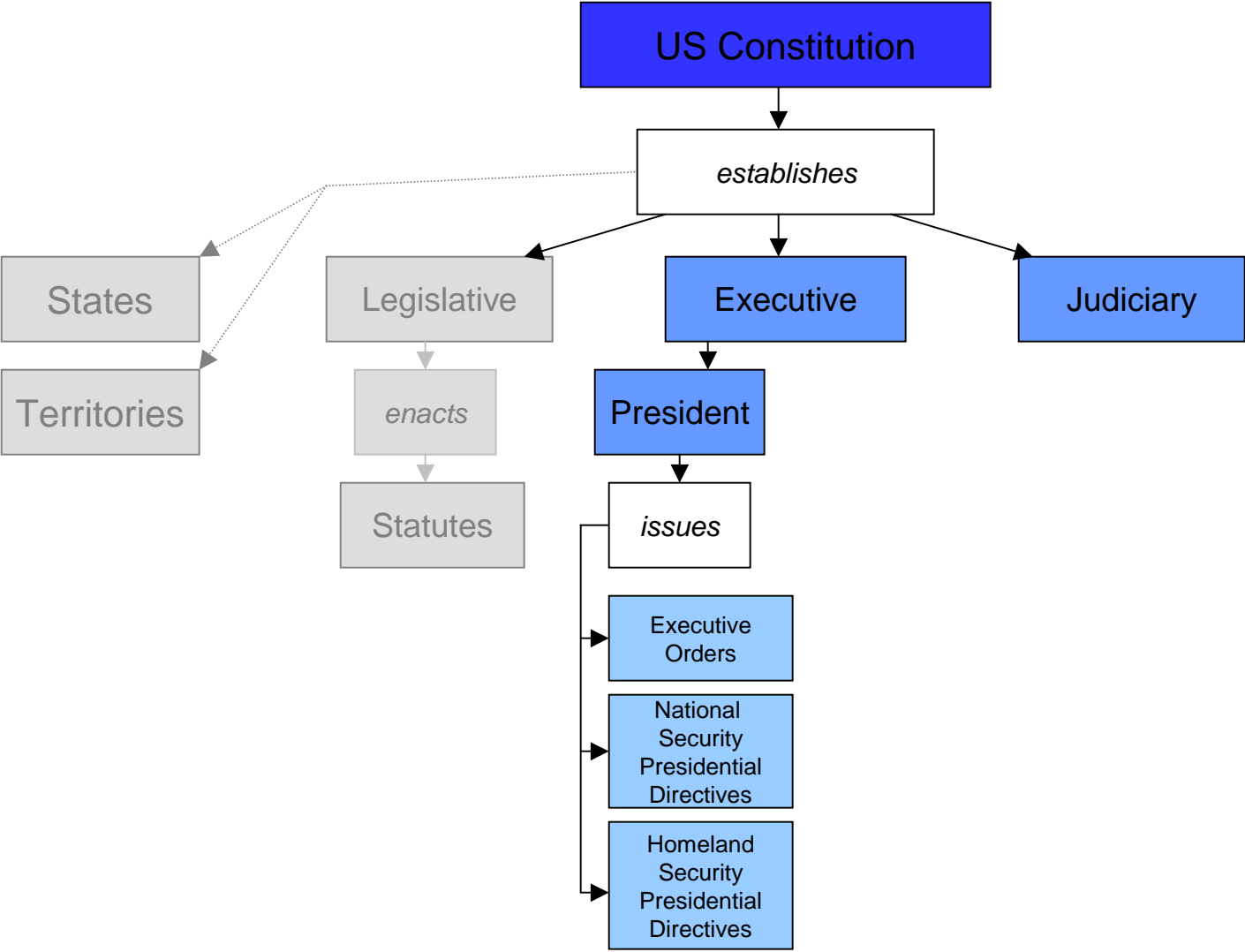
- Overview of creation of law, regulation, policy & practice in the US
- Determine a simple proof
 - Example 1
 - Example 2
- Determine a complex proof
 - Example 3
 - Example 4
- Overview of simple legal logic structures
- Existing mechanisms that will help

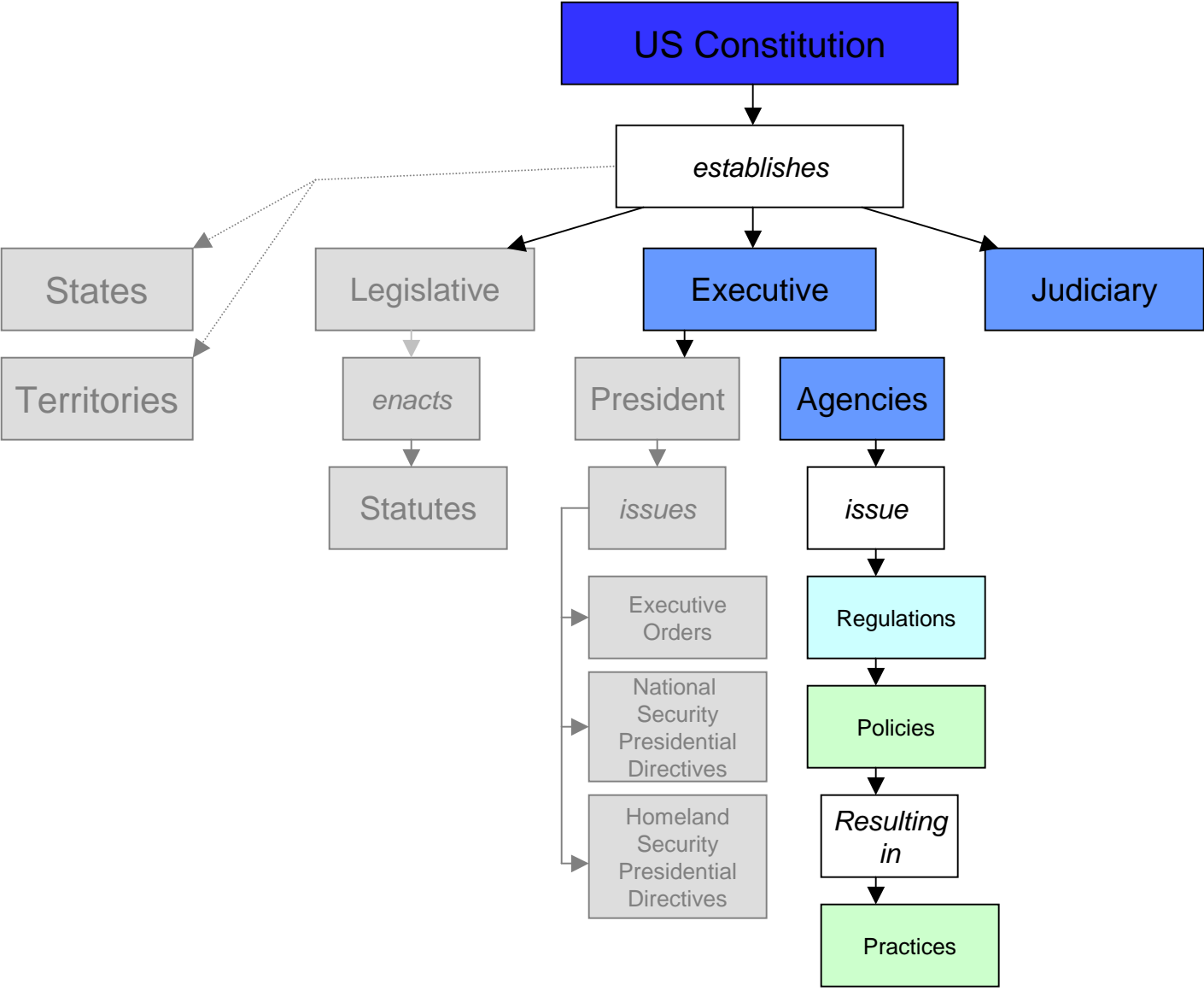
US Constitution

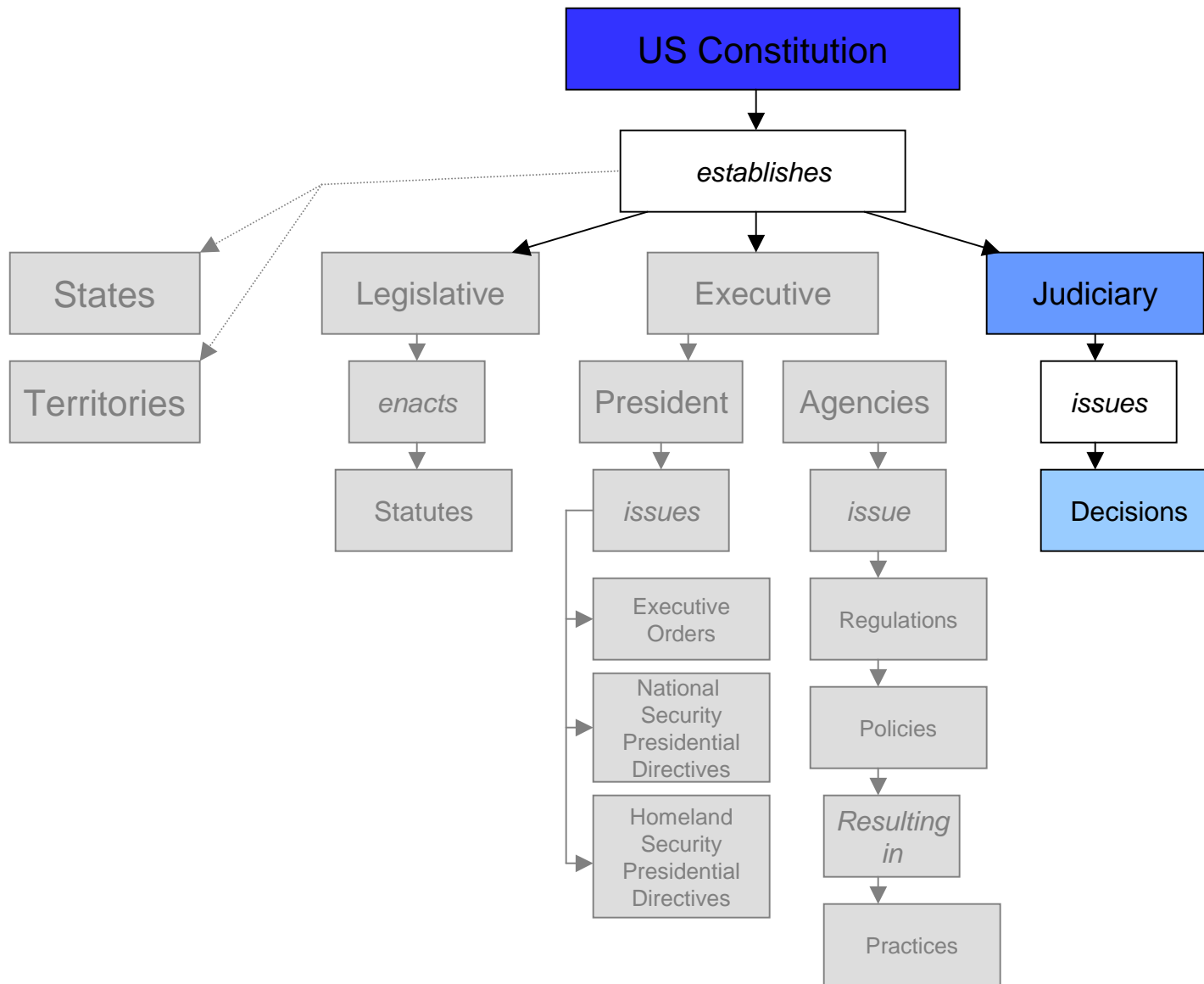


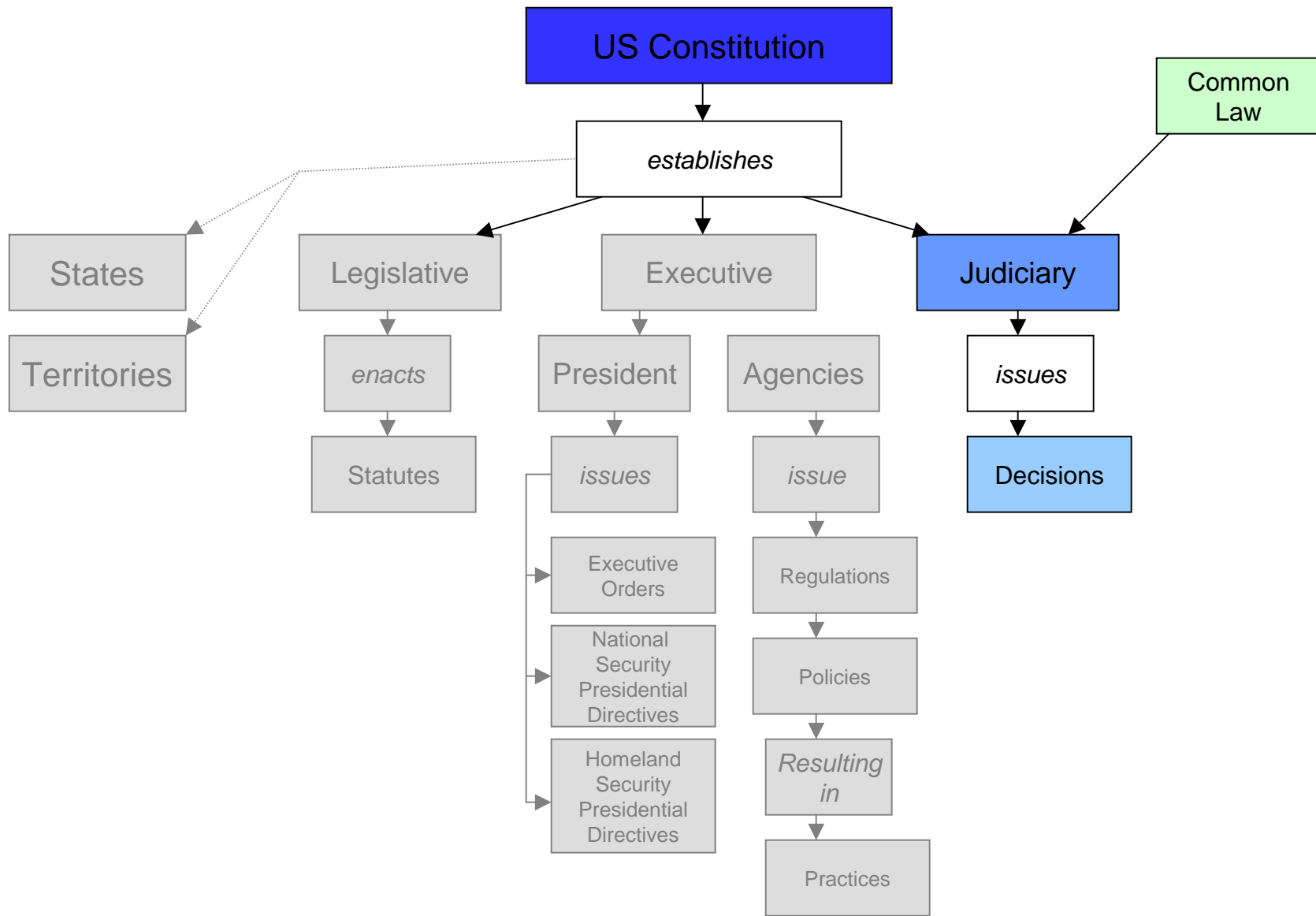


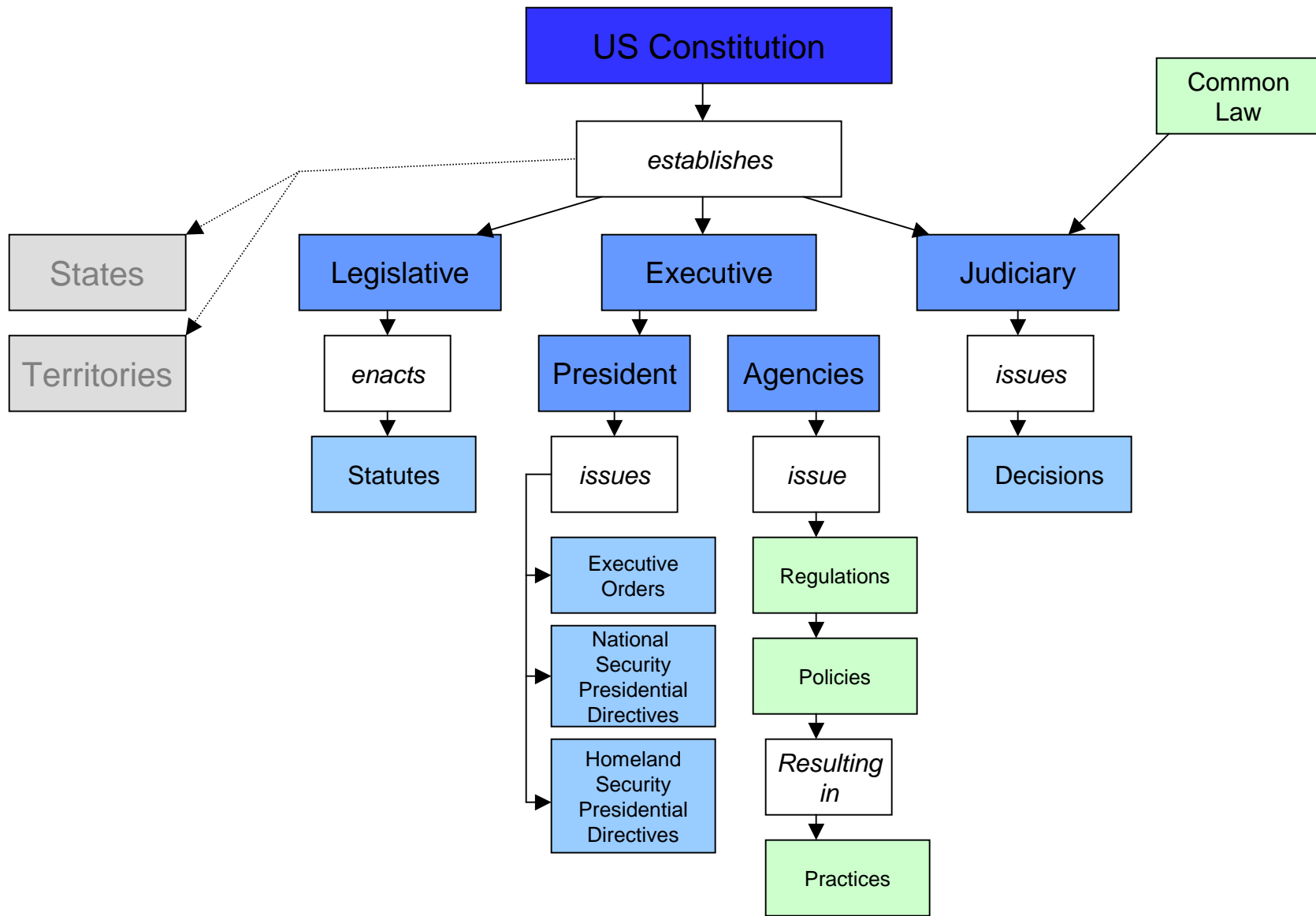










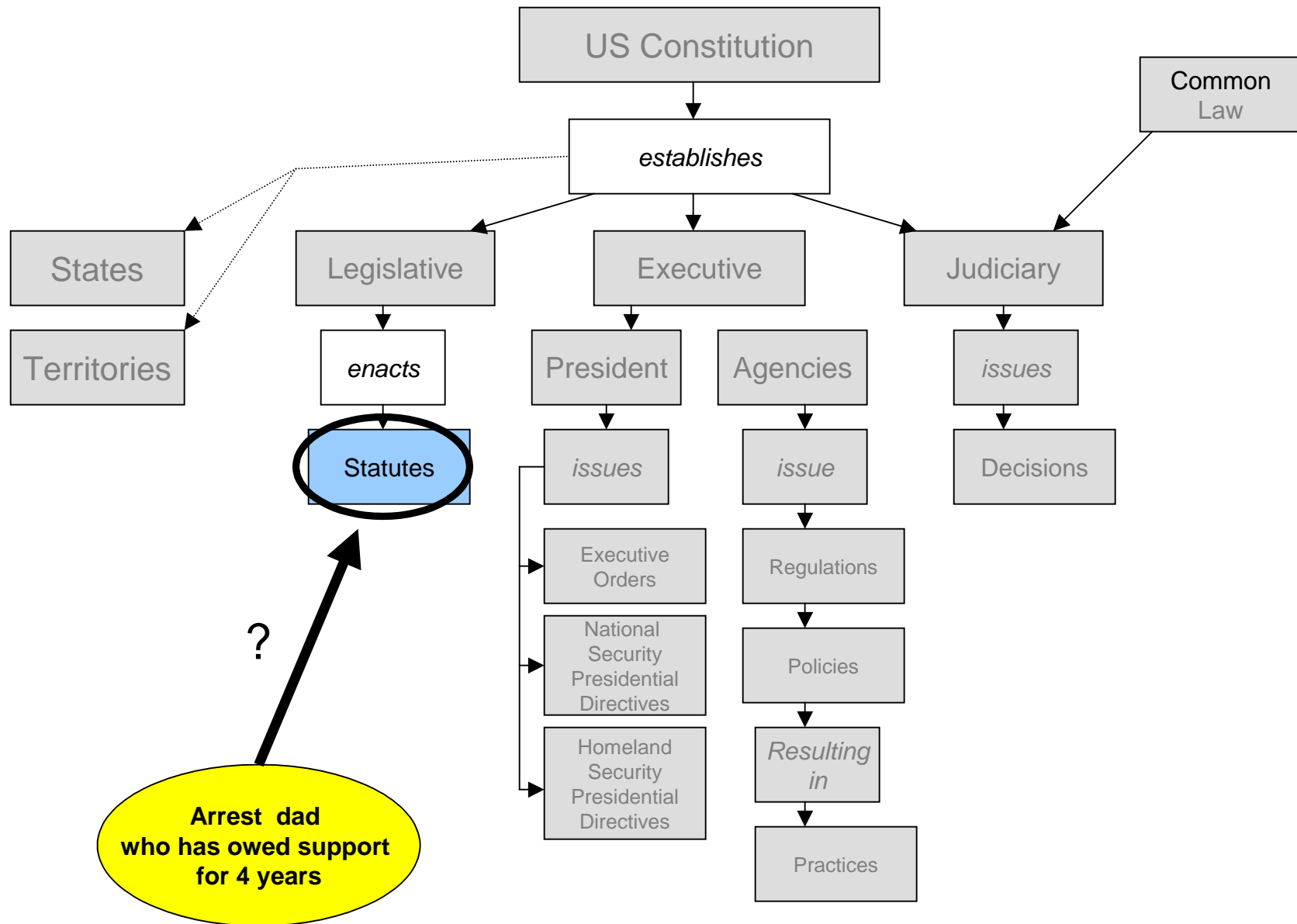


To Determine a Simple Proof:

Search, Retrieve, Match

Example 1

- Simplest
 - Single process: one “rule”, one fact
- Deadbeat Dad is arrested
 - Question: Had the debt existed long enough to qualify for arrest under a federal law?





TITLE 18 > PART 1 > CHAPTER 11A > § 228

§ 228. Failure to pay legal child support obligations

Release date: 2005-09-03

(a) Offense.— Any person who—

- (1) willfully fails to pay a support obligation with respect to a child who resides in another State, if such obligation has remained unpaid for a period longer than 1 year, or is greater than \$5,000;
- (2) travels in interstate or foreign commerce with the intent to evade a support obligation, if such obligation has remained unpaid for a period longer than 1 year, or is greater than \$5,000; or
- (3) willfully fails to pay a support obligation with respect to a child who resides in another State, if such obligation has remained unpaid for a period longer than 2 years, or is greater than \$10,000;

shall be punished as provided in subsection (c).

(b) Presumption.— The existence of a support obligation that was in effect for the time period charged in the indictment or information creates a rebuttable presumption that the obligor has the ability to pay the support obligation for that time period.

(c) Punishment.— The punishment for an offense under this section is—

- (1) in the case of a first offense under subsection (a)(1), a fine under this title, imprisonment for not more than 6 months, or both; and
- (2) in the case of an offense under paragraph (2) or (3) of subsection (a), or a second or subsequent offense under subsection (a)(1), a fine under this title, imprisonment for not more than 2 years, or both.

(d) Mandatory Restitution.— Upon a conviction under this section, the court shall order restitution under section 3663A in an amount equal to the total unpaid support obligation as it exists at the time of sentencing.

(e) Venue.— With respect to an offense under this section, an action may be inquired of and prosecuted in a district court of the United States for—

- (1) the district in which the child who is the subject of the support obligation involved resided during a period during which a person described in subsection (a) (referred to in this subsection as an "obligor") failed to meet that support obligation;
- (2) the district in which the obligor resided during a period described in paragraph (1); or
- (3) any other district with jurisdiction otherwise provided for by law.

(f) Definitions.— As used in this section—

- (1) the term "Indian tribe" has the meaning given that term in section 402 of the Federally Recognized Indian Tribe List Act of 1994 (25 U.S.C. 479a);
- (2) the term "State" includes any State of the United States, the District of Columbia, and any commonwealth, territory, or possession of the United States; and
- (3) the term "support obligation" means any amount determined under a court order or an order of an administrative process pursuant to the law of a State or of an Indian tribe to be due from a person for the support and maintenance of a child or of a child and the parent with whom the child is living.

Search this title:

Search Title 18

Notes

Updates

Parallel authorities (CFR)

Your comments

“Deadbeat Dad” Statute

§ 228. Failure to pay legal child support obligations

Release date: 2005-08-03

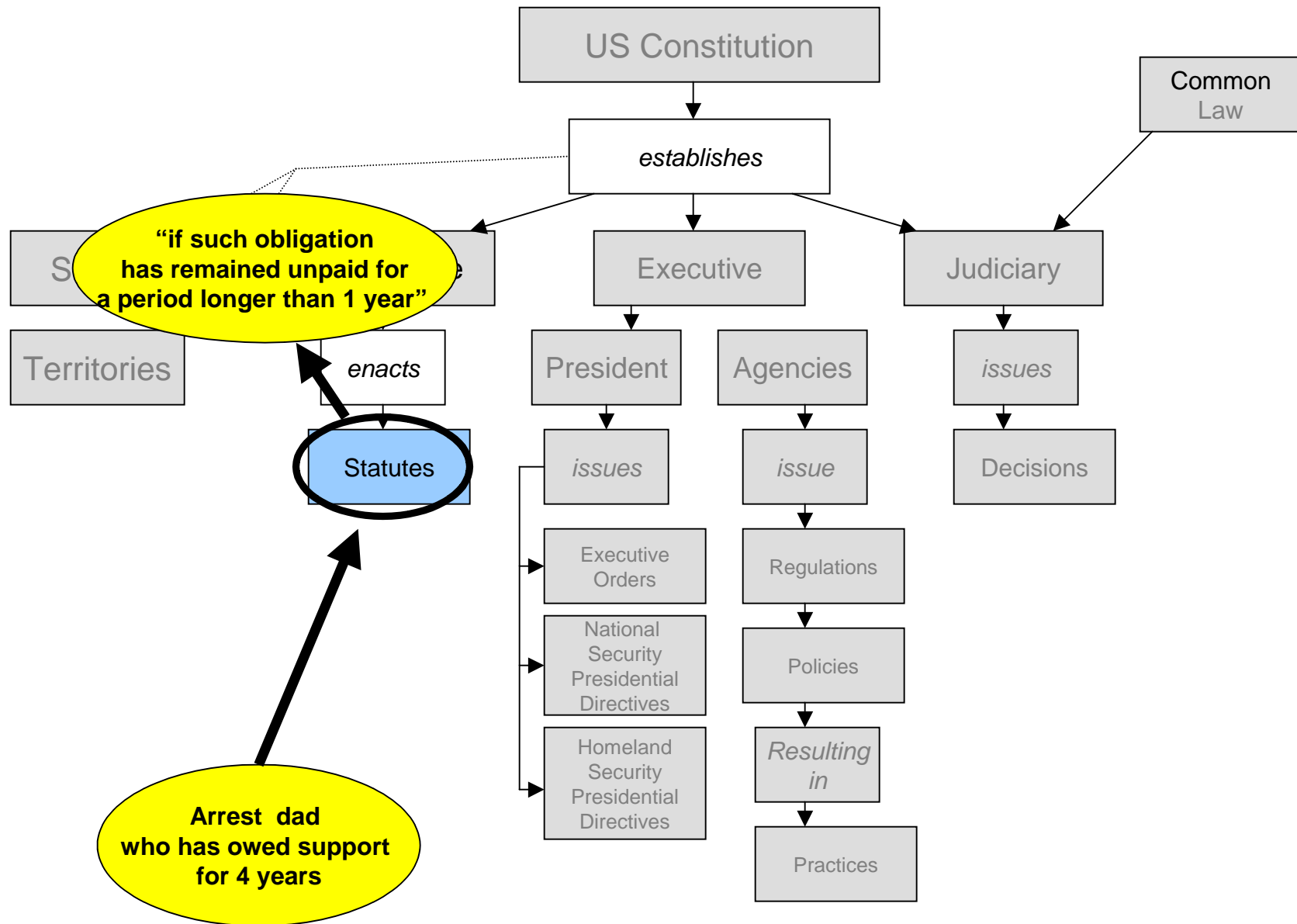
(a) Offense.— Any person who—

- (1) willfully fails to pay a support obligation with respect to a child who resides in another State, if such obligation has remained unpaid for a period longer than 1 year or is greater than \$5,000;
- (2) travels in interstate or foreign commerce with the intent to evade a support obligation, if such obligation has remained unpaid for a period longer than 1 year, or is greater than \$5,000; or
- (3) willfully fails to pay a support obligation with respect to a child who resides in another State, if such obligation has remained unpaid for a period longer than 2 years, or is greater than \$10,000; shall be punished as provided in subsection (c).

(b) Presumption.— The existence of a support obligation that was in effect for the time period charged in the indictment or information creates a rebuttable presumption that the obligor has the ability to pay the support obligation for that time period.

(c) Punishment.— The punishment for an offense under this section is—

- (1) in the case of a first offense under subsection (a)(1), a fine under this title, imprisonment for not more than 6 months, or both; and
- (2) in the case of an offense under paragraph (2) or (3) of subsection (a), or a second or subsequent offense under subsection (a)(1), a fine under this title, imprisonment for not more than 2 years, or both.



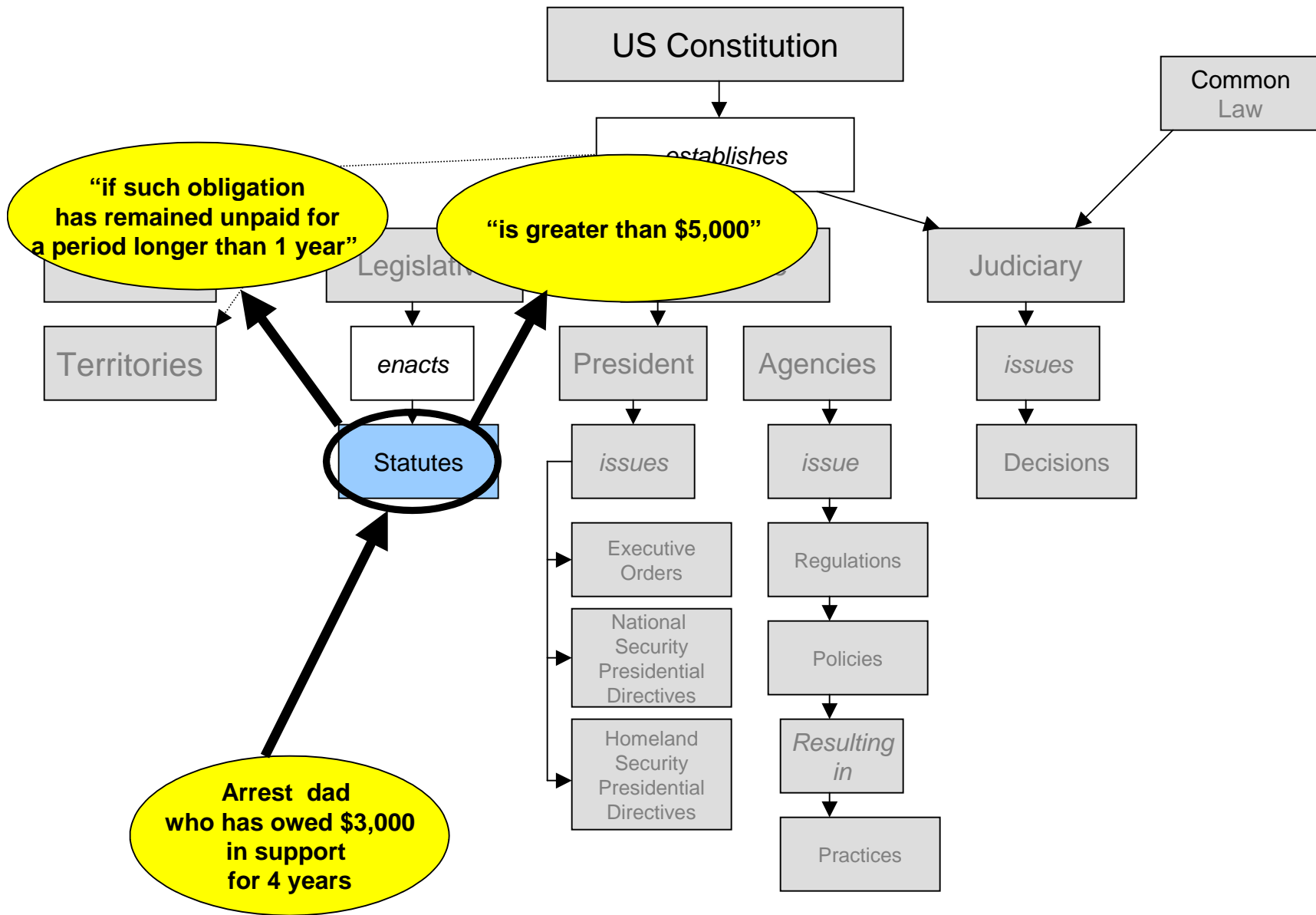
Using Logic:

- deadbeat dad is person who owes child support for more than 1 year
- John Doe owes child support for 4 years
- John Doe is a person

- John Doe is a deadbeat dad

Example 2

- One rule (two subrules), two facts
- Deadbeat Dad is arrested
 - Question: Had the debt existed long enough to qualify for arrest under a federal law?
 - Question: Was the debt large enough to qualify for arrest under a federal law?



Using Logic:

- A Person owes child support for more than 1 year
- B Person owes more than \$5,000
- C Person is deadbeat dad
- D John Doe is a person
- E John Doe has owed child support for 4 years
- F John Doe has owed \$3,000

Does law say:

C if A and B?

C if A or B?

It says:

C if A or B

This law has more rules

- Child and deadbeat parent must live in different states, or
- Parent must travel out of state or country to evade the support payment
- Failure to pay must be “willful”
- Money must be owed pursuant to a court order or administrative process
- And so on...

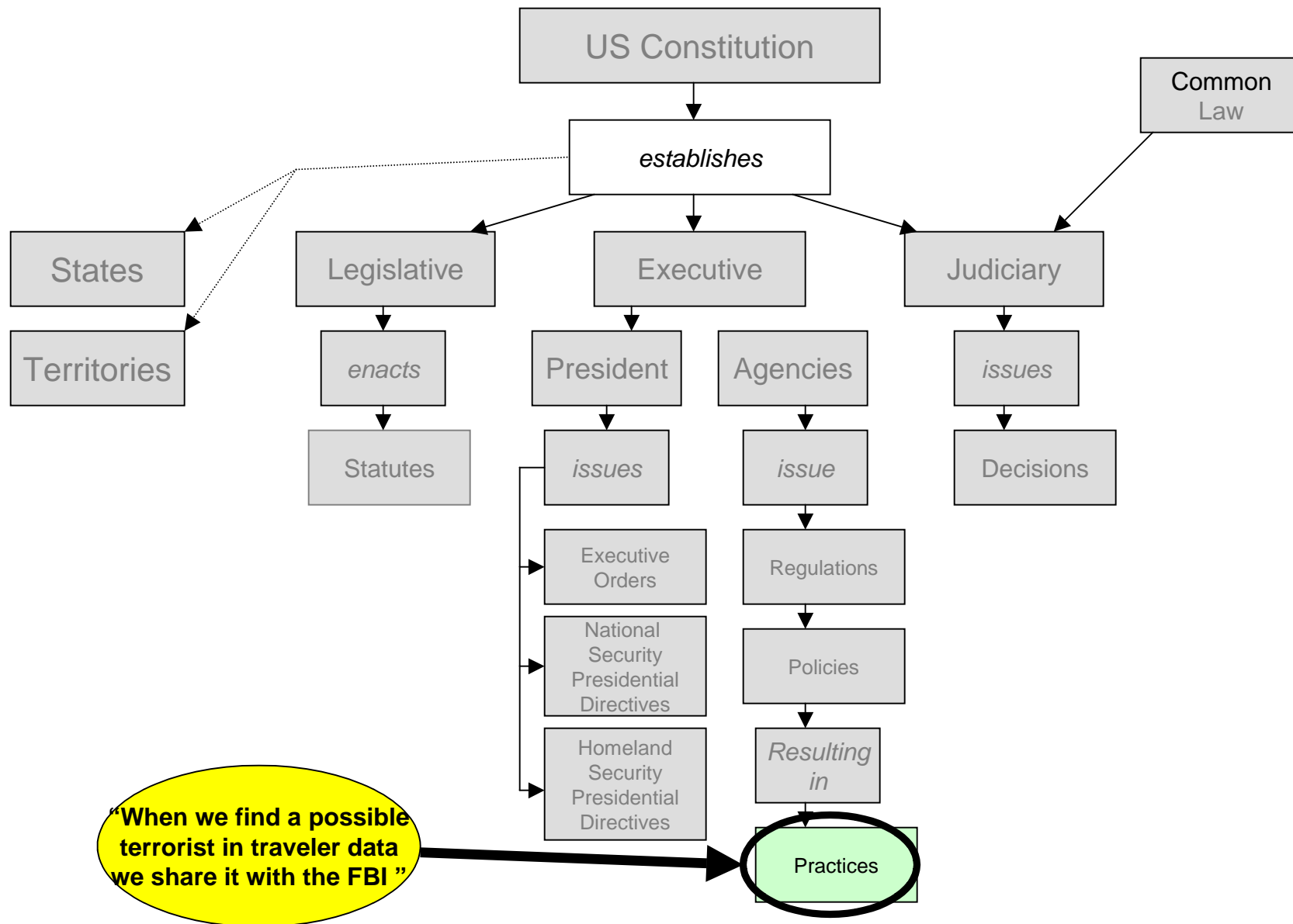
There are probably no laws which are one rule, one fact

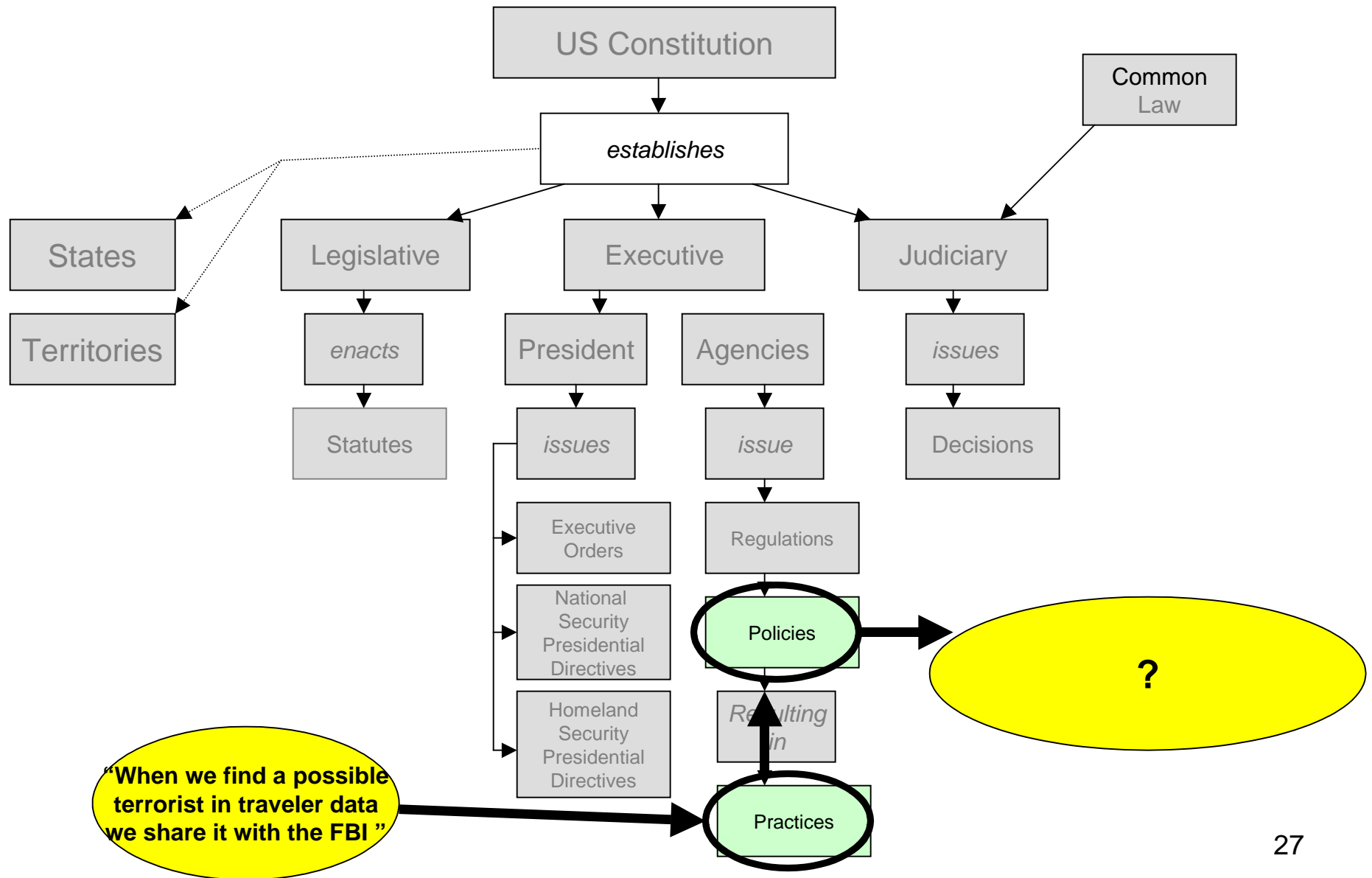
Determine a Complex Proof:

Work Back up the Hierarchy

Example 3

- A practice, a policy, a regulation, a law
- Transportation Security Administration (TSA) shares data about a possible terrorist with the Federal Bureau of Investigation (FBI)
 - The data came from the testing of the “Secure Flight” program





[Federal Register: June 22, 2005 (Volume 70, Number 119)]
[Notices]
[Page 36319-36324]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr22jn05-202]

[[Page 36319]]

Part VI

Department of Homeland Security

Transportation Security Administration

Privacy Act of 1974; Systems of Records: Secure Flight Test Records;
Privacy Impact Assessment; Secure Flight Test Phase; Notice

[[Page 36320]]

operators; and (3) to test the Government's ability to verify the identities of passengers using commercial data and to improve the efficacy of watch list comparisons by making passenger information more complete and accurate using commercial data. For more detail on the purposes and conduct of the Secure Flight testing, please see the revised DTA for the Secure Flight Test Phase, which is published below.

Routine Uses of Records Maintained in the System, Including Categories of Users and the Purposes of Such Uses:

(1) To the Federal Bureau of Investigation where TSA becomes aware of information that may be related to an individual identified in the Terrorist Screening Database as known or reasonably suspected to be or having been engaged in conduct constituting, in preparation for, in aid of, or related to terrorism.

(2) To contractors, grantees, experts, consultants, or other like persons when necessary to perform a function or service related to the Secure Flight program or the system of records for which they have been engaged. Such recipients are required to comply with the Privacy Act, 5 U.S.C. 552a, as amended.

(3) To the Department of Justice (DOJ) or other Federal agency in the review, settlement, defense, and prosecution of claims, complaints, and lawsuits involving matters over which TSA exercises jurisdiction or when conducting litigation or in proceedings before any court, adjudicative or administrative body, when: (a) TSA; or (b) any employee of TSA in his/her official capacity; or (c) any employee of TSA in his/her individual capacity, where DOJ or TSA has agreed to represent the employee; or (d) the United States or any agency thereof, is a party to the litigation or has an interest in such litigation, and TSA determines that the records are both relevant and necessary to the litigation and the use of such records is compatible with the purpose for which TSA collected the records.

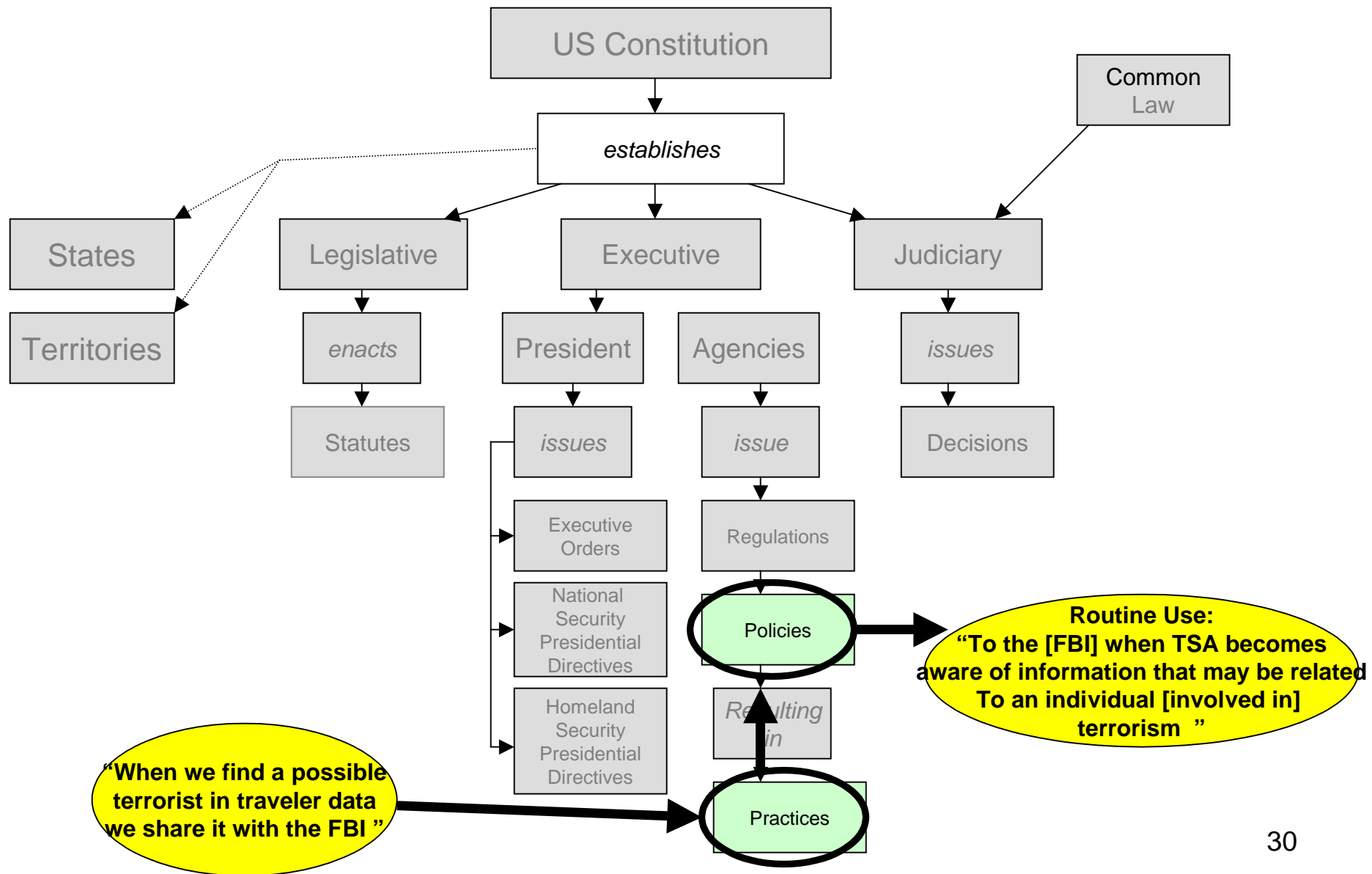
(4) To the National Archives and Records Administration (NARA) or other Federal agencies pursuant to records management inspections being conducted under the authority of 44 U.S.C. 2904 and 2906.

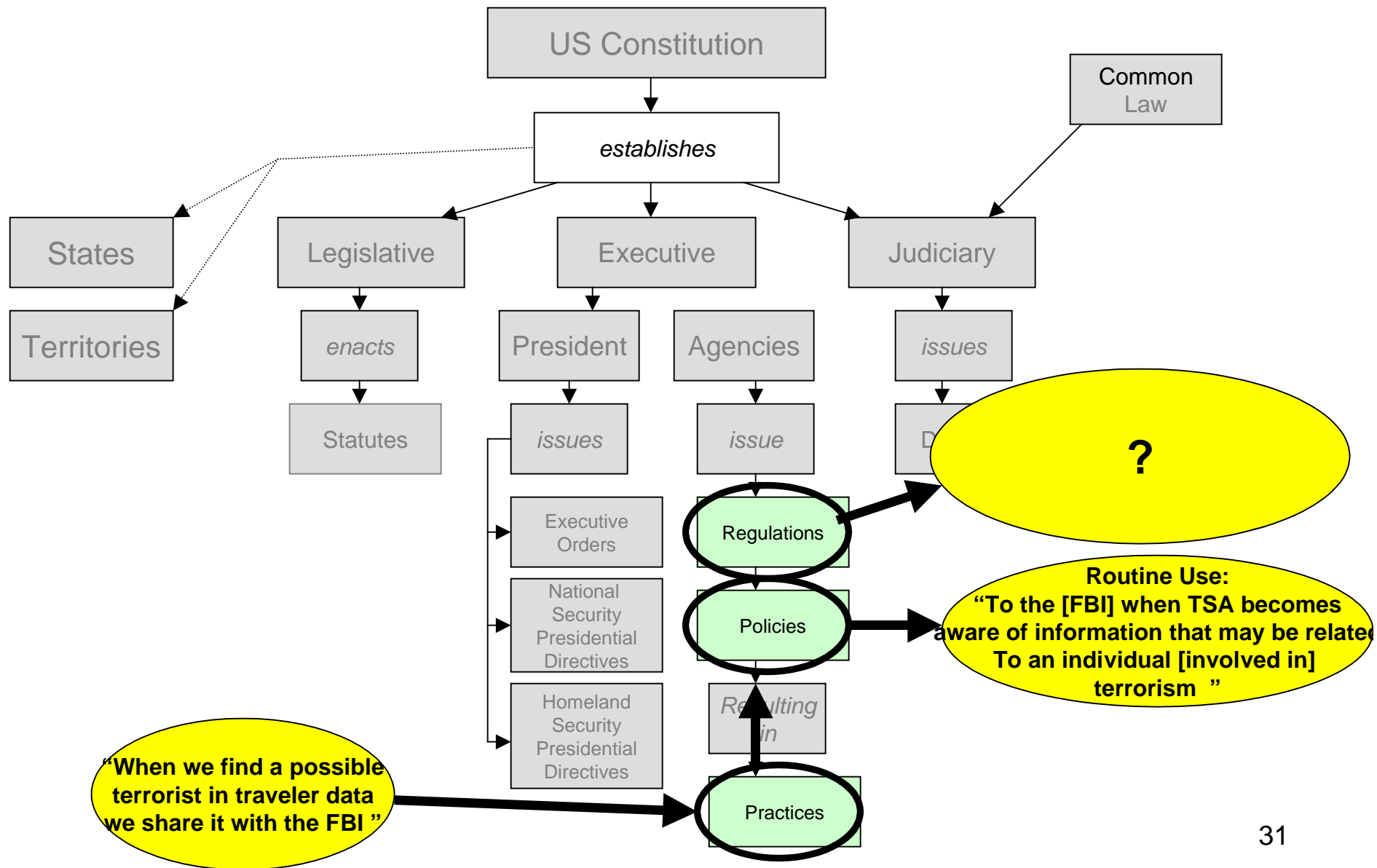
(5) To a Congressional office from the record of an individual in response to an inquiry from that Congressional office made at the request of the individual.

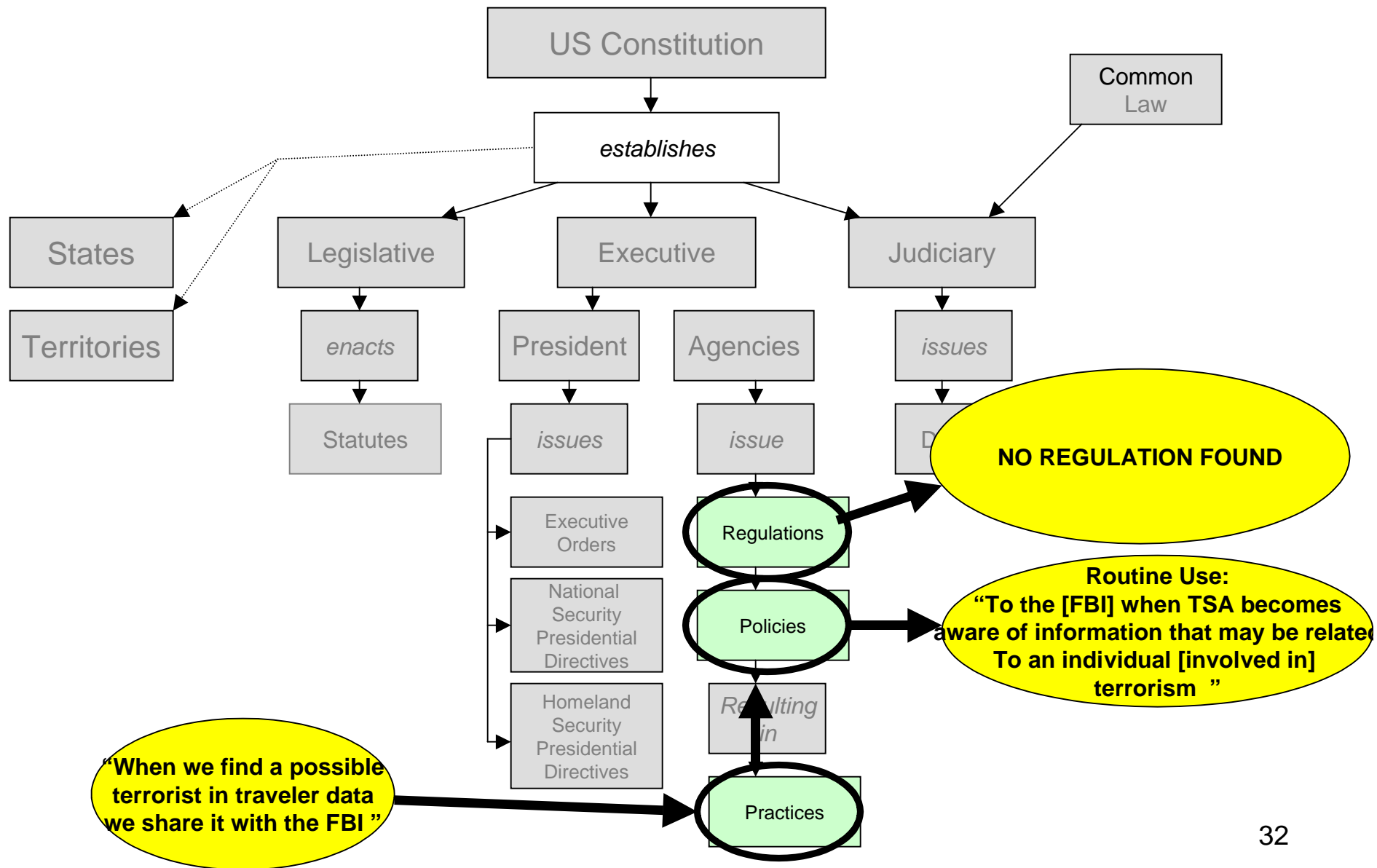
(6) To an agency, organization, or individual for the purposes of performing authorized audit or oversight operations.

Disclosure to Consumer Reporting Agencies:

None.

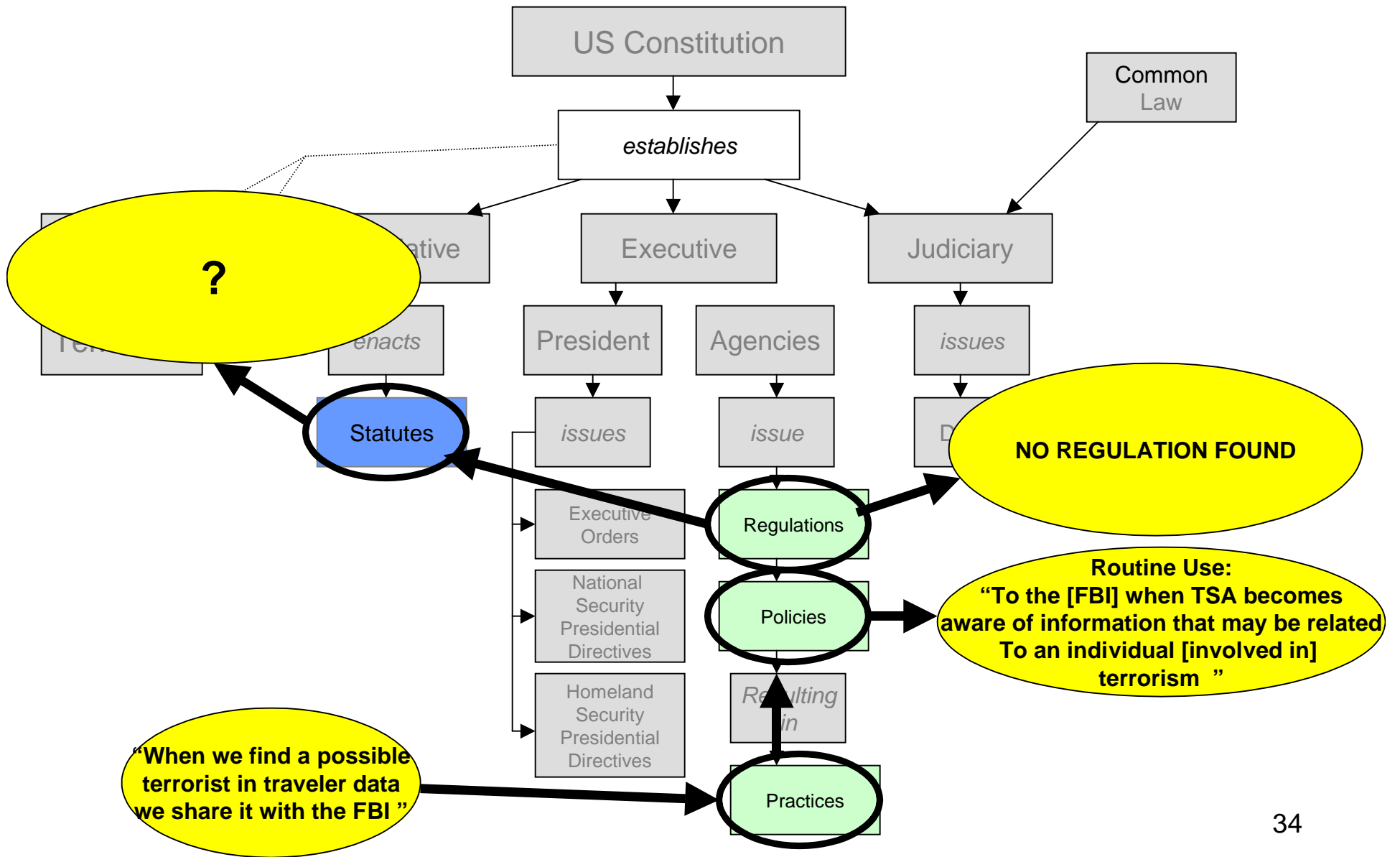






Should we stop there?

Or, just keep going?





legal information institute

US Code collection



collection home faq search donate

TITLE 5 > PART 1 > CHAPTER 5 > SUBCHAPTER II > § 552a
§ 552a. Records maintained on individuals

Prev | Next

Release date: 2005-05-10

(a) Definitions.— For purposes of this section—

- (1) the term "agency" means agency as defined in section 552 (c) ⁽¹⁾ of this title;
- (2) the term "individual" means a citizen of the United States or an alien lawfully admitted for permanent residence;
- (3) the term "maintain" includes maintain, collect, use, or disseminate;
- (4) the term "record" means any item, collection, or grouping of information about an individual that is maintained by an agency, including, but not limited to, his education, financial transactions, medical history, and criminal or employment history and that contains his name, or the identifying number, symbol, or other identifying particular assigned to the individual, such as a finger or voice print or a photograph;
- (5) the term "system of records" means a group of any records under the control of any agency from which information is retrieved by the name of the individual or by some identifying number, symbol, or other identifying particular assigned to the individual;
- (6) the term "statistical record" means a record in a system of records maintained for statistical research or reporting purposes only and not used in whole or in part in making any determination about an identifiable individual, except as provided by section 8 of title 13;
- (7) the term "routine use" means, with respect to the disclosure of a record, the use of such record for a purpose which is compatible with the purpose for which it was collected;
- (8) the term "matching program"—
 - (A) means any computerized comparison of—
 - (I) two or more automated systems of records or a system of records with non-Federal records for the purpose of
 - (i) establishing or verifying the eligibility of, or continuing compliance with statutory and regulatory requirements by, applicants for, recipients or beneficiaries of, participants in, or providers of services with respect to, cash or in-kind assistance or payments under Federal benefit programs, or
 - (ii) recouping payments or delinquent debts under such Federal benefit programs, or

Search this title:

Search Title 5

Notes
Updates
Parallel authorities (CFR)
Your comments

(13) the term “Federal personnel” means officers and employees of the Government of the United States, members of the uniformed services (including members of the Reserve Components), individuals entitled to receive immediate or deferred retirement benefits under any retirement program of the Government of the United States (including survivor benefits).

(b) Conditions of Disclosure.— No agency shall disclose any record which is contained in a system of records by any means of communication to any person, or to another agency, except pursuant to a written request by, or with the prior written consent of, the individual to whom the record pertains, unless disclosure of the record would be—

(1) to those officers and employees of the agency which maintains the record who have a need for the record in the performance of their duties;

(2) required under section [552](#) of this title:

(3) for a routine use as defined in subsection (a)(7) of this section and described under subsection (e)(4)(D) of this section;

(4) to the Bureau of the Census for purposes of planning or carrying out a census or survey or related activity pursuant to the provisions of title 13;

(5) to a recipient who has provided the agency with advance adequate written assurance that the record will be used solely as a statistical research or reporting record, and the record is to be transferred in a form that is not individually identifiable;

(6) to the National Archives and Records Administration as a record which has sufficient historical or other value to warrant its continued preservation by the

(a) Definitions.— For purposes of this section—

(1) the term “agency” means agency as defined in section [552 \(e\) \[1\]](#) of this title;

(2) the term “individual” means a citizen of the United States or an alien lawfully admitted for permanent residence;

(3) the term “maintain” includes maintain, collect, use, or disseminate;

(4) the term “record” means any item, collection, or grouping of information about an individual that is maintained by an agency, including, but not limited to, his education, financial transactions, medical history, and criminal or employment history and that contains his name, or the identifying number, symbol, or other identifying particular assigned to the individual, such as a finger or voice print or a photograph;

(5) the term “system of records” means a group of any records under the control of any agency from which information is retrieved by the name of the individual or by some identifying number, symbol, or other identifying particular assigned to the individual;

(6) the term “statistical record” means a record in a system of records maintained for statistical research or reporting purposes only and not used in whole or in part in making any determination about an identifiable individual, except as provided by section [8](#) of title [13](#);

(7) the term “routine use” means, with respect to the disclosure of a record, the use of such record for a purpose which is compatible with the purpose for which it was collected;

(e) Agency Requirements.— Each agency that maintains a system of records shall—

(1) maintain in its records only such information about an individual as is relevant and necessary to accomplish a purpose of the agency required to be accomplished by statute or by executive order of the President;

(2) collect information to the greatest extent practicable directly from the subject individual when the information may result in adverse determinations about an individual's rights, benefits, and privileges under Federal programs;

...

(4) subject to the provisions of paragraph (11) of this subsection, publish in the Federal Register upon establishment or revision a notice of the existence and character of the system of records, which notice shall include—

(A) the name and location of the system;

(B) the categories of individuals on whom records are maintained in the system;

(C) the categories of records maintained in the system;

(D) each routine use of the records contained in the system, including the categories of users and the purpose of such use;

(E) the policies and practices of the agency regarding storage, retrievability, access controls, retention, and disposal of the records;

WHAT???

To Recap:

- “No agency shall disclose any record ... to another agency, ...unless disclosure of the record would be— “
- “for a routine use as defined in subsection (a)(7) of this section”
- “and described under subsection (e)(4)(D) of this section”

HUH???

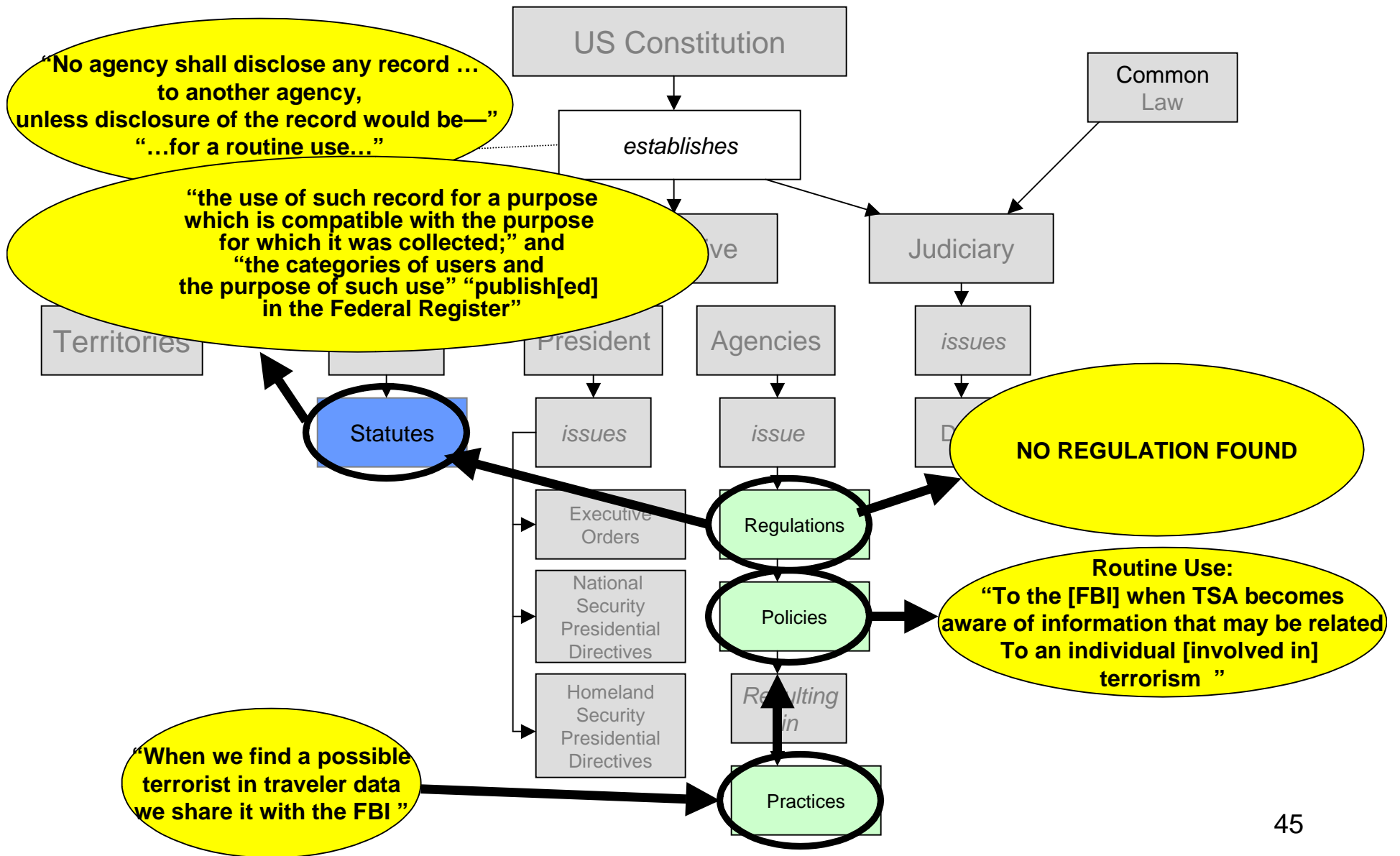
To Clarify:

- “No agency shall disclose any record ... to another agency, ...unless disclosure of the record would be— “
- “for a routine use as defined in subsection (a)(7) of this section”
 - “the term ‘routine use’ means . . . the use of such record for a purpose which is compatible with the purpose for which it was collected;”
- “and described under subsection (e)(4)(D) of this section”
 - “subject to the provisions of paragraph (11) of this subsection, publish in the Federal Register upon establishment or revision a notice of the existence and character of the system of records, which notice shall include— “
 - “each routine use of the records contained in the system, including the categories of users and the purpose of such use;”

In English?

Seriously...

- An agency shouldn't give an electronic record to anyone
- Unless it's for a reason consistent with why the information was collected
- And, it previously published notice that it would do so



LOGIC?

- RULE:

1. Agency1 publishes “routine use” notice in Federal Register
2. The “Routine Use” notice identifies Agency2 as a recipient for information
3. The “Routine Use” notice identifies the circumstances under which information will be shared
4. The “Routine Use” may only authorize sharing that is for a purpose consistent with the original purpose for collecting the information
5. Agency1 may pass information to Agency 2
6. 1, 2, 3, and 4 must be true for 5 to be true

- FACTS:

1. TSA published a “routine use” notice for Secure Flight testing in Federal Register
2. The “Routine Use” notice identifies the FBI as a recipient for information
3. The “Routine Use” notice identifies the circumstances under which information will be shared are when TSA becomes aware of information that may be related To an individual [involved in] terrorism ”
4. The “Routine Use” is authorizing sharing for a purpose consistent with the original purpose for collecting the information
 1. TSA collected the information as part of an effort to identify people involved in terrorism
5. TSA may pass the information to the FBI
6. 1, 2, 3, and 4 are true, so 5 is true

Some Good News!

- Most of the items have standard representations
 - Laws are vv CCC § sss
 - Read “vv” = volume number
 - CCC = abbreviated name of publication (i.e., “USC” = United States Code)
 - § = section
 - “sss” = section number
 - “Deadbeat Dad” law is 18 USC § 228

Read all about it!

- The “Bluebook”
 - Collaboration of Harvard, Yale, Penn & Columbia
- Standard naming conventions for
 - Laws, Regulations, Case Decisions, etc.



Example 4

- Using “triples” concept to handle more complex or voluminous rules
- Following example addresses only the definition of the word “agency” in the Privacy Act
 - Whether an entity is or is not an “agency” as defined here determines whether or not the entity has to follow the rules of the Privacy Act

| | | | |
|----------------------------|------------------------|------------------------------------|-------------------|
| 5 USC § 552a | Is a | Statute | |
| 5 USC § 552a | Popular Name | Privacy Act | |
| 5 USC § 552a | Regulates (applies to) | Privacy Act: Agency ^[1] | |
| Privacy Act: Agency | Definition | 5 USC § 552(e) ^[2] | |
| 5 USC § 552 | Popular Name | Freedom of Information Act | |
| Freedom of Information Act | Acronym | FOIA | |
| 5 USC § 552(f)(1) | Defines | FOIA: Agency | |
| Privacy Act: Agency | Includes | FOIA: Agency | |
| FOIA: Agency | Is | Executive Branch | 5 USC § 552(f)(1) |
| Executive Branch | Includes | Executive Department | 5 USC § 552(f)(1) |
| Executive Branch | Includes | Military | 5 USC § 552(f)(1) |
| Military | Is | Department of Defense | |
| Executive Branch | Includes | Government Corporation | 5 USC § 552(f)(1) |
| Executive Branch | Includes | Government Controlled Corporation | 5 USC § 552(f)(1) |
| Executive Branch | Includes | Independent Regulatory Agency | 5 USC § 552(f)(1) |
| FOIA: Agency | Definition also | 5 USC § 551 | 5 USC § 552(f)(1) |
| FOIA: Agency | Includes | Agency ³ | |
| 5 USC § 551(1) | Defines | Agency ³ | |
| Agency ³ | Is | Authority of US Government | |
| Agency ³ | Is not (excludes) | Congress | 5 USC § 551(1)(A) |
| Agency ³ | Is not (excludes) | US courts | 5 USC § 551(1)(B) |
| Agency ³ | Is not (excludes) | US territorial government | 5 USC § 551(1)(C) |
| US Territorial Government | Is | Puerto Rico | |

^[1] “Agency” is used by other statutes with other definitions.

^[2] This is an error. 5 USC § 552(e) was moved to 5 USC § 552(f) in 1999.

Overview of Simple Legal Analysis

- Rule & fact can be matched with mathematic precision
 - $A < \#$ of days stated as time limit in B
 - $A =$ item included in a list in B
- Retrieve known external information to perform match
 - Need to retrieve C, which contains a fact about A that makes it possible to determine $A = B$
 - C may be identified in A or B
 - C may be so commonly used in this scenario that the “pull” can be pre-coded
- Retrieve previously unknown external information to perform match
 - Cannot determine “if A then B” through obvious paths
 - Need ability to search across broad spectrum for possible facilitating information
- Recognize multiple possible matches and select best match
 - Find 100 definitions of “A”
 - Need ability to make determination which is related to current activity

More Good News!

- Commercial vendors have already begun to parse laws and cases
 - Already have hotlinks
 - Already have some choices of content summarization
 - Already have hierarchical structures for cases
- Open source equivalents have begun but are immature

Another day...

- More complex analysis
 - Using case law
 - Holding v. *dicta*
 - “Four corners”
 - Understanding meaning of undefined words
 - Etc.