Revisiting Constitutive Rules

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- Most analytic contributions consider **constitutive rules** as *logic conditionals*. But their nature seems intuitively to be more complex.
- **What is the structure of constitutive rules?**
  - fundamental question for studies concerned by *social ontology*

Two perspectives on rules

- **Rule-realist:** rules constitutive of an institution can exist only as part of the causal (mental or behavioural) process through which the institutional activity they constitute is practiced.

Roversi, C.: Acceptance is not Enough, but Texts Alone Achieve Nothing. A Critique of Two Conceptions in Institutional Ontology. Rechtstheorie 43(2) (2012) 177–206

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Two perspectives on rules

- **Rule-realist:** rules constitutive of an institution can exist only as part of the causal (mental or behavioural) process through which the institutional activity they constitute is practiced.
- **Rule-positivist:** rules constitutive of an institution can exist before and independently of the causal process through which the institutional activity they constitute is practiced

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From a *knowledge engineering* perspective:

- **Can a system of norms be aligned** — *representation-wise* — **with a system of practices guided by norms?**

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Overview on constitutive rules

Searle's account

- **constitutive** rule (XYC):

  X counts as Y in context C

Searle, J.R.: Speech acts: An Essay in the Philosophy of Language. Cambridge University Press (1969),
and following works as [Searle1983], [Searle2010]

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  - X is *extra-institutional* or **brute**, and occurs/holds independently of the rule
  - Y is *intra-institutional*: it cannot occur if no definite constitutive rule is applicable

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Conte: *ludus* vs *lusus*

- Crucial distinction: rules of the ***game*** vs rules of the ***play*** (ontological vs phenomelogical)

Conte, A.G.: L'enjeu des régles. Droit et Société 17–18 (1991) 125–146

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proper ***eidetic (game)-constitutive*** rule

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Jones and Sergot: *count-as* as conditional

- A **count-as** relation establishes that a certain state of affairs or an action of an agent is a "*sufficient condition* to guarantee that the institution creates some (usually normative) state of affairs"
  - They consider a *conditional logic* operator, calibrated to avoid unsound results.

Jones, A., Sergot, M.: A formal characterisation of institutionalised power. Journal of IGPL (1996)

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? `declaration-of-marriage → married`

? `declaration-of-marriage → nixon-is-impeached OR married`

?

Boella and Van der Torre: consistutive rules as belief rules

- What is the relation between constitutive and regulative rules?

Boella, G., Torre, L.V.D.: Constitutive Norms in the Design of Normative Multi-agent Systems. Proceedings of CLIMA VI

Boella and Van der Torre: consistutive rules as belief rules

- What is the relation between constitutive and regulative rules?
- If we interpret the normative system as an *agent*
  - regulative rules can be seen as (normative) *goals*
  - institutional facts as *beliefs*
  - constitutive rules as **belief rules**

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Grossi: classificatory function of consitutitive rules

- Supported by the vast literature concerning the non-regulative aspects of normative systems, i.e. *determinative rules* [VonWright1963], *conceptual rules* [Bulygin1992], *qualification norms* [Peczenik1989], *definitional norms* [Jones1992]

  Grossi focuses on the *classificatory* aspect of constitutive rules, and propose to use the **subsumption** operator.

Grossi, D.: Designing Invisible Handcuffs, Formal Investigations in Institutions and Organizations for Multi-agent Systems. PhD thesis, University of Utrecht (2007)

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Grossi: classificatory function of consitutitive rules

vehicles are not admitted in public parks [general norm]

bikes are vehicles [classification rule]

bikes are not admitted in public parks [specific norm]

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Grossi: classificatory function of consitutitive rules

in normative system N, conveyances transporting people or goods count as vehicles [**constitutive rule**]

it is always the case that bikes count as conveyances transporting people or goods [**classificatory rule**]

in normative system N, bikes count as vehicles [**proper classificatory rule**]

- "Vehicle" acts as a *middle term*, or *intermediate concept*, anchor for inferences.

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Hindriks: connotation and import

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- **(C)XY: Constitutive rule**
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- **(C)XY: Constitutive rule**
  - ***Connotation*** defines the conditions which have to be satisfied in order to apply a certain institutional term: it is a descriptive component.
- **YZ: Status rule**
  - **Import** specifies the consequences which occur once those condition are satisfied.

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Boer: institutional rules, constituting and constitutive facts

- **Constitutive rules** require at least a *brute*, extra-institutional fact to create an institutional fact

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- **Institutional rules** operate on institutional facts, on the basis on other institutional facts.
- *Status rules* are a sub-set of institutional rules.

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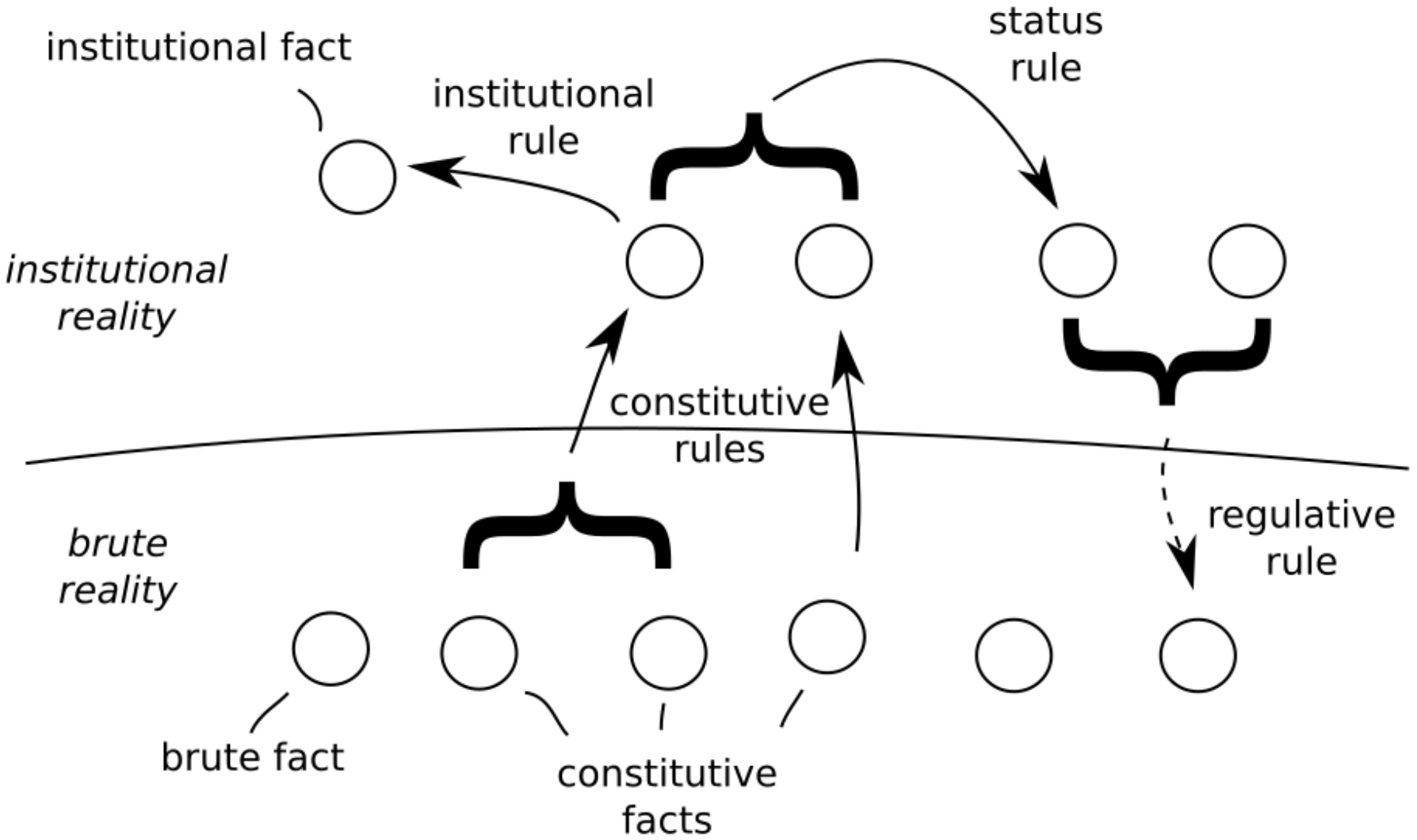
institutional fact
institutional rule
status rule
institutional reality
constitutive rules
regulative rule
brute reality
brute fact
constitutive facts

Integration

What are constitutive rules?

- Two meanings:

  – as *characteristic regulative drivers* (i.e. rules which defines the institution)

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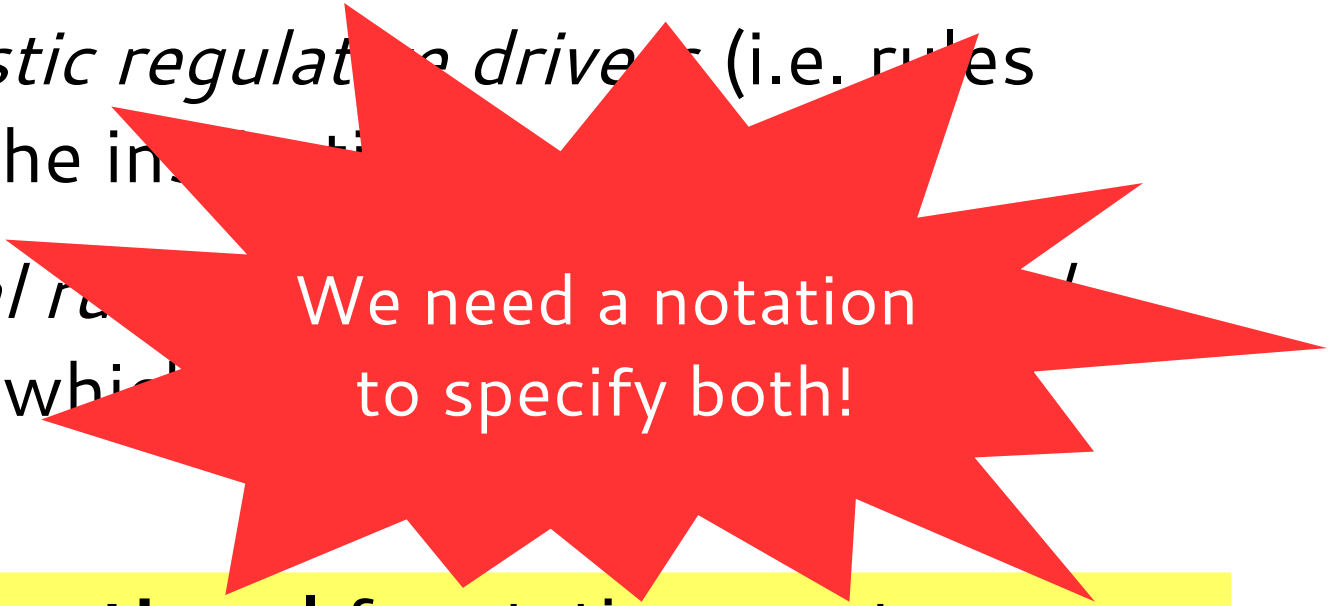

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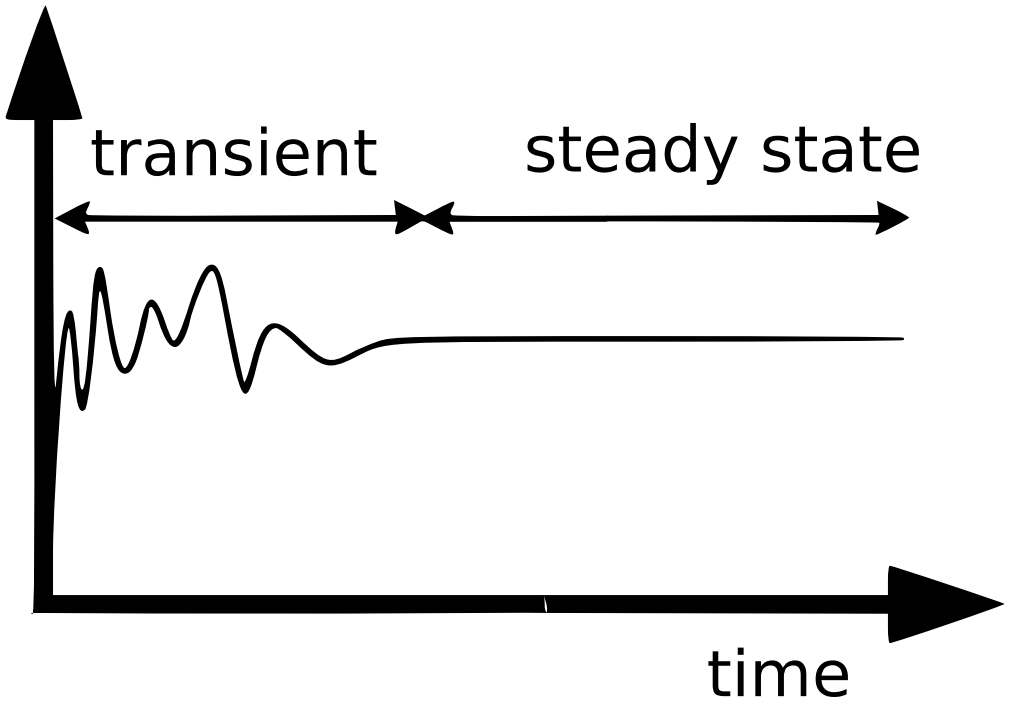
Looking for a notation

Steady states and transients

- Physical systems can be approached from steady state (equilibrium) or transient (non-equilibrium, dynamic) perspectives



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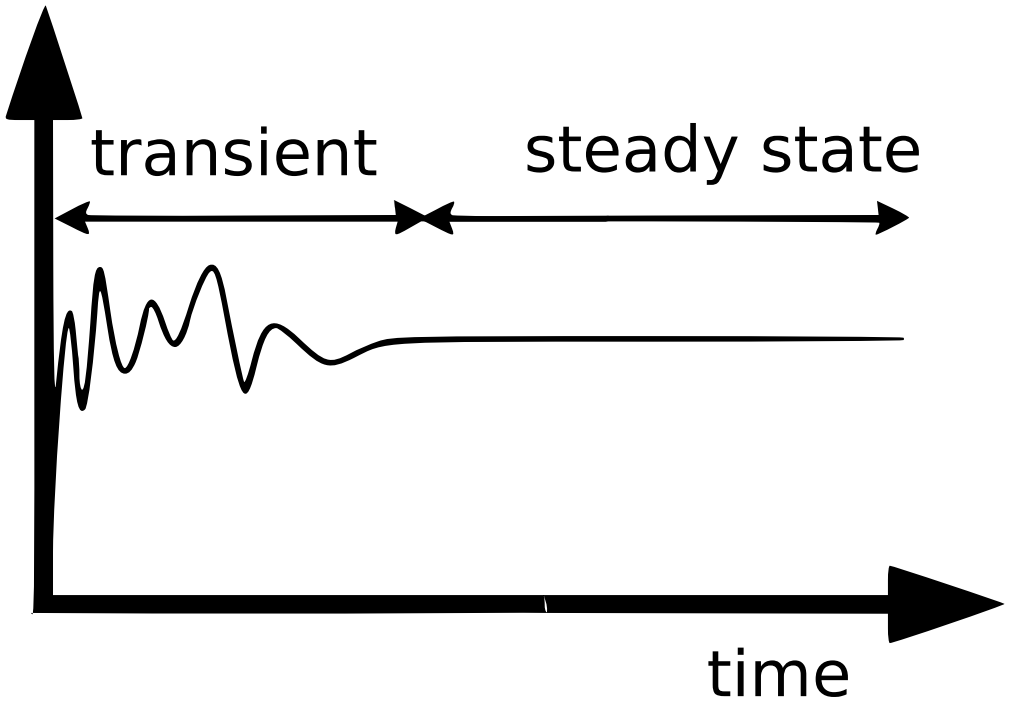

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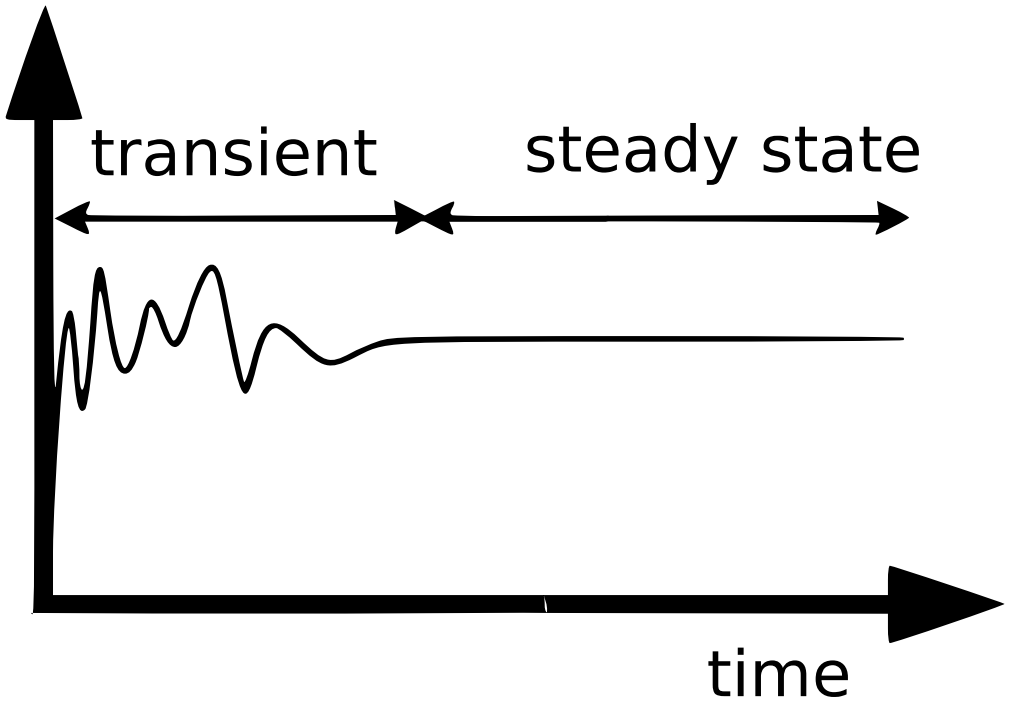

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  ex. **Ohm's Law**
  V = R * I

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Specifying transients and steady states

- Possible analogies:
  - *steady state* approach with
    - Logic
    - Declarative logic programming

focus on **What**

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Specifying transients and steady states

- Possible analogies:
  - *steady state* approach with
    - Logic
    - Declarative logic programming
  - *transient* approach
    - Process modeling
    - Procedural programming

focus on **What**

focus on **How**

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Requirements for the notation

- To *separate static and dynamic aspects*
  - modeling both **states** and **transitions**

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For instance,
Logic Programming
(Prolog/ASP, etc.)

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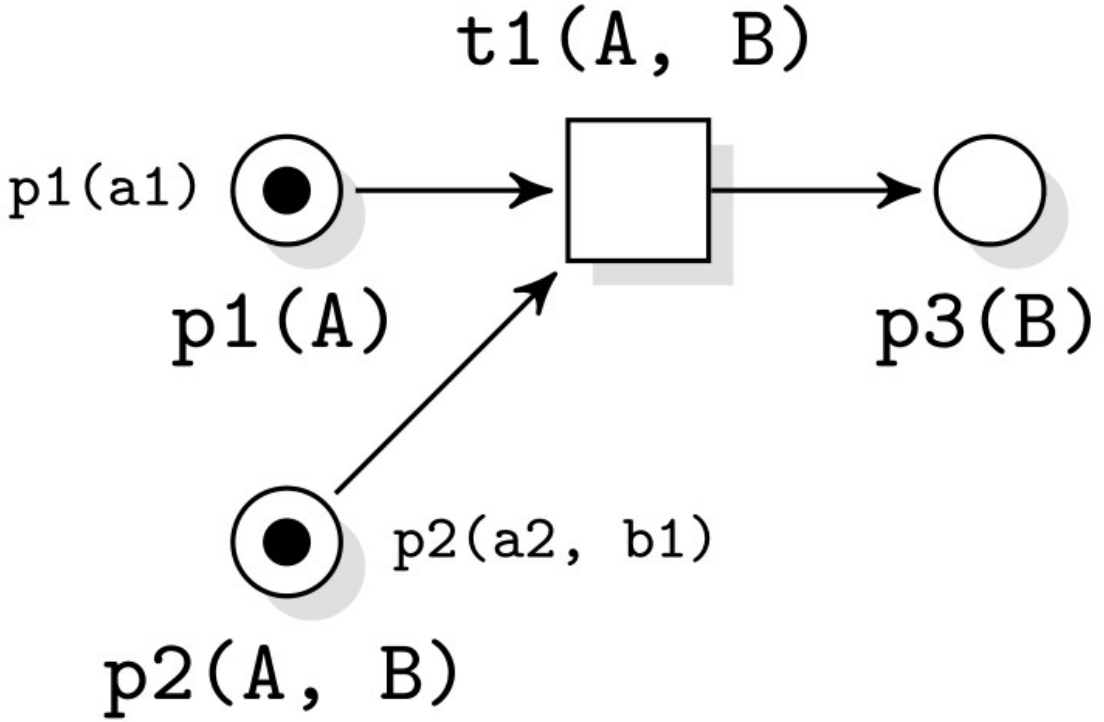
Logic Programming Petri Nets

Logic Programming Petri Nets (LPPNs) – procedural component

not enabled transition



A prototype library can be found on:
`https://github.com/s113n0/lppneu`

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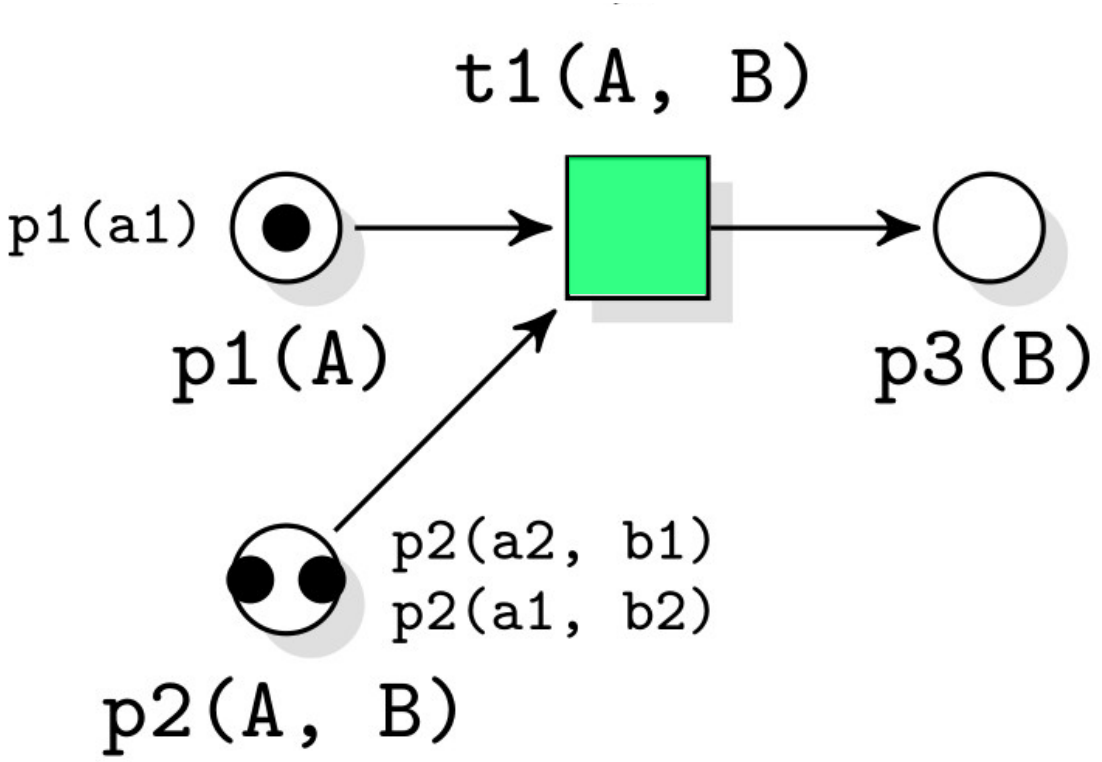

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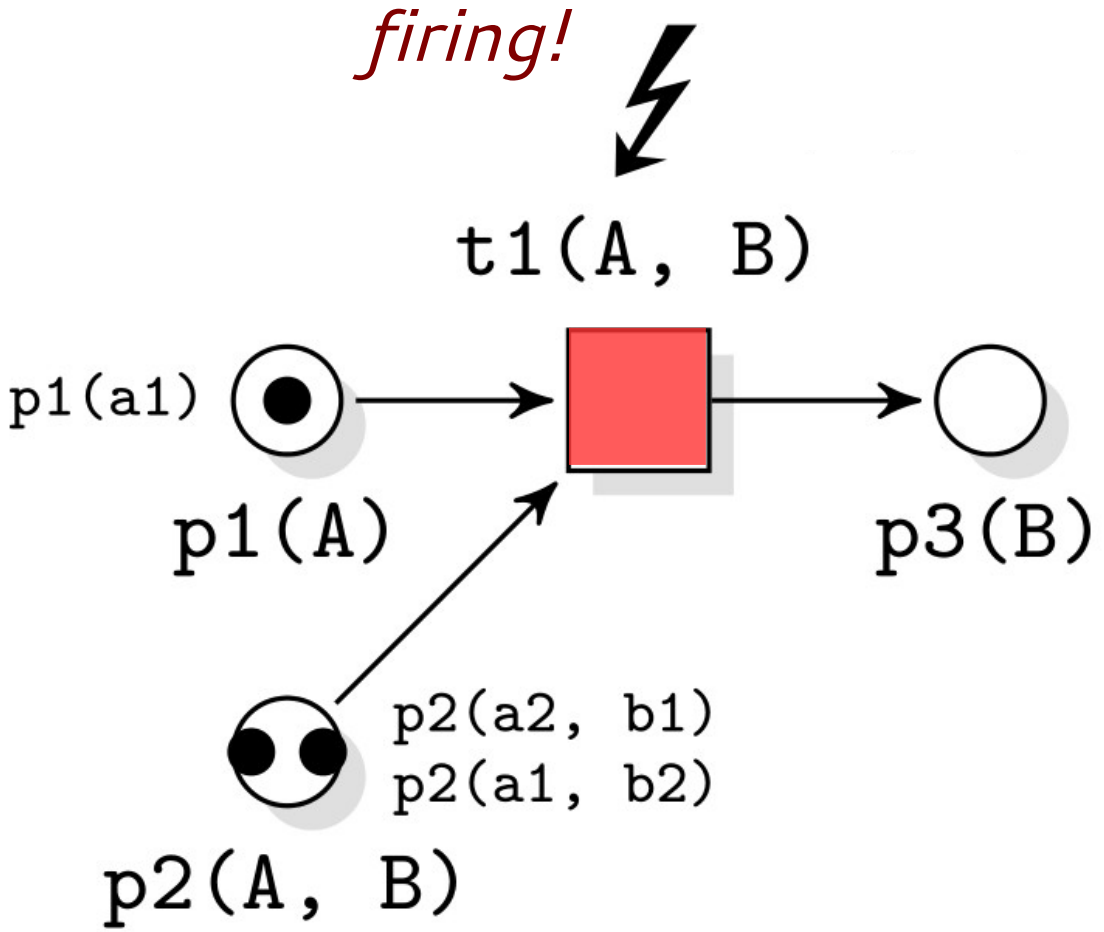

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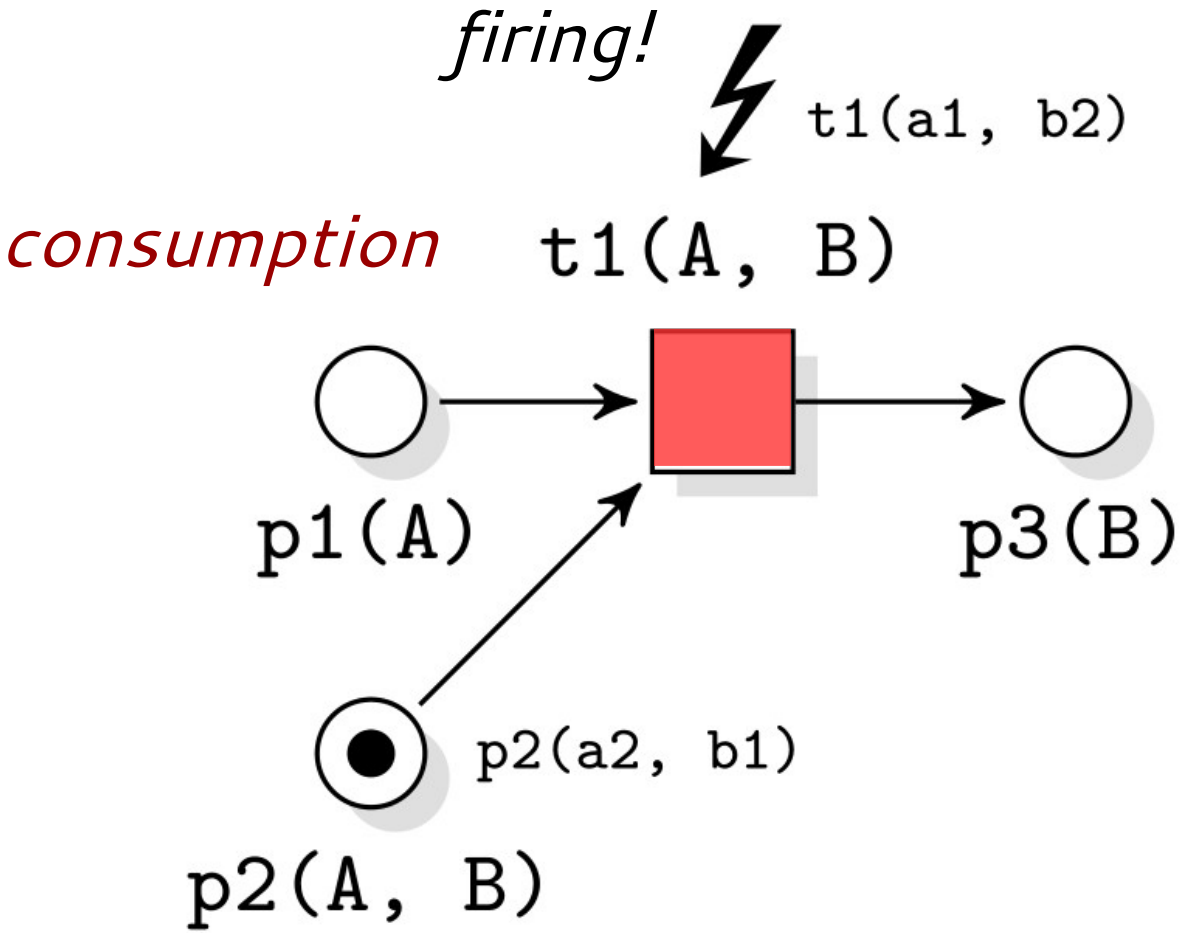

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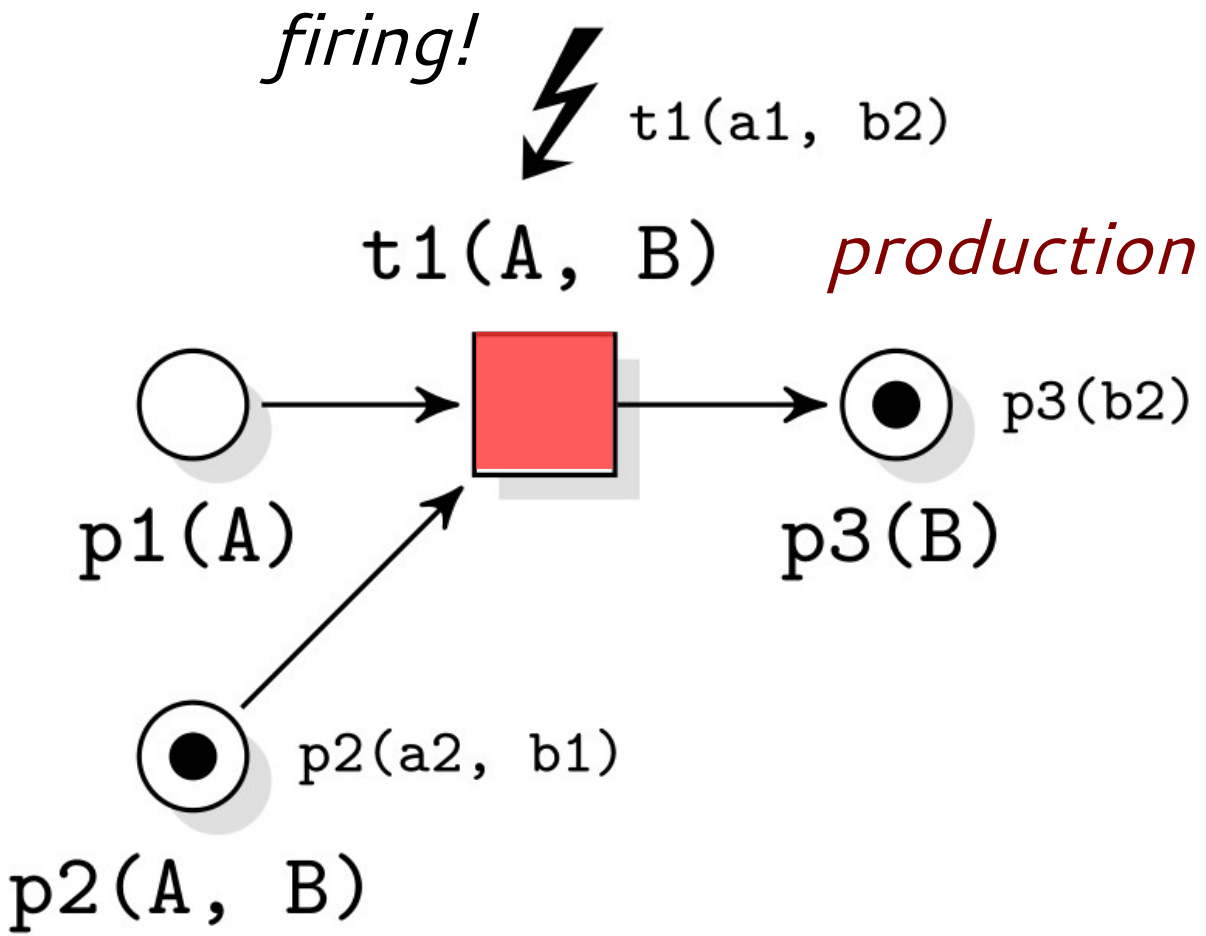

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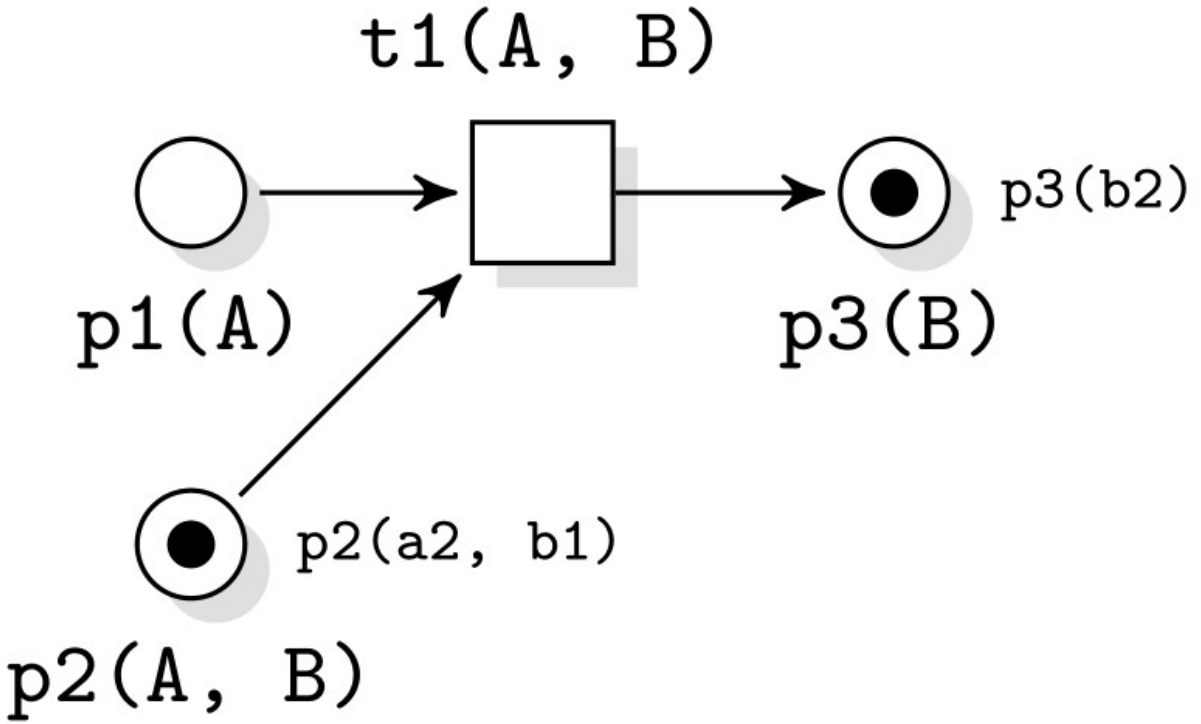

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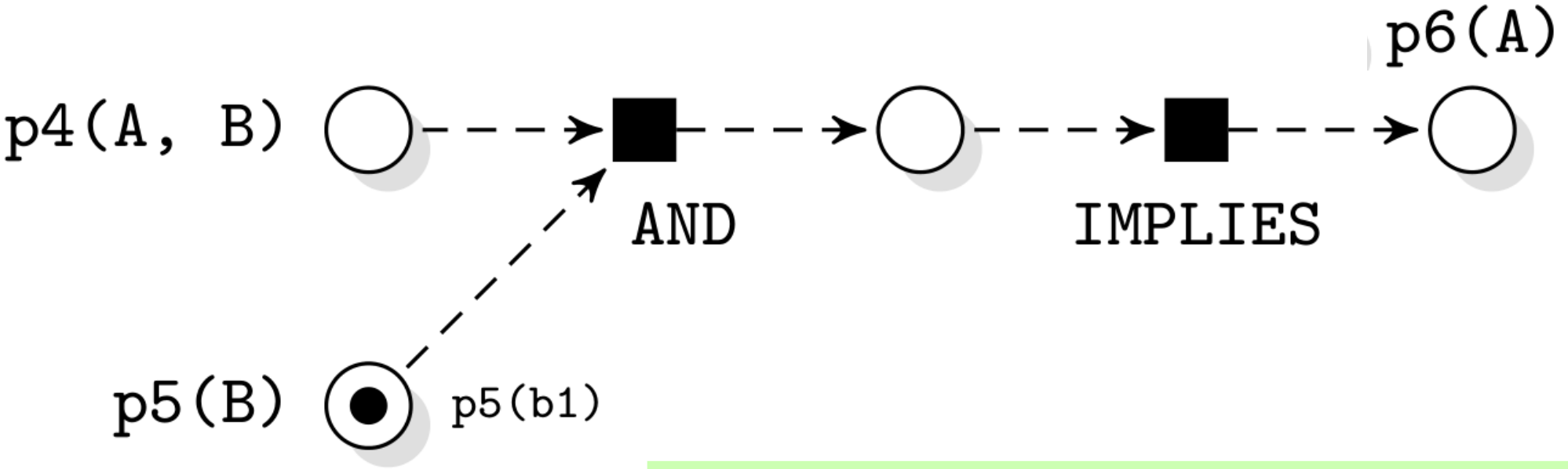
Logic Programming Petri Nets (LPPNs) – declarative component



Equivalent Prolog/ASP code:

```
p6(A) :- p4(A, B), p5(B).
p5(b1).
```

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Revisiting constitutive rules

Constitutive rules – *static aspects*

- In this case, **subsumption** is plausibly the most effective representation

  bikes counts as vehicles

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vehicle(E) :- bike(E).
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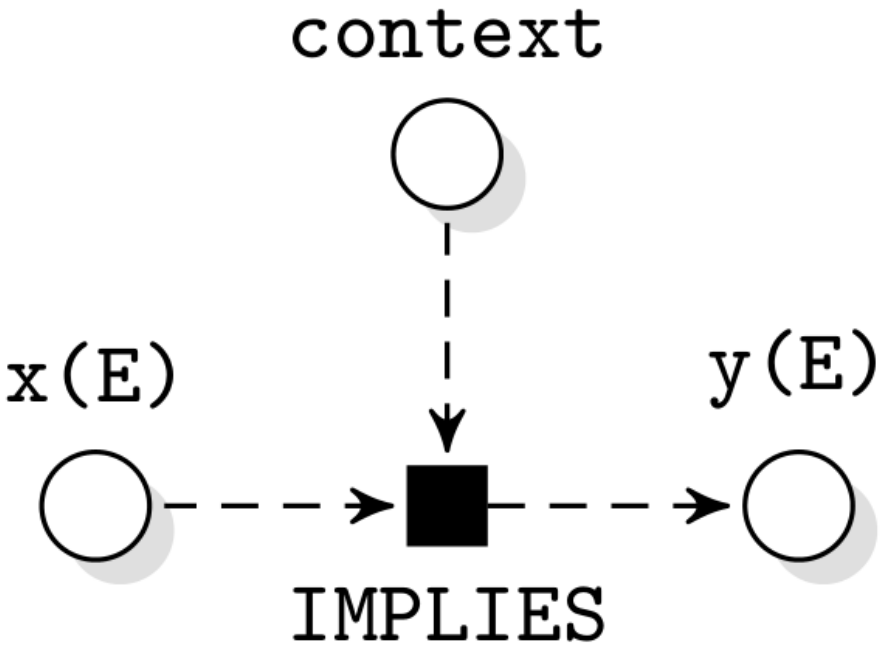

constitutive classificatory rules

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Constitutive rules – *static aspects*

- Within the institutional system, we can also consider ***institutional rules*** e.g. definitional ones:

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checkmate(E) :- check(E), pieceIn(K, E), king(K),
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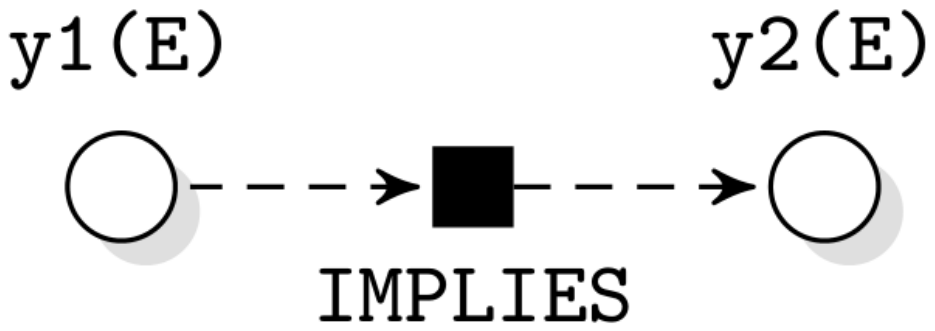

institutional classificatory rules

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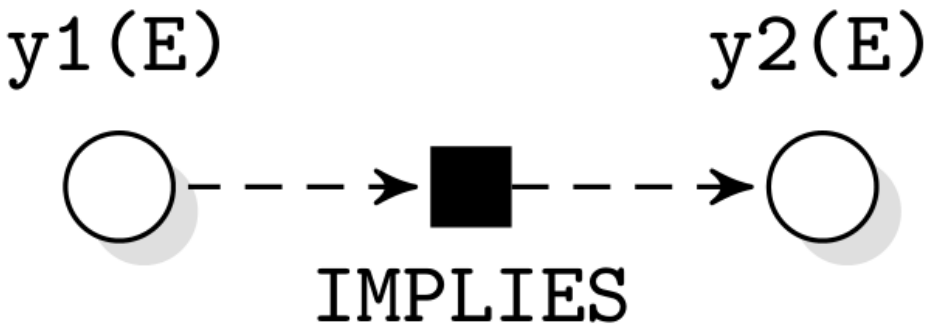
Constitutive rules – *static aspects*

- Within the institutional system, we can also consider ***institutional rules*** e.g. definitional ones:

  a formal charge which addresses a public officer counts as an impeachment

```
impeachment(E) :- charge(E), addressing(E, P),
publicOfficer(P).
```



institutional classificatory rules

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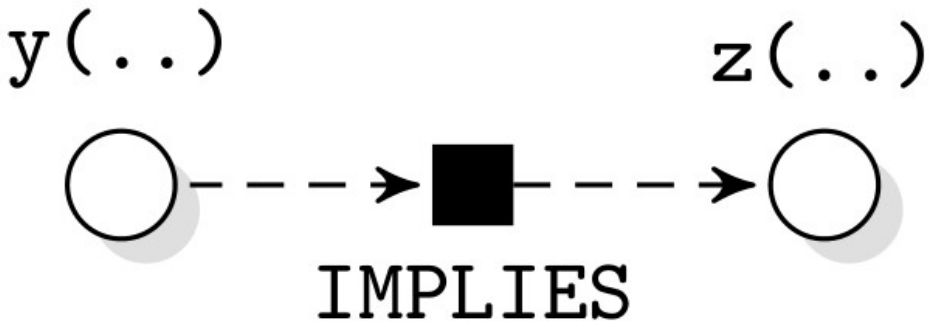

status rules

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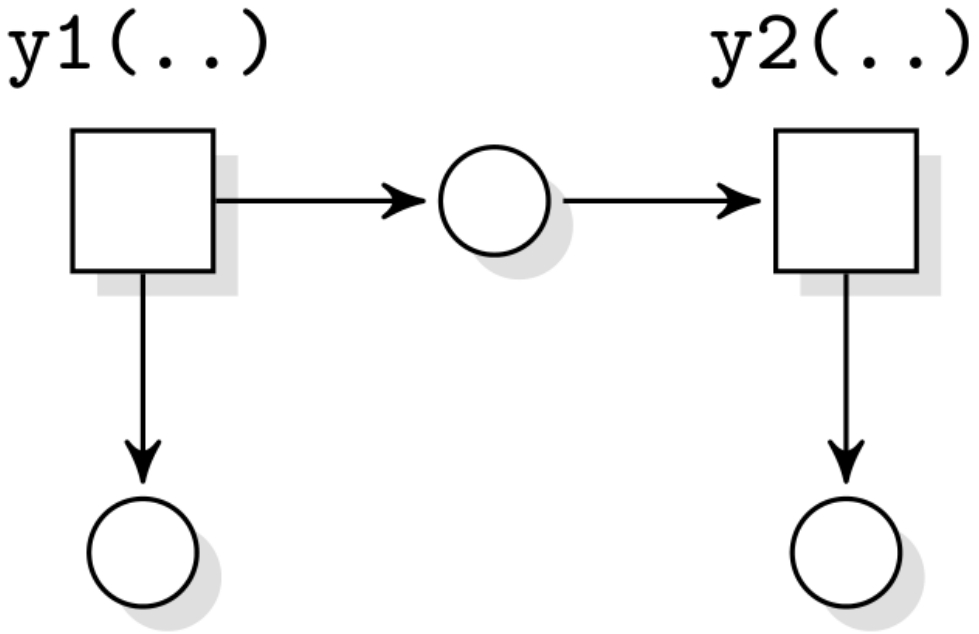

institutional event rule

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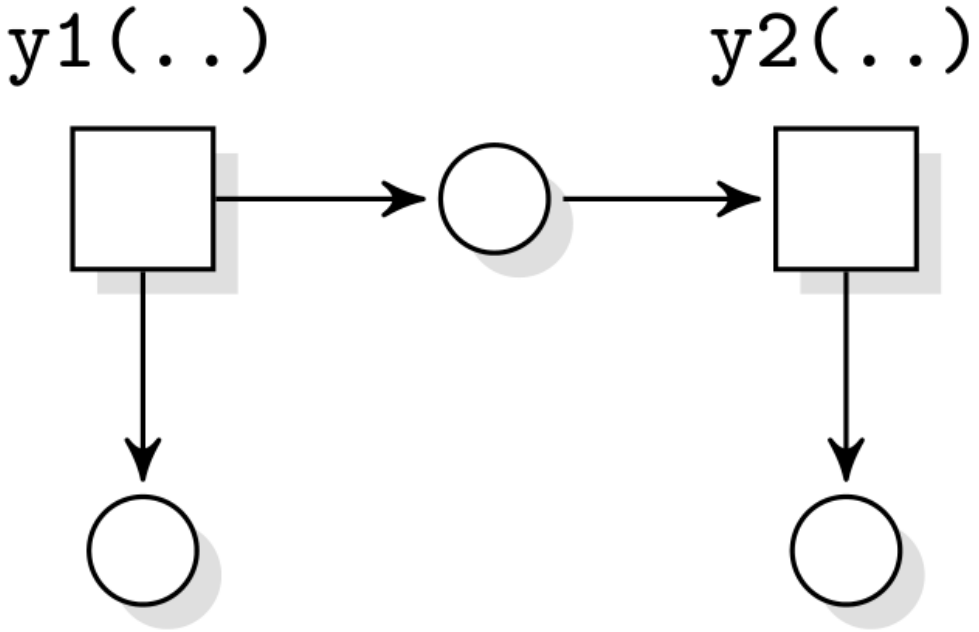


institutional event rule

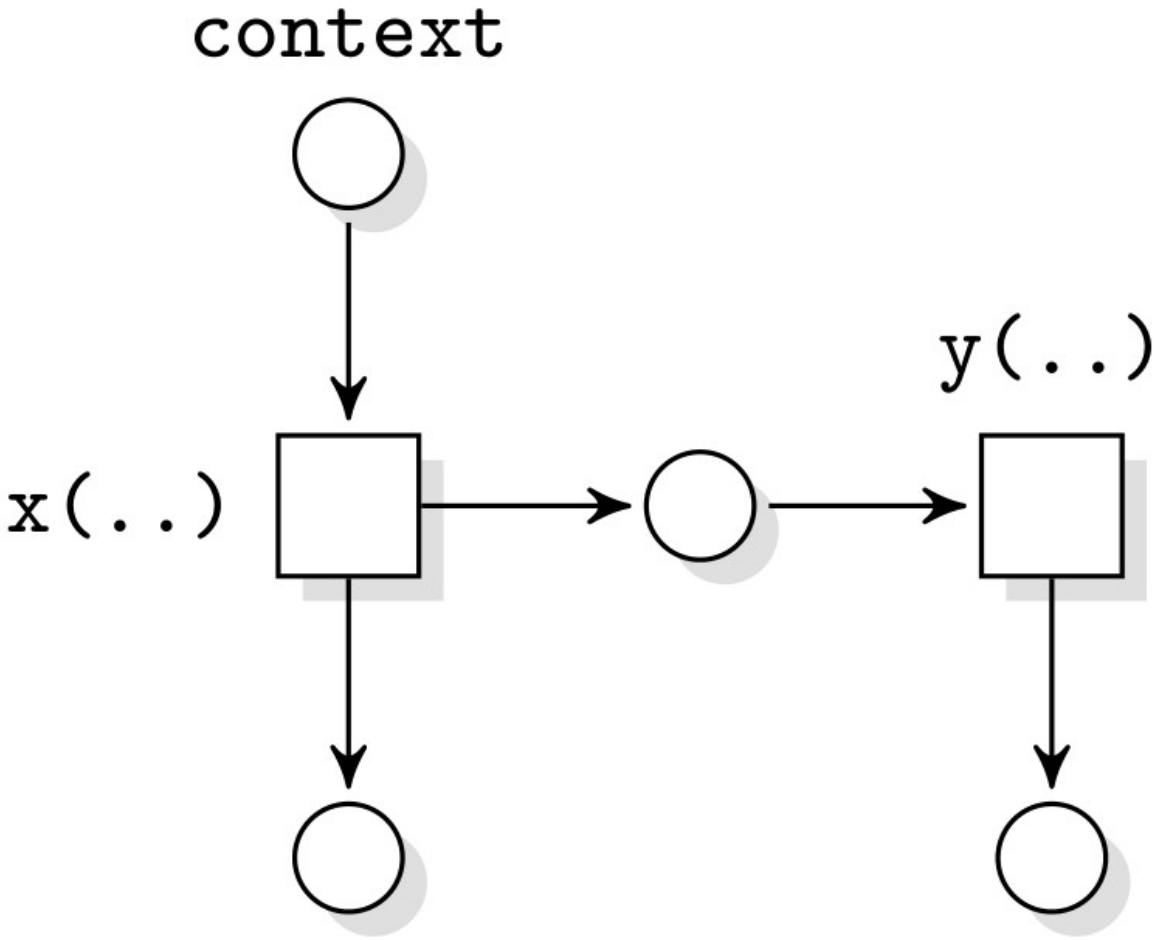
Initation component of the previous rule.

Constitutive rules – *dynamic aspects*

- However…

  Raising a hand
  counts as
  making a bid.

Constitutive rules – *dynamic aspects*



- However…

  Raising a hand counts as making a bid.

constitutive event rule

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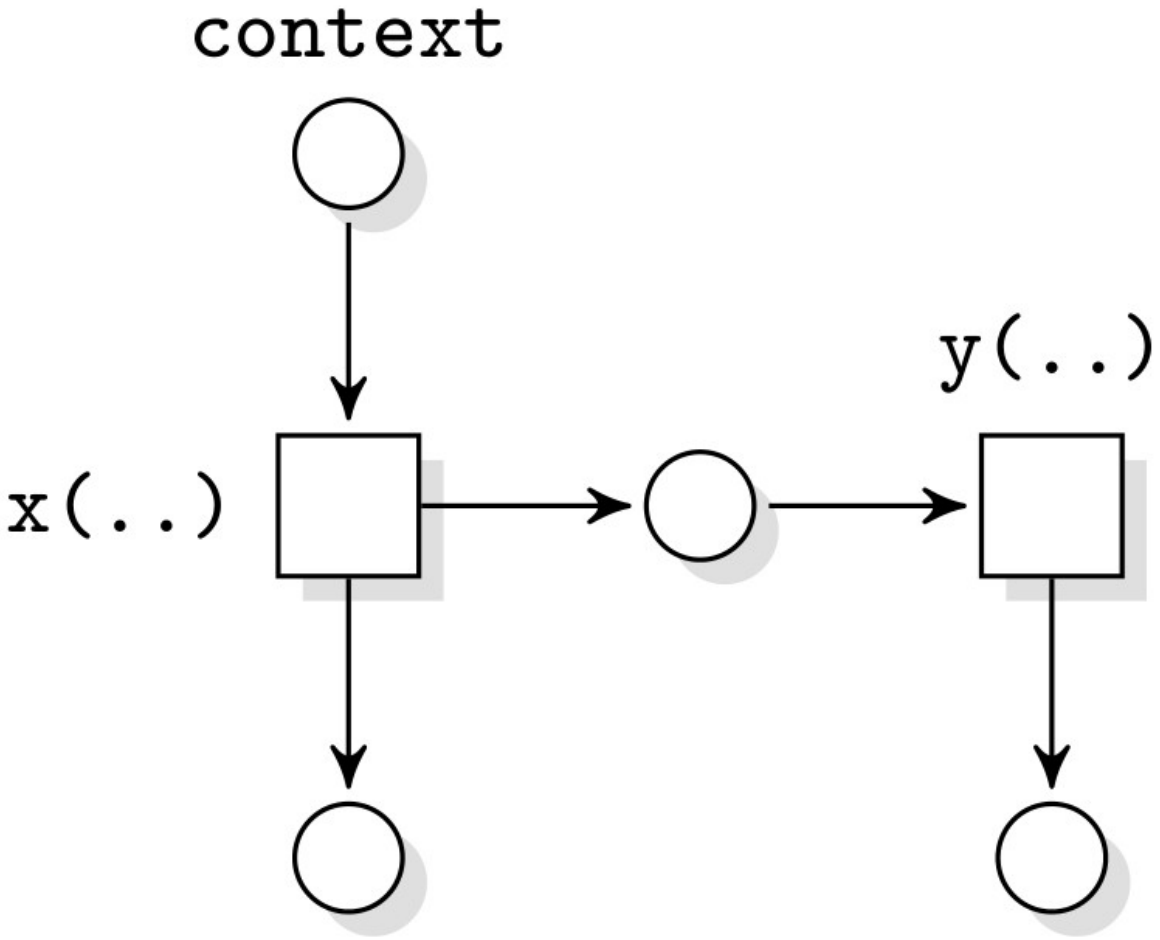
Constitutive rules – *dynamic aspects*



- However…

Raising a hand
counts as
making a bid.

constitutive event rule

In this case, there is a **decoupling** between the *brute* and the *institutional* results of the hand-raising action.

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From constitution to power

Moving focus from action to agent

- The social participant creates the intended institutional outcome only
  - if he is provided with relevant ***institutional power*** (or ability), or, correlatively,
  - if the social environment is **disposed** with a correlative ***institutional susceptibility***.

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Moving focus from action to agent

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- We can analyze power through the notion of *disposition*.

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What is a disposition?

- A **disposition** is a precondition necessary to reach, at the occurrence of an adequate ***stimulus***, a now only potential state.

Lewis, D.: Finkish Dispositions. The Philosophical Quarterly 47 (1997) 143–158

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What is a disposition?

- A **disposition** is a precondition necessary to reach, at the occurrence of an adequate ***stimulus***, a now only potential state.
- This transformation, and the resulting outcome, is called the ***manifestation*** of the disposition.

- Examples: *being fragile*, *soluble*, etc.

Lewis, D.: Finkish Dispositions. The Philosophical Quarterly 47 (1997) 143–158

Specifications of power in law

	private persons	judicial officers	legislative authority
qualification	minimum requirements of personal qualification (*capacity*)	manner of appointment, qualifications for and tenure of judicial officer	qualifications of identity of the members of the legislative body
performance	manner and form in which the power is exercised (*execution, attestation*)	procedure to be followed in the court	manner and form of legislation, procedure to be followed
subject-matter	variety of rights and duties which may be created	jurisdiction	domain over which the power may be exercised

Hart, H.L.A.: The Concept of Law. 2ed. Clarendon Press (1994)

Correspondences

- *qualification* defines the **disposition**
- *performance* defines the **stimulus**
- *subject-matter* provides the ingredients to specify the **manifestation**

Correspondences

- *qualification* defines the **disposition**

  ~ classificatory rules

- *performance* defines the **stimulus**

  ~ constitutive event rules

- *subject-matter* provides the ingredients to specify the **manifestation**

  ~ consequent of institutional/status rules

What is constitution?

Ontological status

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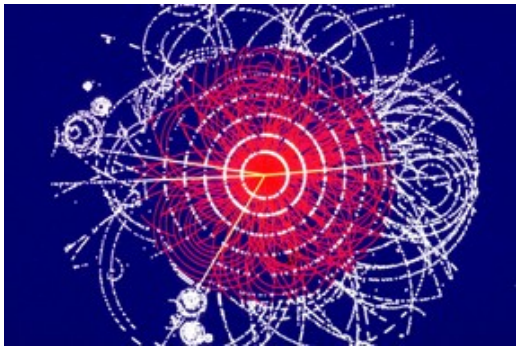
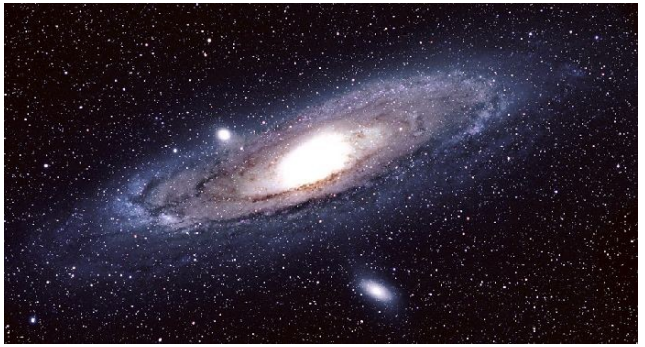
Ontological status

- Only Hindriks and Boer explicitly elaborate and argue for an *ontological distinction* between institutional and brute realms.
- Searle strongly argues against that: there is only one reality according to him.
- For the **decoupling** effect we talked before, however, we cannot speak of *identity*.

Ontological strata in sciences

- In principle, the division of reality in multiple *ontological strata* is affine to how natural sciences operates according to dimensional scales.





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Ontological strata in sciences

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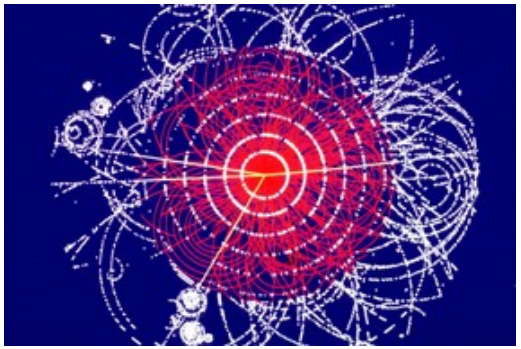

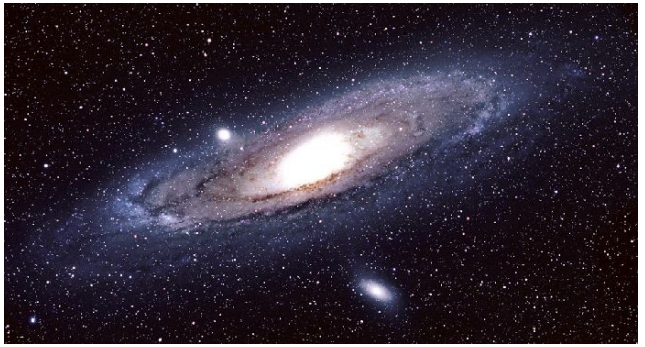

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Ontological strata in sciences

- In principle, the division of reality in multiple *ontological strata* is affine to how natural sciences operates according to dimensional scales.
- Each dimensional scale obeys to laws which may be conflicting with laws at other scales, but are applicable and confirm expectations within their context.
- The relation between domains is expressed by ***emergence*** of properties or phenomena.

Supervenience

- One way to deal with emergence is through the notion of **supervenience**, resumed as:

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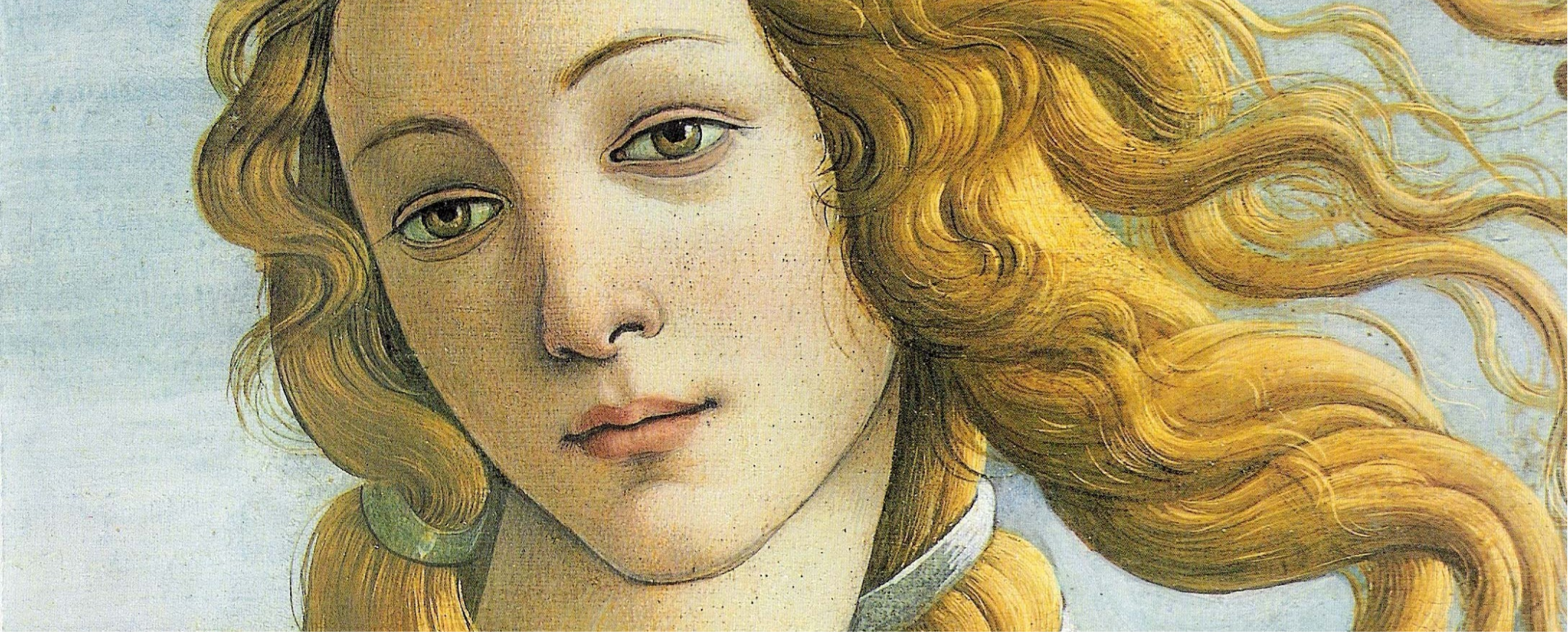
  there cannot be a change in the *supervened realm* without having a change in the *supervening realm*.

- e.g. mental states cannot change without having a change occurring at physical level.



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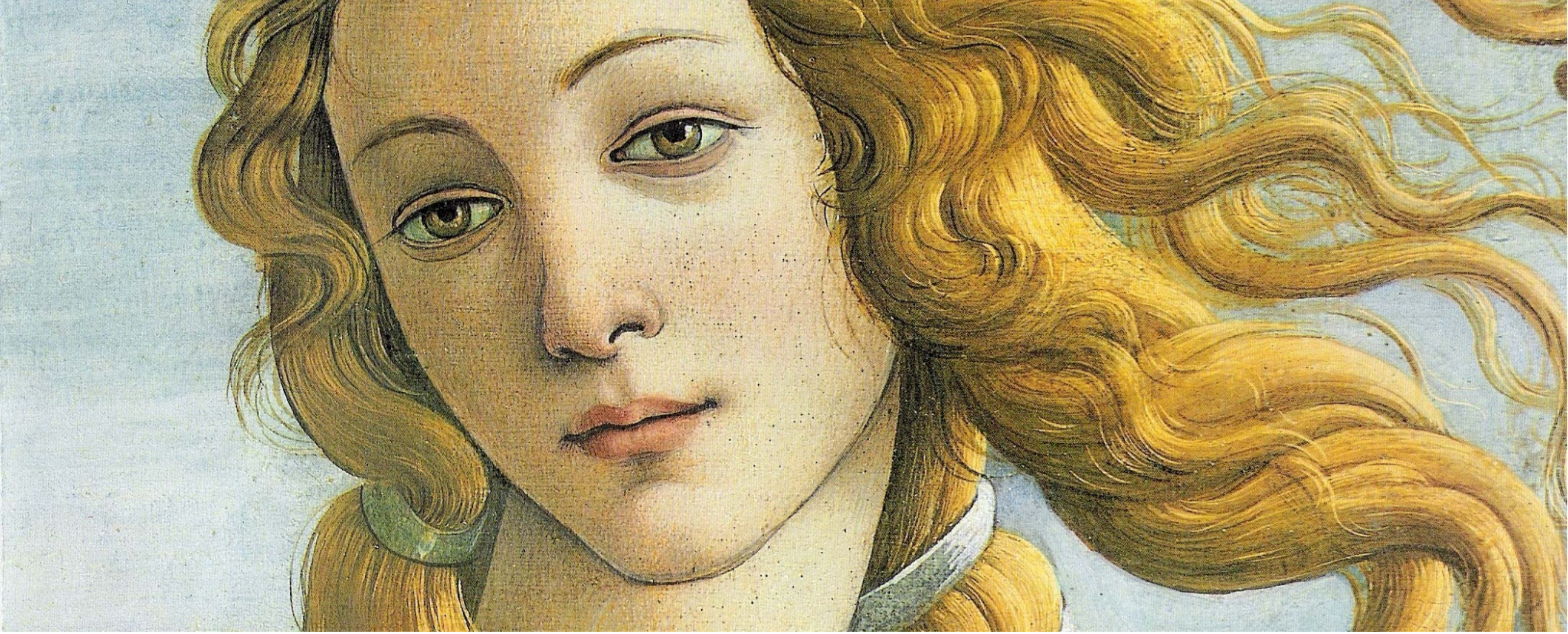

- The beauty of a painting ***supervenes*** the painting.

- i.e. if the painting lose its beauty, a change necessarily occurred in its material structure.

  [assume same observer, in same mental state]

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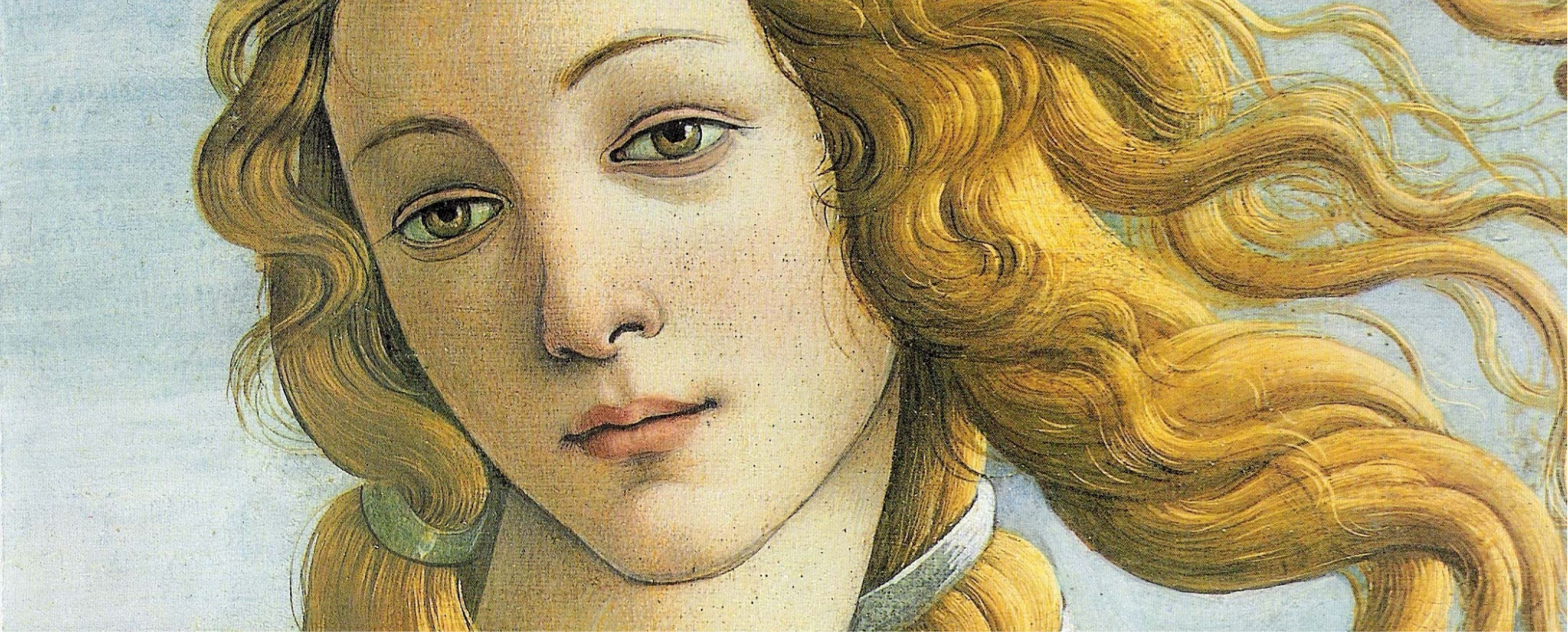

- The beauty of a painting ***supervenes*** the painting.

- A painting does not "define" its beauty, nor it "cause" it, but it "**constitutes**" it.

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Institutional supervenience

- If in a certain moment the institutional domain is found to be different, something has to have changed in the brute world as well, or we are in presence of a **normative friction**.
- For instance,
  - *If*, running a prescriptive model,
  - the satisfaction of an obligation occurs
  - *I should find* the performance of the satisfying action in the given behavioural model

Institutional supervenience

- If in a certain moment the institutional domain is found to be different, something has to have changed in the brute world as well, or we are in presence of a **normative friction**.
- Intuitively ***computing supervenience is related to checking alignment***.
- *For first results see my presentation on Friday!*

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Conclusion

Discussion

- The complexity of tackling down the notion of constitutive rules is due to the integration of the different types of interactions that may occur between brute and institutional domains.

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- The complexity of tackling down the notion of constitutive rules is due to the integration of the different types of interactions that may occur between brute and institutional domains.
- What we saw here is the *operational* component of constitution. However, there is also an *adaptation* component.

Discussion – limitations

- Constitutive rules defines a **structural coupling** between two realms (cf. Luhmann):
  - Via constitution, the brute realm "*irritates*" the institutional realm, triggering internal responses.

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Discussion – limitations

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  - On the other hand, regulatory dispositions have to a good extent consequence on the practical reasoning/behaviour of the agents [**nomotropic** behaviour, i.e. *acting in light of rules*]
- Double feedback: but different temporal scales allow decomposition!

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Discussion – notation

- Why Petri nets?
  - direct distinction between static and dynamic aspects (~ noun/verb categories)
  - primitive operators of local causation
  - nice overlap with process modeling theory and practices

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  - direct distinction between static and dynamic aspects (~ noun/verb categories)
  - primitive operators of local causation
  - nice overlap with process modeling theory and practices

- Our research objective targets the alignment of reprentations of law, of behaviour and of implementation of law.

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Discussion – logic

- The logic programming component have to be extended allowing *priority-based* representations
  - ***partial ordering*** operators for both procedural and declarative components
- Integration with other frameworks (e.g. description logic, defeasible logics) is a possible option however.