



Aligning Law and Action

a conceptual and computational inquiry

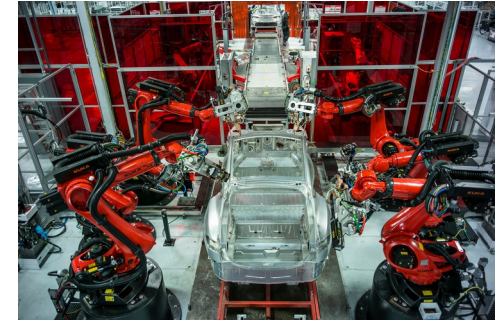
Ph.D. Thesis Defense – 8 December 2016

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Problem context

- Fast pace of innovation
 - Technological
 - Social
- Integration
 - Economic
 - Institutional



Problem context, consequences

→ Increased expectations towards
administrative organizations:

- *efficiency*, in terms of resources spent,
- *efficacy*, in terms of impact,
- *agility*, in terms of:
 - rapidity of response (*responsiveness*)

↓ *In practice, the same expectations
we have towards an ATM..*

an engineering problem?



Problem context, consequences

→ Increased expectations towards administrative organizations:

- *efficiency*, in terms of resources spent,
- *efficacy*, in terms of impact,
- *agility*, in terms of:
 - rapidity of response to **failures** (*responsiveness*)
 - easiness of adaptation (*adaptability*)



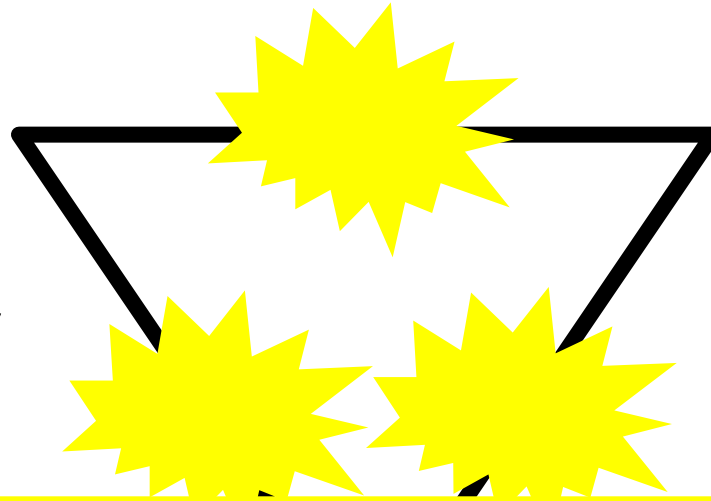
Initial research question

- How to establish a *constructive computational legal theory* which supports administrative organizations in achieving better responsiveness and adaptability?

Three frictioning “realities”

**sources
of law**

What the law
states..



**social
system**

How people
behave..

are three matters only loosely coupled

services

How public administrations
implements the law..

Three representational domains

sources
of law



legal norms

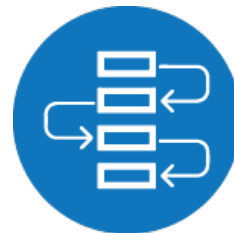


legal cases



*stories,
experiences*

social
system



*business
process models*

services

Three representational domains

sources
of law



legal norms



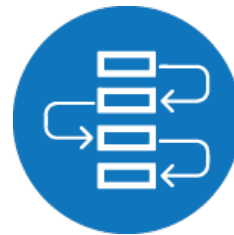
legal cases



*stories,
experiences*

social
system

frictions identified by **alignment checking**



*business
process models*

services

Common representational ground?

sources
of law



legal norms



legal cases



*stories,
experiences*

social
system



*business
process models*

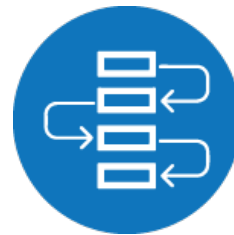
services



legal cases



*stories,
experiences*



*business
process models*



legal norms

institutional characterizations
of abstract or situated actions

intentional characterizations
of situated actions

common ground:
actions.. roles!

specifications
of actions



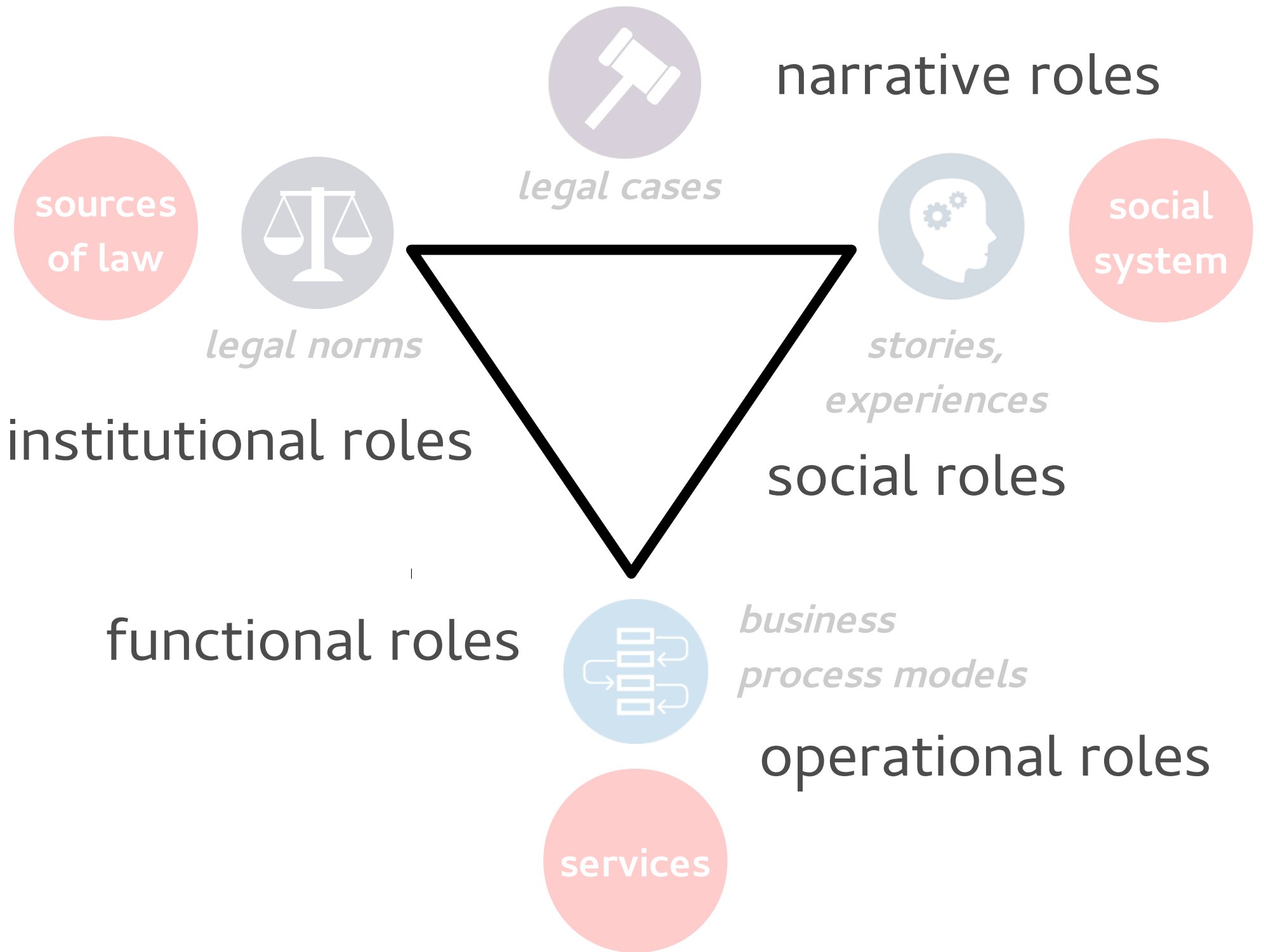
services

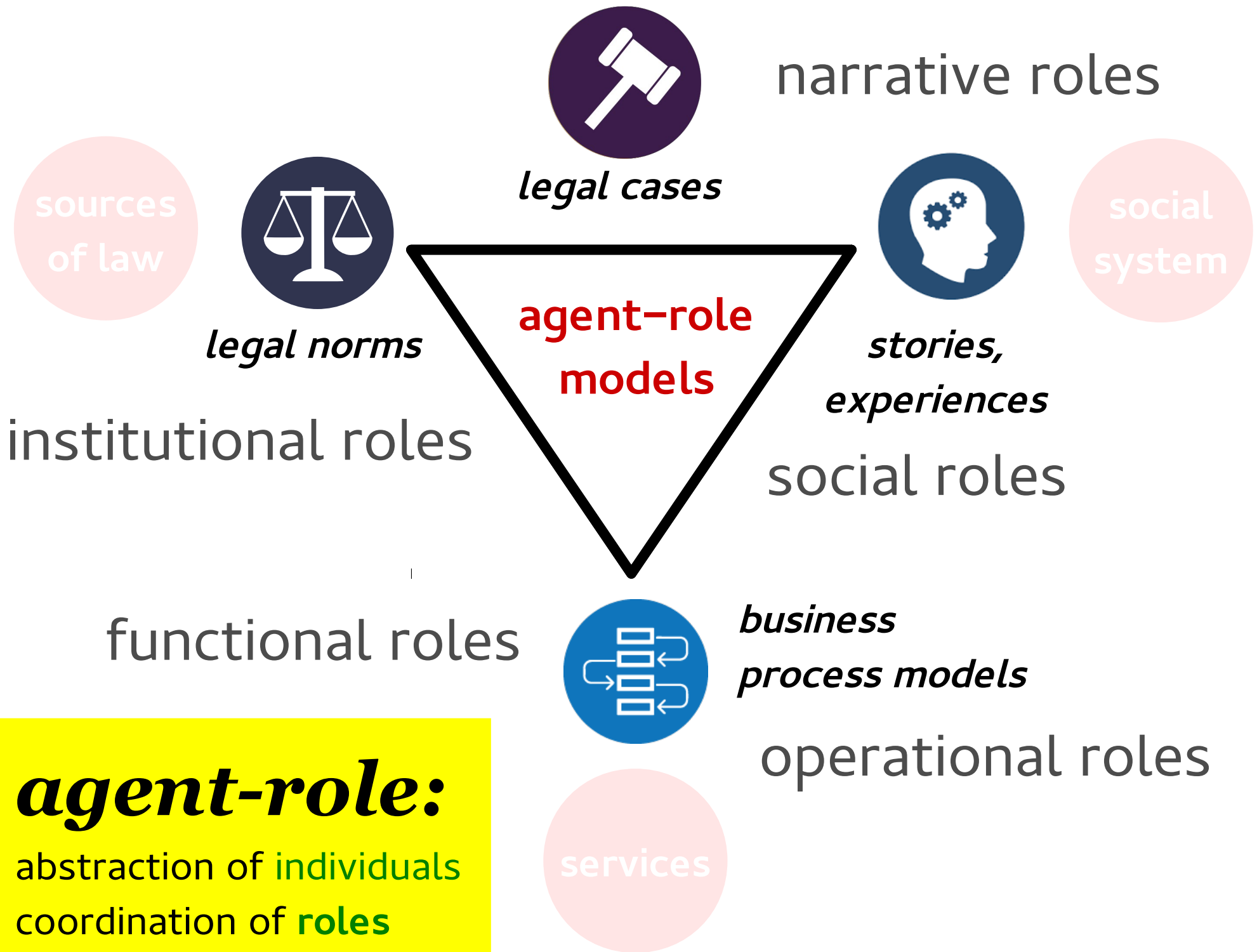


sources
of law



social
system





What's in an *agent-role* model?

Normative positions

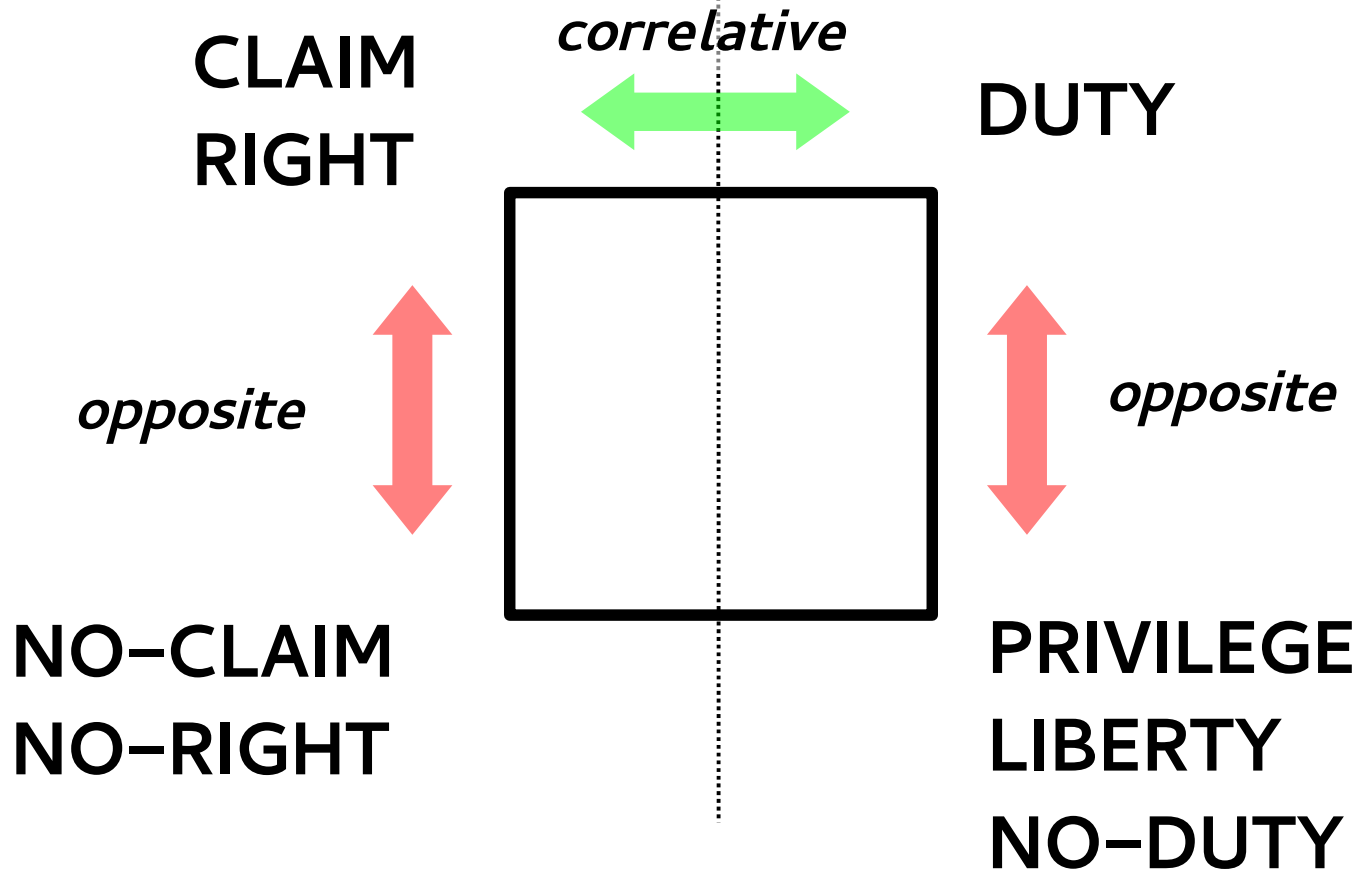
Institutional positions

- In a formal institution, each actor is bound to other actors according to certain legal relationships, associated to *legal positions*.
- Hohfeld [1917] introduced a visual organization of *fundamental legal positions* encountered in adjudications.

First Hohfeldian square

beneficiary perspective

addressee perspective

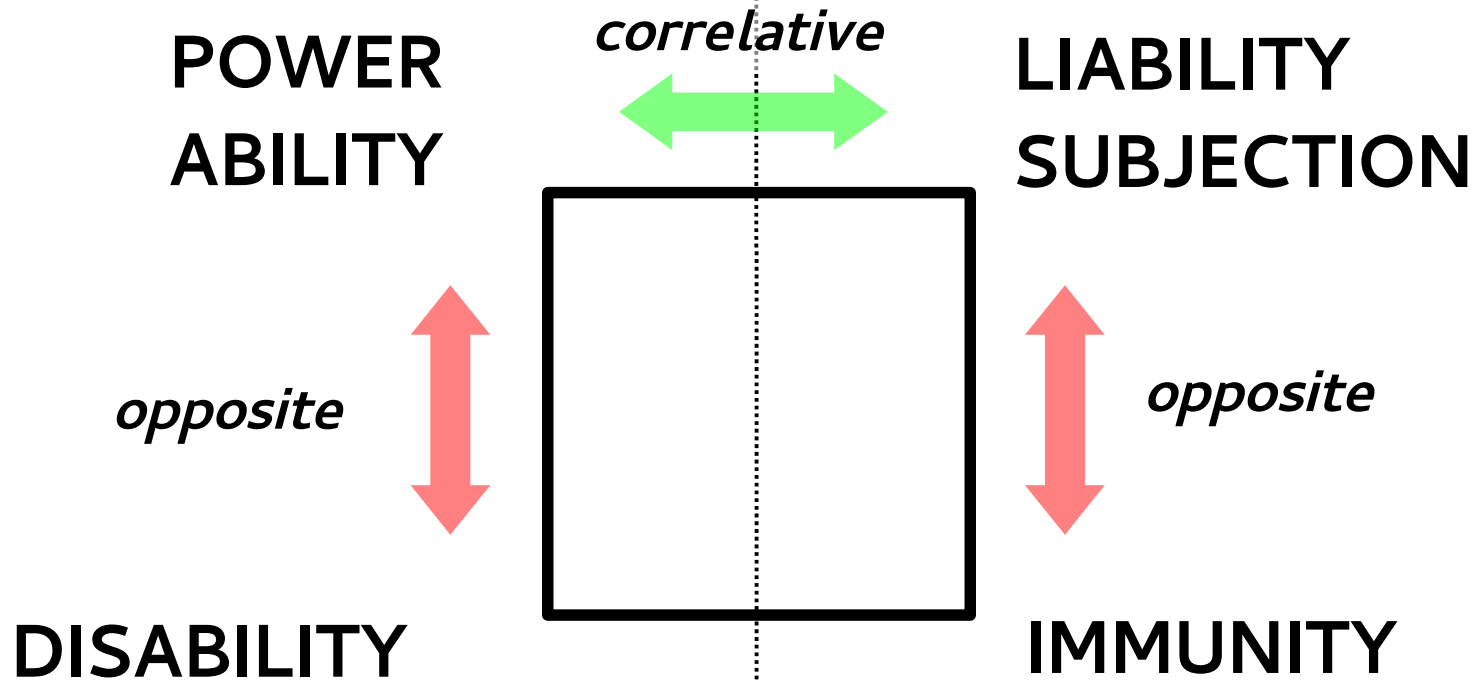


W. N. Hohfeld. Fundamental legal conceptions as applied in judicial reasoning. The Yale Law Journal, 1917.

Second Hohfeldian square

performer perspective

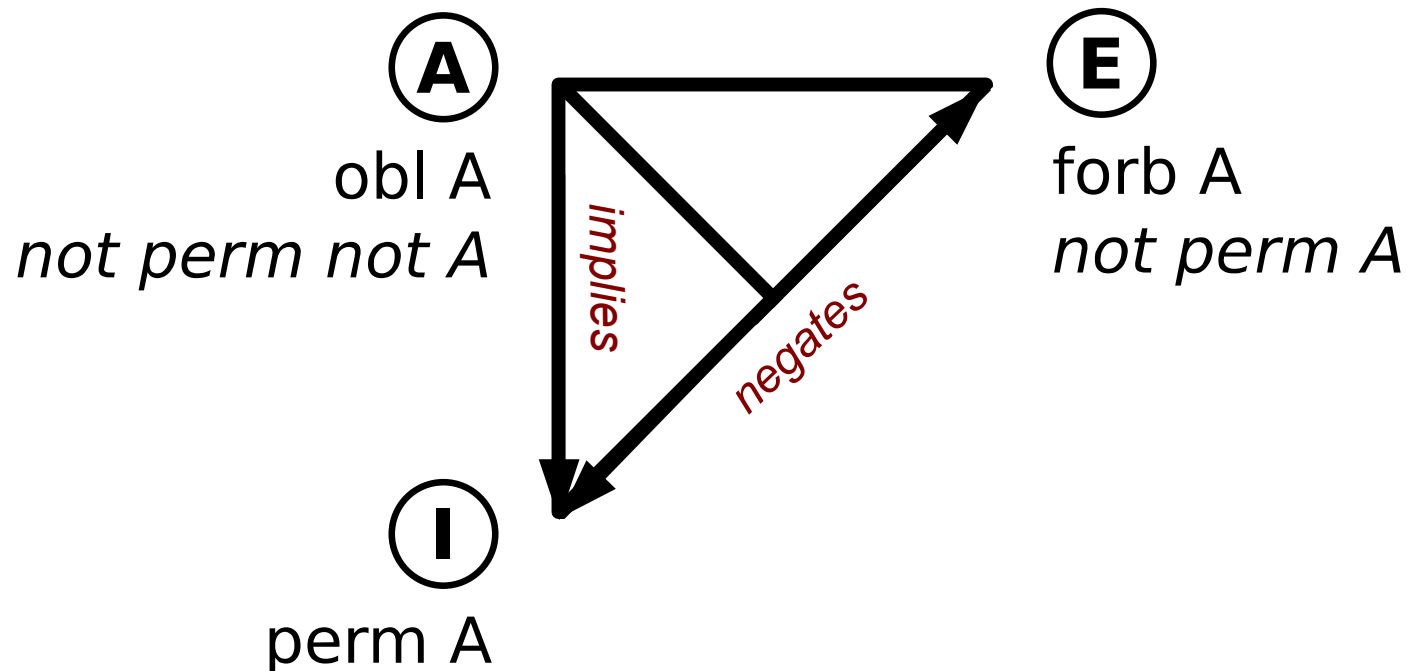
recipient perspective



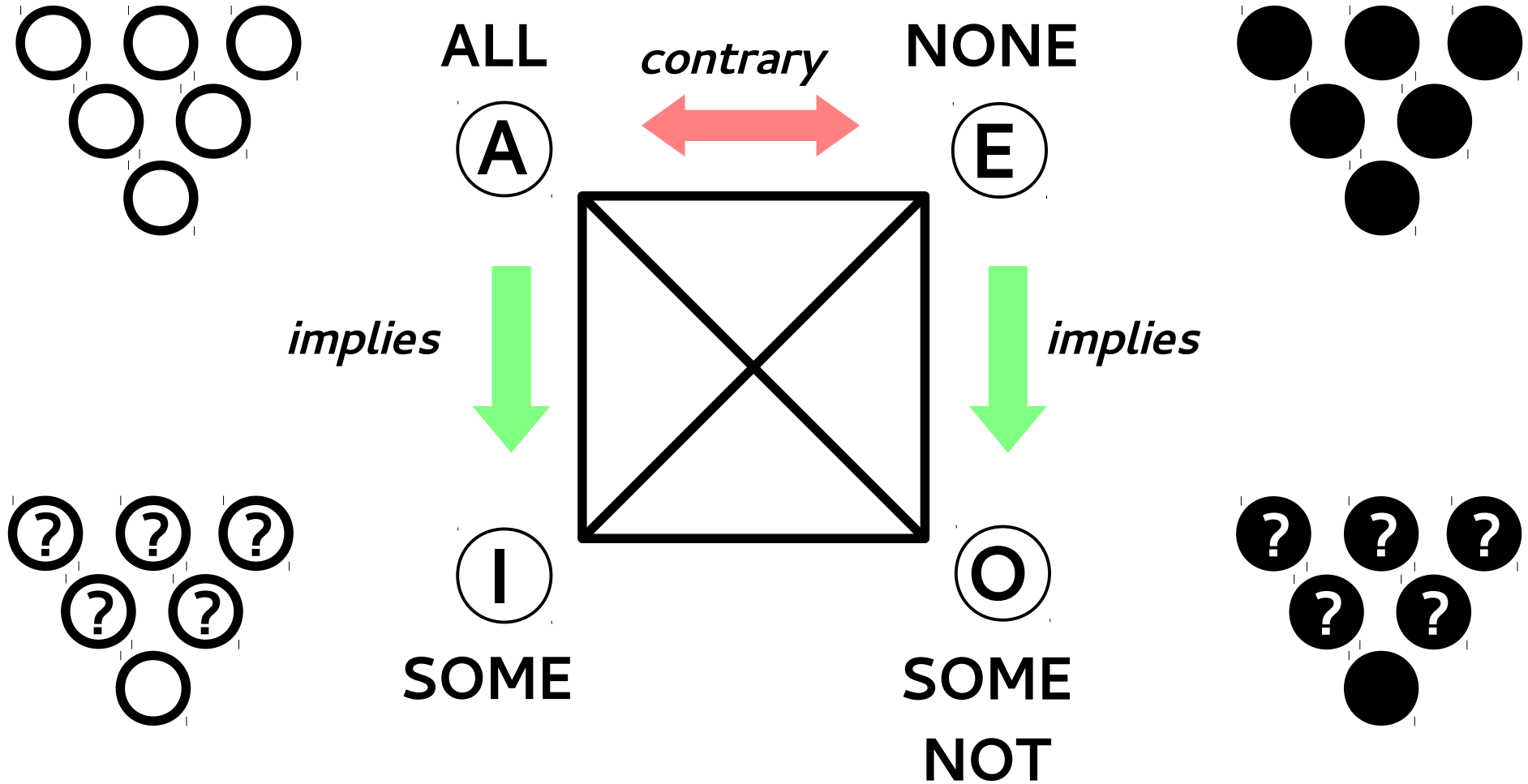
Lindhal's formal analysis (1977) showed that liberty and immunity relationships are asymmetrical in the framework

Similar asymmetries

These asymmetries can be explained by referring to the standard axioms of **deontic logic**, here represented on a portion of the Aristotelian square.

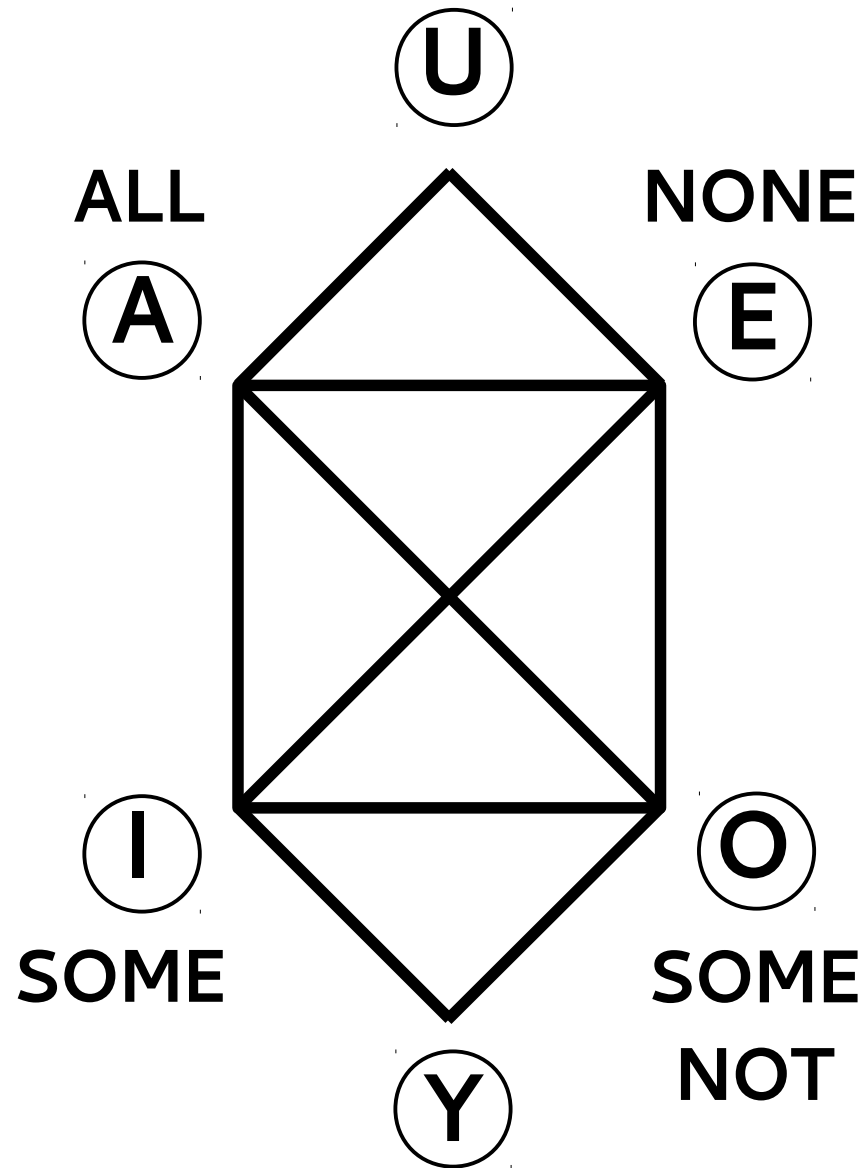


The (existential) Aristotelian Square



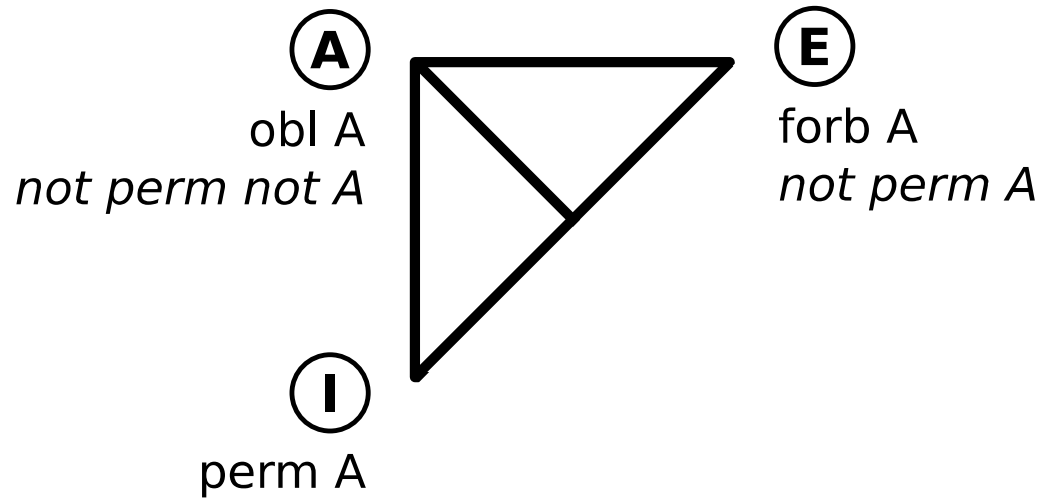
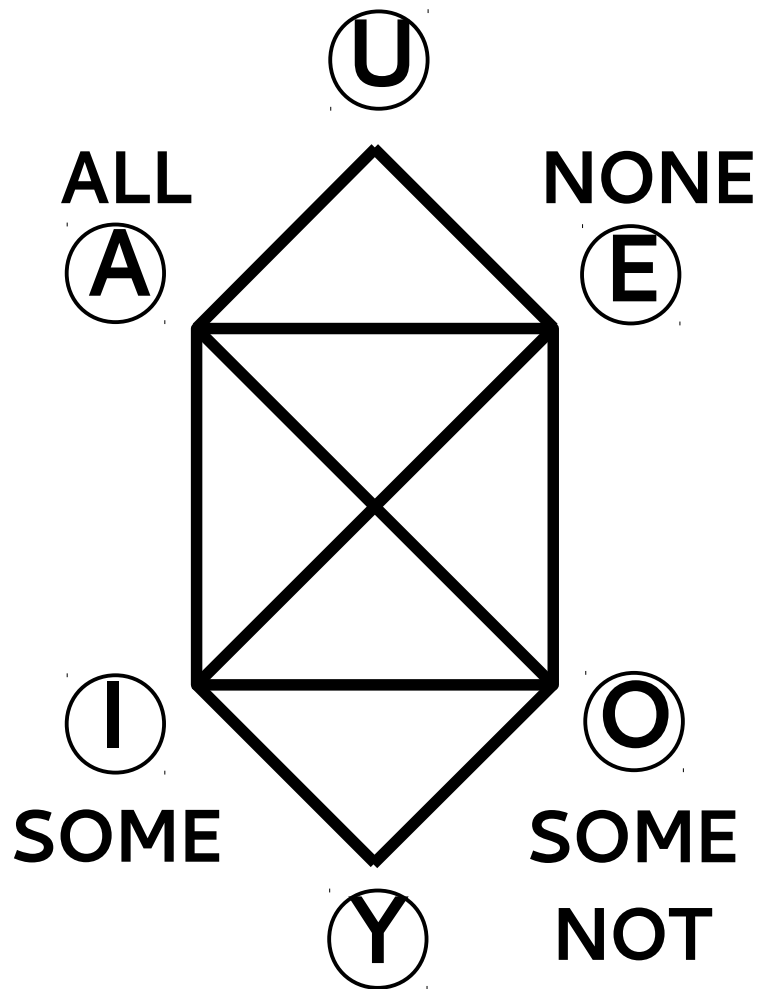


ALL or NONE



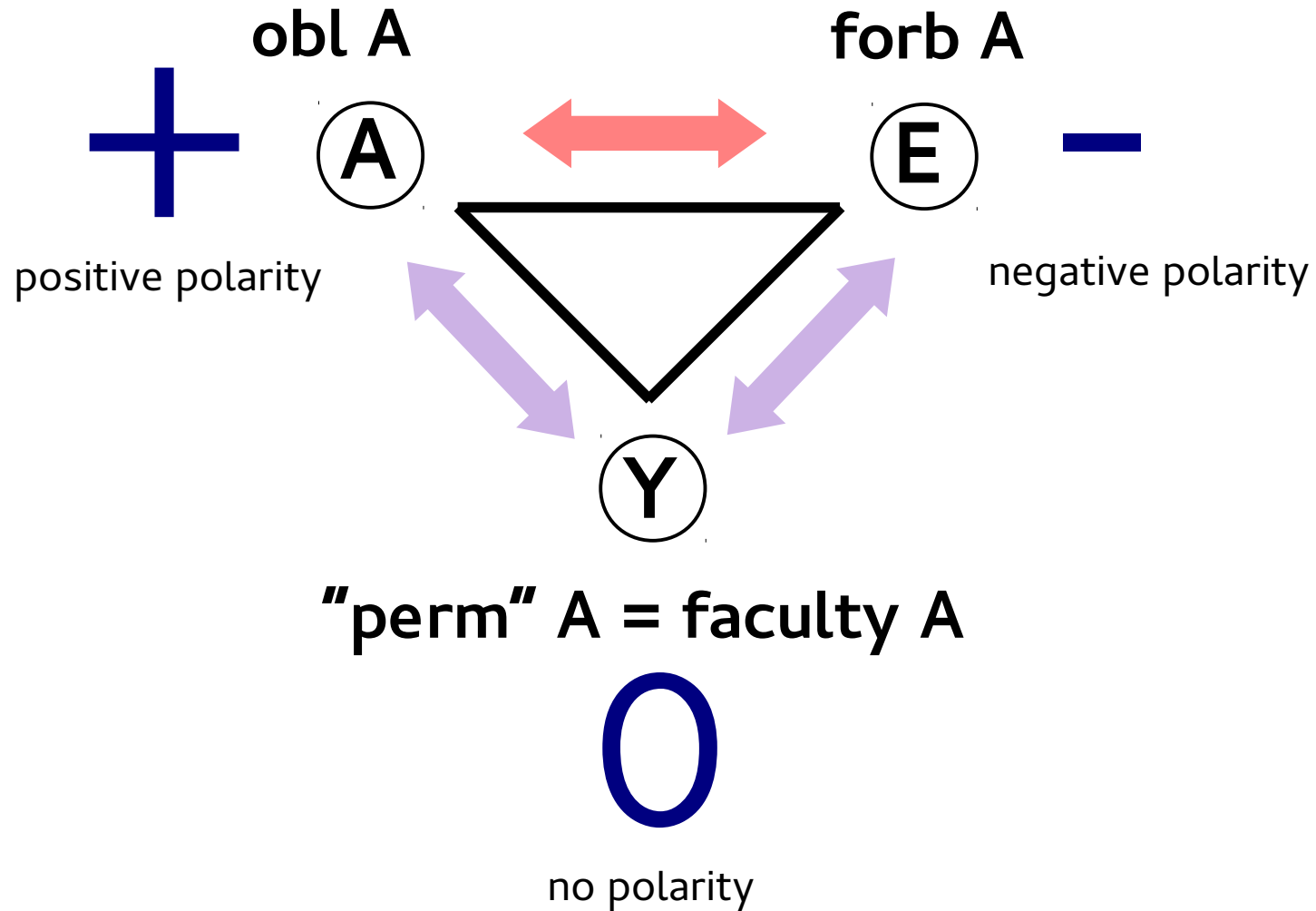
SOME and SOME NOT \equiv "SOME"

ALL or NONE



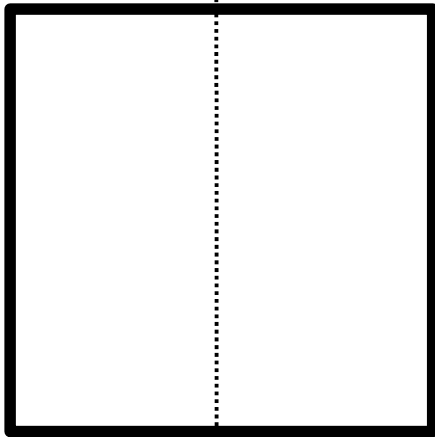
SOME and SOME NOT \equiv "SOME"

Deontic triangle of contrariety



CLAIM

DUTY



NO-CLAIM

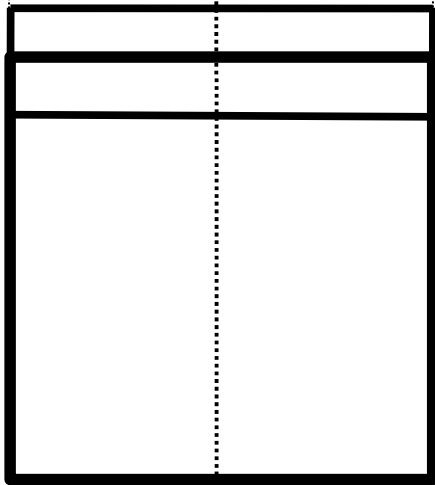
LIBERTY

beneficiary perspective

addressee perspective

CLAIM

DUTY

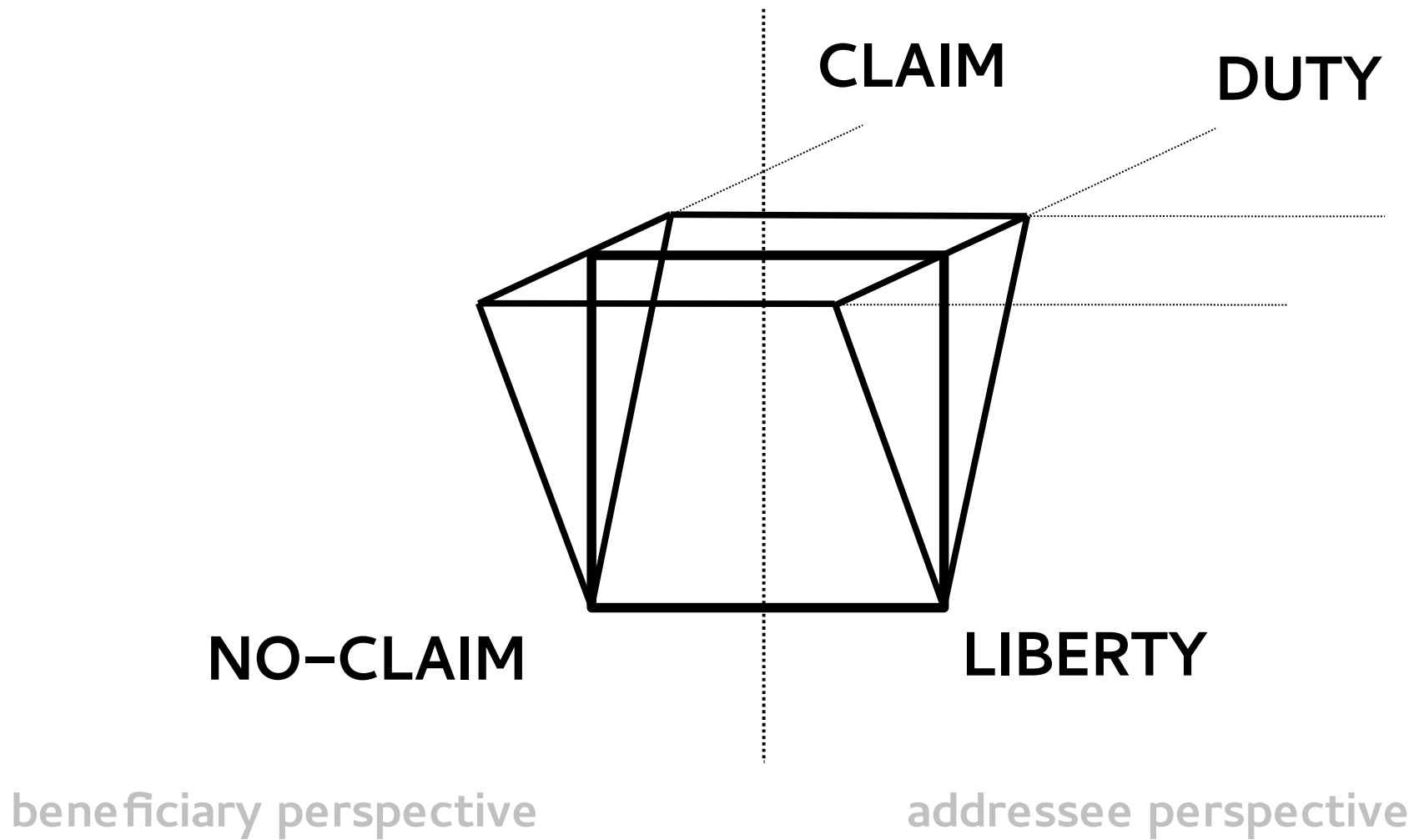


NO-CLAIM

LIBERTY

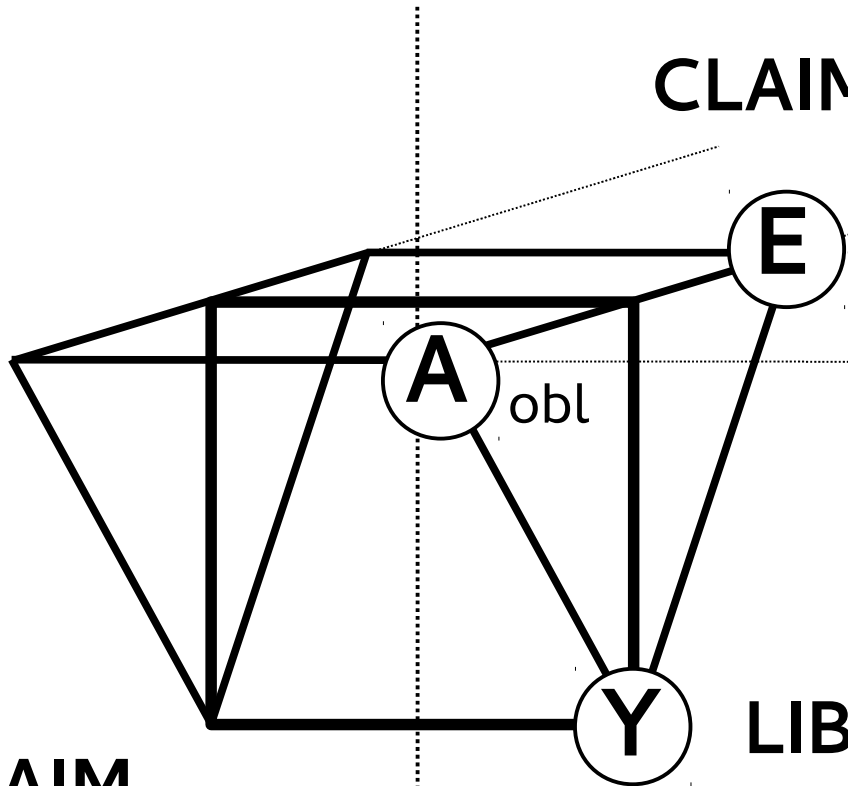
beneficiary perspective

addressee perspective



CLAIM

DUTY



forb

obl

"perm" = faculty

+

-

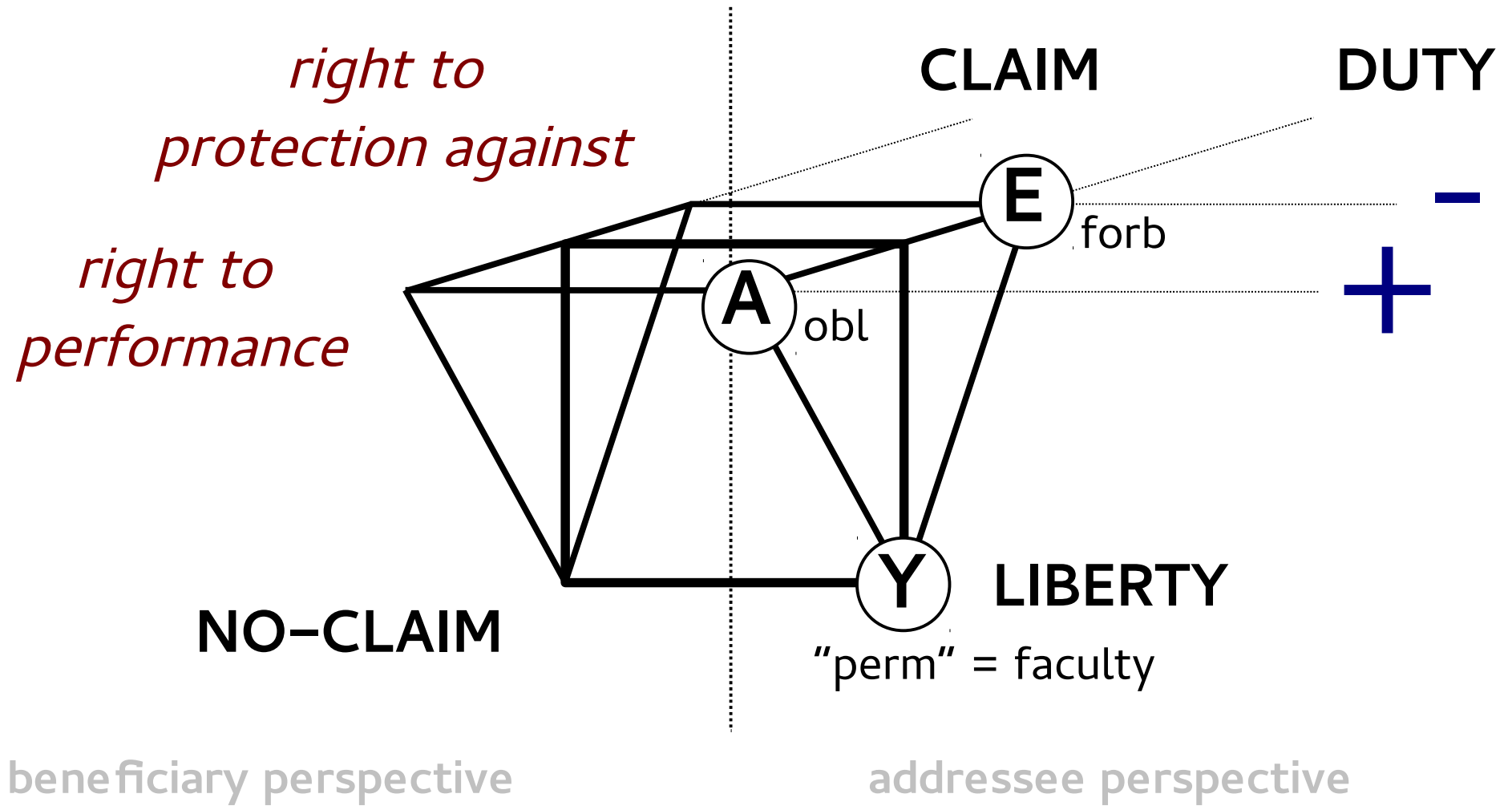
NO-CLAIM

LIBERTY

beneficiary perspective

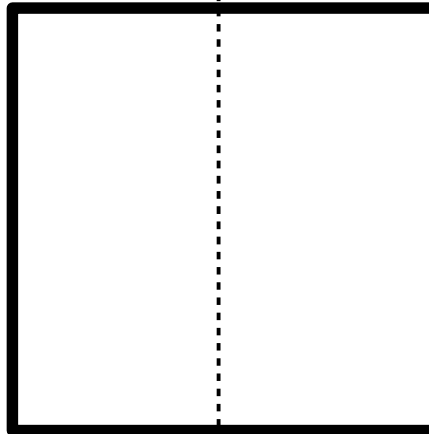
addressee perspective

First Hohfeldian Prism



POWER

LIABILITY



DISABILITY

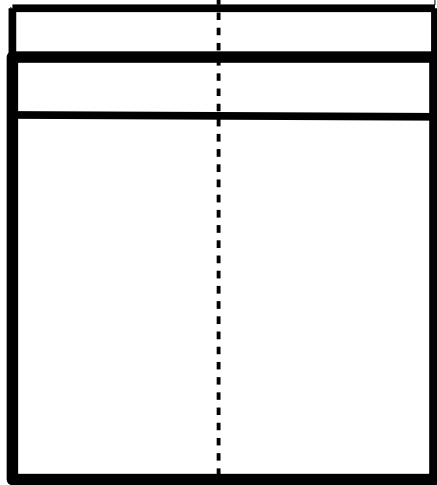
IMMUNITY

performer perspective

recipient perspective

POWER

LIABILITY

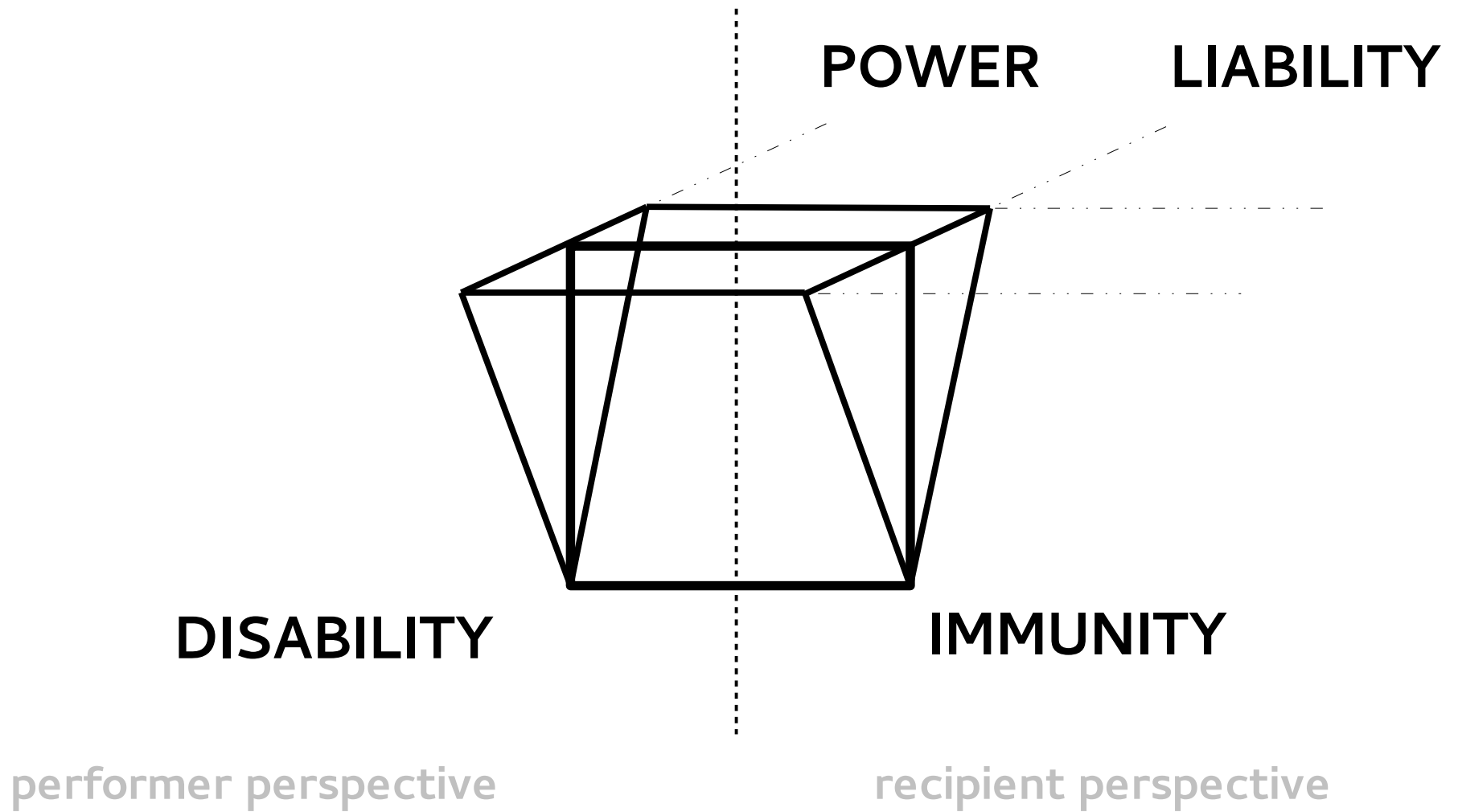


DISABILITY

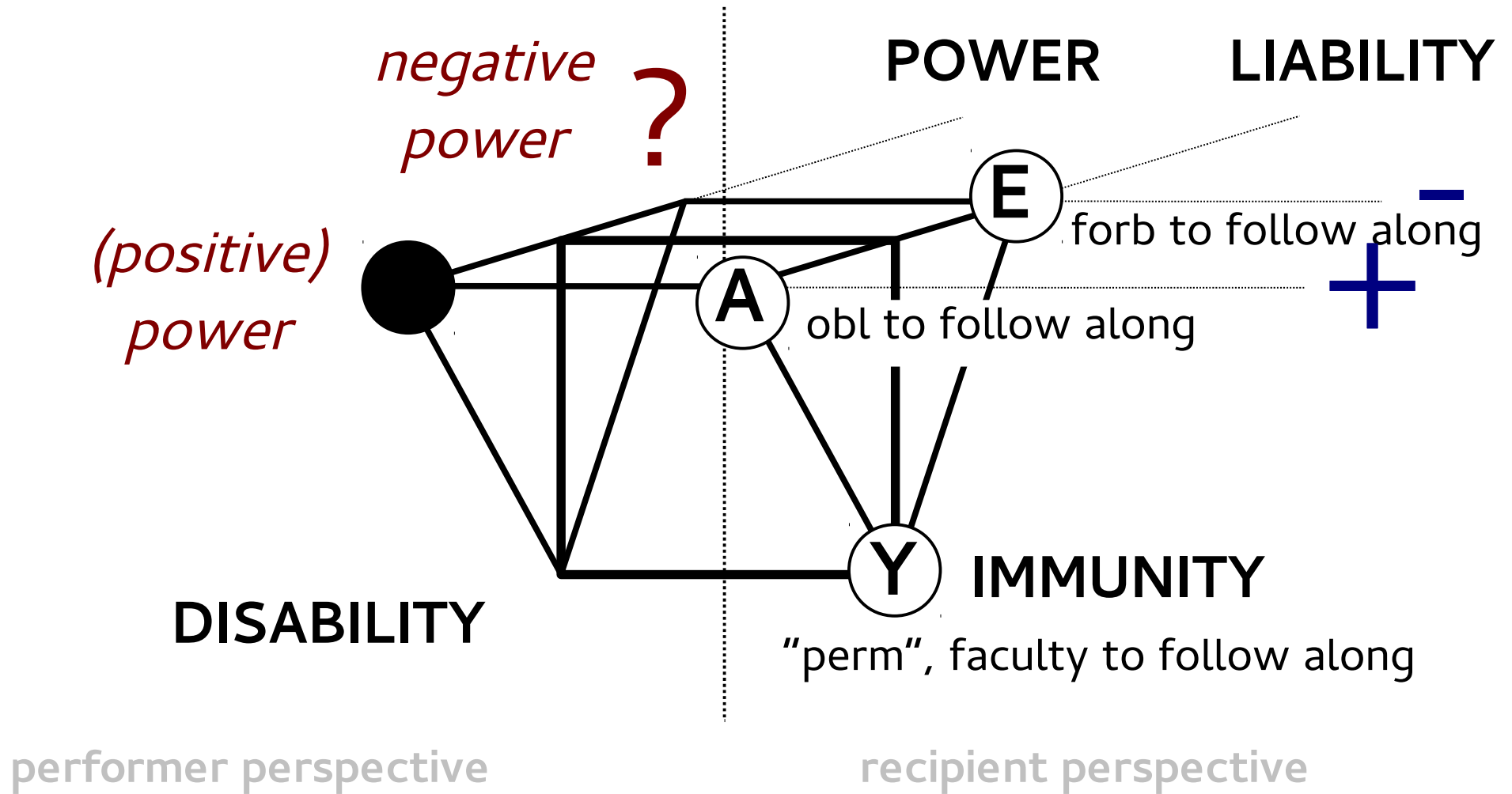
IMMUNITY

performer perspective

recipient perspective



Second Hohfeldian Prism



Negative liability – confirmation

“Know all men by these presents [...] we have unanimously and deliberately declared [...] that the King of Spain has forfeited, ipso jure, all hereditary right to the sovereignty of those countries, and are determined from henceforward not to acknowledge his sovereignty or jurisdiction [...], ***nor suffer others to do it.***”

The Dutch Declaration of Independence
Act of Abjuration (1581)

Agentive positions

From institutional to agentive

- *intuition*: **correlativeness** of legal relationships holding between two parties can be put in relation with the correlativeness **of the agent with his own environment**



investigating a kind of
"contract for living"

Why is this important?

- It provides a richer expressivity than usual intentional models.
- It shows is a deep connection between practical reasoning and normative reasoning categories:

Law is *embedded* with a theory of mind.

Cognitive grounding

→ Mapping of general reasoning questions:



- From commitment to action
 - *What is to be done?*
- From commitment to monitoring
 - *What is to be paid attention to?*

“It is obligatory to finish the thesis in four years.”

“It is forbidden that four years are spent without finishing the thesis.”

Are they the same?

“It is obligatory to finish the thesis in four years.”

~ obl(thesis \vee \neg 4ypassed)

“It is forbidden that four years are spent without finishing the thesis.”

~ forb(\neg thesis \wedge 4ypassed)

obl(A) \leftrightarrow forb(\neg A)

Deontic logic would say yes.

“It is obligatory to finish the thesis in four years.”

“It is forbidden that four years are spent without finishing the thesis.”

But in principle they activate different patterns (**ACQUIRE** vs **PREVENT**)
→ different *susceptibilities!*

Returning on agility

sources
of law



legal norms

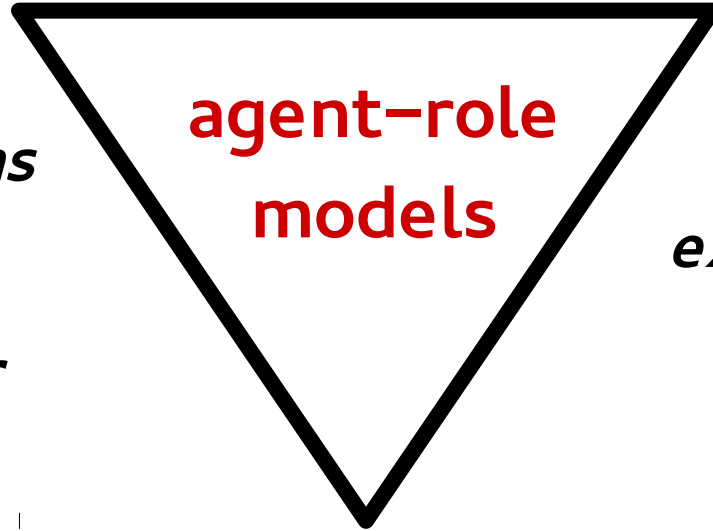


legal cases



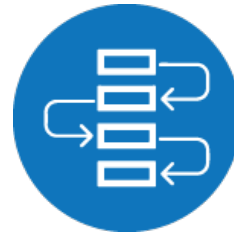
*stories,
experiences*

social
system



**agent-role
models**

*Looking for
frictions...*



*business
process models*

services

adaptive

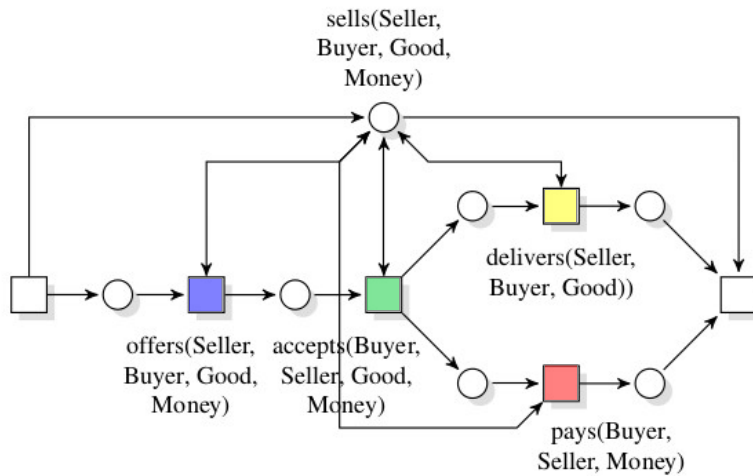
normative change
social change

punctual

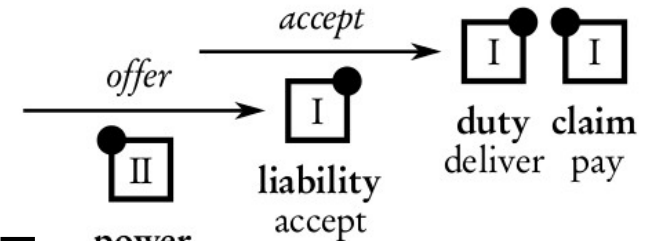
cases of non-compliance
wrong service execution

Checking alignment between models

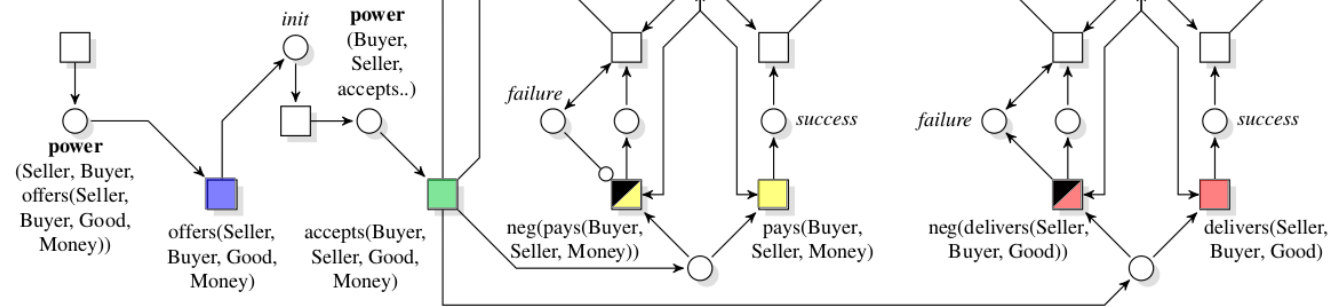
Service model



Normative model

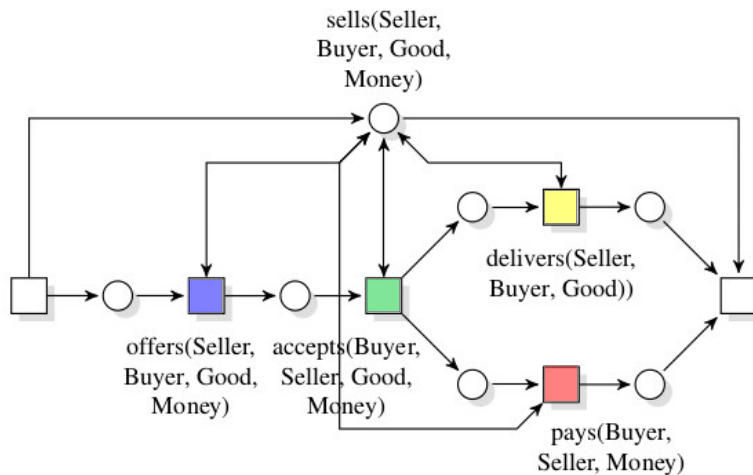


are they
"compatible"?
(after execution: yes!)

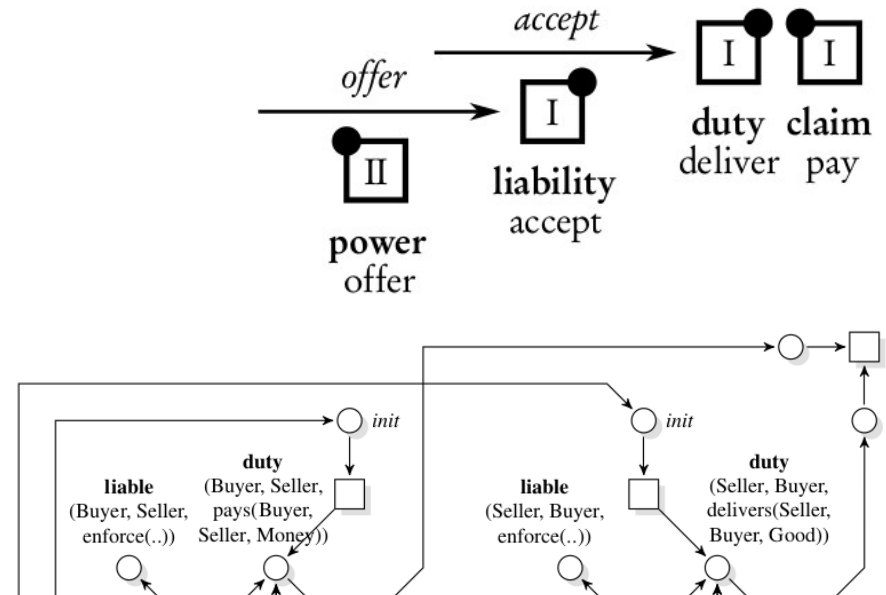


Checking alignment between models

Service model



Normative model



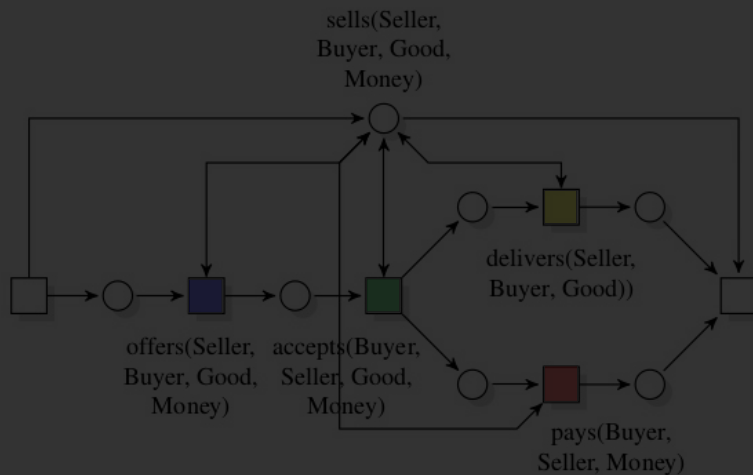
NOTE: normative model issued after *interpretation*

→ alternative interpretations can be accounted

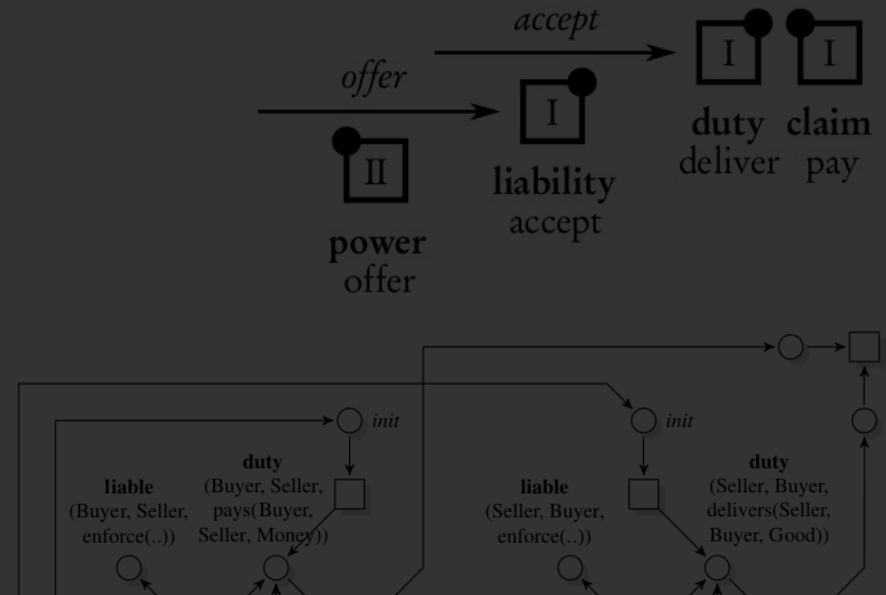
Deciding the final interpretation is a matter of *justification*, and then *argumentation*...

Checking alignment between models

Service model



Normative model



NOTE: normative model issued after *interpretation*
→ alternative interpretations can be accounted

Deciding the final interpretation is a matter of *justification*, and then *argumentation*...

Conclusion

Outlining the kernel of agency

- The core problem – of *normative, epistemic and ontological frictions* – is more general than the legal domain, and it is related to the different modalities we attribute to reality.



collective



individual



physical

Key points

- Importance of acknowledging the deep interaction of *normative concepts* with *practical reasoning*,
- Necessity of mapping ***constructivist*** and ***pluralistic*** approaches in technological terms
 - incremental acquisition of relevant cases
 - maintenance of alternative interpretations

guidance \neq control

requires

less data

more knowledge