Revisiting Constitutive Rules

9 December 2015 – AICOL Workshop / JURIX @ Braga

Giovanni Sileno (g.sileno@uva.nl), Alexander Boer, Tom van Engers

Leibniz Center for Law
University of Amsterdam
Problem

• Most analytic contributions consider constitutive rules as logic conditionals. But their nature seems intuitively to be more complex.
Problem

- Most analytic contributions consider constitutive rules as logic conditionals. But their nature seems intuitively to be more complex.
Problem

• Most analytic contributions consider constitutive rules as logic conditionals. But their nature seems intuitively to be more complex.
Problem

• 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.

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.

Is an alignment possible?

- Are the rule–positivist and the rule–realist views irredeemably incompatible?
Is an alignment possible?

- Are the rule–positivist and the rule–realist views irredeemably incompatible?

From a knowledge engineering perspective:

- Can a system of norms be aligned — representation-wise — with a system of practices guided by norms?
Overview on constitutive rules
Searle's account

- **constitutive** rule (XYC):
  
  X counts as Y in context C

Searle's account

- **constitutive rule** (XYC):
  \[ X \text{ counts as } Y \text{ in context } C \]

- **regulative rule** (X, or YX):
  \[ \text{Do } X \quad \text{or} \quad \text{If } Y \text{ do } X. \]
Searle's account

- **constitutive rule** (XYC):
  \[ \text{X counts as Y in context C} \]

- **regulative rule** (X, or YX):
  \[ \text{Do X or If Y do X}. \]

  - X is *extra-institutional* or *brute*, and occurs/holds independently of the rule
Searle's account

- **constitutive** rule (XYC):
  \[ X \text{ counts as } Y \text{ in context } C \]

- **regulative** rule (X, or YX):
  \[ \text{Do } X \quad \text{or} \quad \text{If } Y \text{ do } X. \]

- 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
Conte: *ludus vs lusus*

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

Conte: *ludus vs lusus*

- Crucial distinction: rules of the *game* vs rules of the *play* (ontological vs phenomelogical)
- Conflactions of constitutive rules in Searle's work:
  - **X-type**: a promise counts as the undertaking of an obligation

Conte: *ludus* vs *lusus*

- Crucial distinction: rules of the *game* vs rules of the *play* (ontological vs phenomological)
- Conflactions of constitutive rules in Searle's work:
  - **X-type**: a promise counts as the undertaking of an obligation
  - **Y-type**: checks in which the king cannot meet the attack counts as checkmate
Conte: *ludus* vs *lusus*

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

- Conflactions of constitutive rules in Searle's work:
  - **X-type**: a *promise* counts as the undertaking of an obligation
  - **Y-type**: checks in which the king cannot meet the attack counts as *checkmate*
  - one ought not to steal (*~regulative rules*)

Conte: *ludus* vs *lusus*

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

- Conflactions of constitutive rules in Searle's work:
  - **X-type**: a *promise* counts as the undertaking of an obligation
  - **Y-type**: checks in which the king cannot meet the attack counts as *checkmate*
  - *one ought not to steal* (∼regulative rules)
  - *related to* (linguistic) performance: *promises* should be about future behaviour

Conte: *ludus* vs *lusus*

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

- Conflations of constitutive rules in Searle's work:
  - **X-type**: a *promise* counts as the undertaking of an obligation
    - proper *eidetic (game)-constitutive* rule of an obligation
  - **Y-type**: checks in which the king cannot meet the attack counts as *checkmate*
  - one ought not to steal (*~regulative rules*)
  - related to (linguistic) performance: *promises* should be about future behaviour

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 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.

? 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 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

Grossi: classificatory function of constitutive 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: classificatory function of constitutive rules

vehicles are not admitted in public parks [general norm]
bikes are vehicles [classification rule]
bikes are not admitted in public parks [specific norm]

Grossi: classificatory function of constitutive 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.

Hindriks: connotation and import

• Constitutive rules go under a XYZ scheme

Hindriks: connotation and import

- Constitutive rules go under a **XYZ** scheme
- **(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.
Hindriks: connotation and import

- Constitutive rules go under a \textit{XYZ} scheme
- \textit{(C)XY: Constitutive rule}
  - \textit{Connotation} defines the conditions which have to be satisfied in order to apply a certain institutional term: it is a descriptive component.
- \textit{YZ: Status rule}
  - \textit{Import} specifies the consequences which occur once those condition are satisfied.

Boer: institutional rules, constituting and constitutive facts

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

Boer: institutional rules, constituting and constitutive facts

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

- **Institutional rules** operate on institutional facts, on the basis on other institutional facts.

Boer: institutional rules, constituting and constitutive facts

- **Constitutive rules** require at least a *brute*, extra-institutional fact to create an institutional fact.
- **Institutional rules** operate on institutional facts, on the basis on other institutional facts.
- **Status rules** are a sub-set of institutional rules.

Integration
What are constitutive rules?

- Two meanings:
  - as characteristic regulative drivers (i.e. rules which defines the institution)
What are constitutive rules?

- Two meanings:
  - as *characteristic regulative drivers* (i.e. rules which defines the institution)
  - as *operational rules to construct institutional facts* (i.e. rules which constitutes institutional meaning)
What are constitutive rules?

• Two meanings:
  – as *characteristic regulative drivers* (i.e. rules which defines the institution)
  – as *operational rules to construct institutional facts* (i.e. rules which constitutes institutional meaning)
  
• *transformational* for static aspects
What are constitutive rules?

- Two meanings:
  - as *characteristic regulative drivers* (i.e. rules which defines the institution)
  - as *operational rules to construct institutional facts* (i.e. rules which constitutes institutional meaning)

  - **Transformational** for static aspects
  - **Reactive** for dynamic aspects
What are constitutive rules?

- Two meanings:
  - as *characteristic regulative drivers* (i.e. rules which defines the institution)
  - as *operational rules to construct institutional facts* (i.e. rules which constitutes institutional meaning)

- *transformational* for static aspects
- *reactive* for dynamic aspects

We need a notation to specify both!
Looking for a notation
Steady states and transients

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

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

- Steady states descriptions *omit* transient characteristics.
Steady states and transients

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

- Steady states descriptions omit transient characteristics

  ex. Ohm's Law
  \[ V = R \times I \]
Specifying transients and steady states

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

focus on What
Specifying transients and steady states

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

• To separate static and dynamic aspects
  – modeling both states and transitions
Requirements for the notation

- To separate static and dynamic aspects
  - modeling both states and transitions
- To specify transients:
  - being provided with a primitive operator for causation, treated structurally on local scale
Requirements for the notation

- To *separate static and dynamic aspects*
  - modeling both *states* and *transitions*
- To specify *transients*:
  - being provided with a primitive operator for *causation*, treated structurally on *local scale*
- To maintain *steady state relationships*:
  - being integrated with a formalism to treat logical relationships.
Requirements for the notations:

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

- To specify transients:
  - being provided with a primitive operator for causation, treated structurally on local scale

- To maintain steady state relationships:
  being integrated with a formalism to treat logical relationships.
Requirements for the notation

- To separate static and dynamic aspects
  - modeling both states and transitions
- To specify transients:
  - being provided with a primitive operator for causation, treated structurally on local scale
- To maintain steady state relationships:
  being integrated with a formalism to treat logical relationships.

For instance, Logic Programming (Prolog/ASP, etc.)
Logic Programming Petri Nets
Logic Programming Petri Nets (LPPNs) – procedural component

not enabled transition

A prototype library can be found on: https://github.com/s1l3n0/lppneu
Logic Programming Petri Nets (LPPNs) – procedural component

enabled transition

A prototype library can be found on: https://github.com/s1l3n0/lppneu
Logic Programming Petri Nets (LPPNs) – procedural component

A prototype library can be found on: https://github.com/s1l3n0/lppneu
Logic Programming Petri Nets (LPPNs) – procedural component

A prototype library can be found on: https://github.com/s1l3n0/lppneu
Logic Programming Petri Nets (LPPNs) – procedural component

A prototype library can be found on: https://github.com/s1l3n0/lppneu
Logic Programming Petri Nets (LPPNs) – procedural component

A prototype library can be found on: https://github.com/s1l3n0/lppneu
Logic Programming Petri Nets (LPPNs) – declarative component

Equivalent Prolog/ASP code:
\[
p6(A) :- p4(A, B), p5(B).
p5(b1).
\]
Revisiting constitutive rules
Constitutive rules – *static aspects*

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

bikes counts as vehicles
Constitutive rules – *static aspects*

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

  **bikes counts as vehicles**

  `vehicle(E) :- bike(E).`
Constitutive rules – \textit{static aspects}

- In this case, \textit{subsumption} is plausibly the most effective representation.

\textbf{bikes counts as vehicles}

\texttt{vehicle(E) :- bike(E)}. 

\begin{tikzpicture}
  \node[shape=circle,draw=black] (x) at (0,0) {x(E)}; 
  \node[shape=rectangle,fill=black] (y) at (1.5,0) {y(E)}; 
  \node[below=of x] (implies) {\textbf{IMPLIES}}; 
  \draw[->] (x) -- (implies); 
  \draw[->] (implies) -- (y); 
  \node at (-2,1) {\textbf{context}}; 
\end{tikzpicture}
Constitutive rules – *static aspects*

- Within the institutional system, we can also consider *institutional rules* e.g. definitional ones: a check in which the king cannot meet the attack counts as checkmate
Constitutive rules – static aspects

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

  a check in which the king cannot meet the attack counts as checkmate

  \[
  \text{checkmate}(E) :\text{-} \text{check}(E), \text{pieceIn}(K, E), \text{king}(K), \text{underAttackIn}(K, E), \text{noAvailMovesIn}(K, E).
  \]
Constitutive rules – *static aspects*

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

  a **check** in which the king cannot meet the attack counts as **checkmate**

\[
\text{checkmate}(E) \leftarrow \text{check}(E), \text{pieceIn}(K, E), \text{king}(K), \text{underAttackIn}(K, E), \text{noAvailMovesIn}(K, E).
\]
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**

\[
\text{impeachment}(E) :- \text{charge}(E), \text{addressing}(E, P), \text{publicOfficer}(P).
\]

\[\text{y1}(E) \implies \text{y2}(E)\]

**institutional classificatory rules**
Constitutive rules – *static aspects*

- Amongst institutional rules, we have **status rules**, connecting institutional with regulative notions.

  a promise counts as an obligation
Constitutive rules – *static aspects*

- Amongst institutional rules, we have *status rules*, connecting institutional with regulative notions.

  a promise counts as an obligation

  \[ \text{duty}(A) :- \text{promise}(A). \]
Constitutive rules – *static aspects*

- Amongst institutional rules, we have **status rules**, connecting institutional with regulative notions.

a **promise counts as an obligation**

\[
duty(A) :- \text{promise}(A).
\]

\[y(\ldots) \rightarrow z(\ldots)
\]

IMPLIES

**status rules**
Constitutive rules – *dynamic aspects*

- the term *act* refers both to a *performing act* and to the *outcome* of such performance.
Constitutive rules – *dynamic aspects*

- the term *act* refers both to a *performing act* and to the *outcome* of such performance.

making a promise *counts as an undertaking an obligation*
Constitutive rules – *dynamic aspects*

- the term *act* refers both to a *performing act* and to the *outcome* of such performance.

making a promise *counts as an undertaking an obligation*

\[ y_1(\ldots) \quad \rightarrow \quad y_2(\ldots) \]

**institutional event rule**
Constitutive rules – *dynamic aspects*

- the term *act* refers both to a *performing act* and to the *outcome* of such performance.

Making a promise counts as an undertaking an obligation

\[ y_1(\ldots) \quad \text{y2}(\ldots) \]

*Initiation* 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
Constitutive rules – *dynamic aspects*

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

- However...

Raising a hand counts as making a bid.

**constitutive event rule**
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.
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*.

- We can analyze power through the notion of *disposition*.
What is a disposition?

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

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.

### Specifications of power in law

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

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

• Only Hindriks and Boer explicitly elaborate and argue for an *ontological distinction* between institutional and brute realms.
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.
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.
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.
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:
Supervenience

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

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

- One way to deal with emergence is through the notion of **supervenience**, resumed as:
  
  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.
• The beauty of a painting *supervenes* the painting.
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]
• The beauty of a painting *supervenes* the painting.

• A painting does not “define” its beauty, nor it “cause” it, but it “*constitutes*” it.
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!
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.
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.

• 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.
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.
  - 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]
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.
  - 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!**
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
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

• Our research objective targets the alignment of representations of law, of behaviour and of implementation of law.
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.