The Architecture of an Economy with Social Enterprises

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Abstract
Both a Social Economy and a Social Enterprise are described by a novel concept, called an Actor'. This embodies the empirical context of a decision maker in a Generic Perspective Structure, on which it operates. This structure is based on a projective geometry and has the maximization of her expected relational capacity as goal. This approach allows for constructing an institutional design map from a topology of various value interactions into a topology of institutions characterized by transactions. An architecture is designed for a fitting social enterprise.

Keywords: Co-evolution, Cooperatives, Health-care Sector Policy, Institutional Design, Minds Formation, Multilevel Rule rationality, Ordering of Institutions, Relational Capacities.

1 Introduction

One of the main unresolved issues in political economy is the definition and embeddedness of a social enterprise in a market economy. That problem is approached here by offering a sound and innovative foundation for the design of institutions aimed at realizing a variety of values: private, cooperative and/or collective. An institution can be viewed as a set of rules that structure a given type of interaction between individuals (North, 1990). This concept is generalized in the sense that an institution is considered to be the result of a map on the set of volatile values in the minds of people, mapping these into a set of means that can embody those values and which enable people to arrive at an innovative and stable allocation of these embodied values. The underlying concept that frames institutions and other living organisms is the Actor concept.

Values and means in this concept are not necessarily expressible in terms of money, which is the standard view in economic analysis. Neither are they precisely known or exogenously given, which is again a standard assumption in the neoclassical decision models. Decisions are based on expectations, ideals and perspectives of the decision makers, irrespective whether they are a

\(^1\) The full paper may be consulted at my website www.ruysnet.nl
politician, entrepreneur, or employee. These individual perspectives and goals are not independent, but depend on each other. The main modeling assumption is that there is a common structure in decision making, which I call the generic structure. This structure has also to be specified for concrete, transient situations, such that checks and balances can be made, both on the micro-level and the macro-level of an economy.

The challenge in this paper is the design that generic structure, which can be related to a transient structure. It lays at the foundation of an integrative approach that is needed to embed the social economy in a market economy. The central concept is a Relational Capacity, from which the concept of an Actor is derived.

2 The Actor concept and the Institutional Frame

A Relational Capacity is modeled as a ternary relation between three modules. A module is conceived as a function or a role that interacts with another function to generate a third one. For example, the triple producer – input – output, where the producer interacts with input to generate output, forms a ternary relation. Similarly the triple consumer – input – satisfaction. In order to relate these almost independent modules, the mathematical tool of a graph is used that can express relations between functions and positions of functions relative to each other by means of an operator. These relational functions are called relational capacities. Some of these capacities refer to perspectives to the future, which are represented by a projective structure with an interaction rule. The projective structure is derived from reducing relational capacities to the bare relational essentials, resulting in the Fano projective hypergraph with three spanning perspectives (see Figure 1). The fundamental property of this symmetric projective structure is that this capacity structure has a dual structure of ternary relations, which is not only dual, but is also equal to the capacity structure. This implies that ternary relations may be handled as if they were capacities, and obey the same rules.

![Figure 1: The Fano Projective Hypergraph, and the isomorphic Generic Perspective Structure](image)
Now meanings can be given to positions, which makes the structure asymmetric. The spanning capacities are given the meanings: the Giving Mind, $V^+$, the Receiving Mind, $V^-$, and the Means relational capacity, $M$, all interacting according to the rules of the projective structure. This meaningful structure is called the *Generic Perspective Structure*. The generated ternary relations are called Regimes, and the structure dual to the Generic Perspective Structure is called its *Generic Regime Structure*, see Figure 2. The three spanning regimes in this structure have the following meanings: the Embodying Suppliers’ Regime, $\beta^+$, the Embodying Receivers’ Regime, $\beta^-$, and the Mindset Regime, $\psi$, which meanings are derived from the meanings of the capacities in the perspective structure. These three spanning regimes are independent in the Regime Structure. When three interacting regimes are dependent (connected by a line in Figure 2), they are called a Domain.

![Diagram](image)

**Figure 2: The Generic Regime Structure of an Organization**

Next, an empirical content can be given to each of these generic perspective modules. Let a string of realized, empirical relational capacities in the ordinary Euclidean plane, be connected or amalgated with each ideal point in the projective structure (see Henle, 1997), resulting in a transient module. These transient modules receive a meaning from the perspective to which they are attached. This is the *Transient Perspective Structure*.

The spanning modules in the Transient Perspective Structure can be ordered. The Mind modules $V^+, W, V^-$ allow a *Richness Ordering*, indicating the degree of relational complexity of the structures with which a capacity can be or has been engaged. The Means module ($M$) contains the legal and other carriers of values; these carriers allow for a *Refinement Ordering*, indicating their capacity to embody values (Mind modules) of a certain complexity. The interaction between a Mind module and a Means module results in a Body module, which contains the characteristics of both, in line with the performance of the operation defined on the generic projective structure. A Body module is a feasible combination of a Mind and a Means module; Body modules can be ordered by a nominal *Level Ordering*, a Whole-Parts or Ancestor ordering, with the first (highest) level module being the identifying module that contains all modules with relatively lower complexity. This ordering determines the *Architecture* of the organism under investigation (see Section 4). The first level module sets the standard for complexity. For
example, the participants in a market – be it a local market or a global market – are less complex than the market itself, as far as their market behavior concerns. Those market participants are much more complex, of course, in a context that is not the complexity reducing market.

Finally, before defining the concept of an Actor, her goal function has to be specified. An Actor is assumed to enhance her relational capacity in the Transient Capacity Structure. Notice that the external environment is included in the Transient Perspective Structure insofar relevant. She maximizes the relational capacity of that spanning regime that – according to her perspectives – contributes minimally to her performance.

An Actor is an operator on her Transient Capacity Structure, as introduced above, that maximizes her relational capacity. That implies the macro Actor’s self-interest to empower her micro-actors, each within her role. That makes the Actor’s architecture correspond to the subsidiarity principle. Furthermore, the goal function and therefore the Actor-concept is universally applicable to living organisms; profit maximization, for example, enhances the firm’s relational capacity, which makes the Actor concept universally applicable.

3 An interpretation of the Actor’s Transient Perspective Modules for an Economy

According to Harari (2015), a society is an imagined reality or an imagined community: a story in which people believe. It is the fundament for all cooperation. Firms are approached as if they are persons, as if they really exist. What makes a firm a firm? The manager? The output? It is our common belief that a firm exists. Take money: people share often only their belief in money. The most important forces exist only in our common minds and imagination. The fundament for cooperation is community shaping ideas.

An Economy is considered to be an Actor with Micro-Actors that orient the Economy in three generic perspectives that span the Economy’s Transient Perspective Structure: the Micro-actors’ Receiving Capacities; the Micro-Actors’ Giving Capacities, and Capacities concerning a Governance, which makes the Micro-actors competent to exchange and to enhance their and the Economy’s relational capacities and welfare.

The independent Perspectives (the spanning capacities in the Transient Perspectives Structure) are the three modules, indicated by letters and their positions, see Figure 1):

- \( V^+ \) = (100) Receivers’ Perspectives (needs values)
- \( V^- \) = (010) Suppliers’ Perspectives (provision values)
- \( M \) = (001) Governance Perspectives (social means)

The dependent Perspectives (derived capacities) are:

- \( B^+ \) = (101) Competent Demand (a Body)
- \( B^- \) = (011) Competent Supply (a Body)
- \( W \) = (110) The Common Mind (social value orientation)
- \( X \) = (111) The Balanced Outcome (a Body)
Each Relational Capacity is not only related to and oriented at the other Relational capacities, but also exerts a force on each of the other Relational Capacities, generating a third one. The Capacity interactions within the Generic Perspective Structure correspond with the binary rules of motion in the Fano-Hypergraph. Both are indicated by the operator $\oplus$. This operator is called addition modulo 2, with $1 \oplus 0 = 1$ and $1 \oplus 1 = 0$. For example, the Embodying Receiver’s Regime $(V^+, B^+, M)$ contains both the function $V^+ \oplus M = B^+$, which is the choice function in Parson’s (1951) Action theory, and the function $B^+ \oplus M = V^+$, which is the revealed preference principle. Other regimes can be derived similarly. The result is an interdependent structure of regimes, presented in Figure 2. These regimes are represented in shorthand notation in the figure on the left, treating the regimes as relational capacity modules. That ternary relation is called a Regime or a force-field. Their name-giving is approximately determined by the functions they perform.

Independent Regimes:
- $(V^+, B^+, M) = \beta^+$ Embodying Receivers’ Regime
- $(V^-, B^-, M) = \beta^-$ Embodying Suppliers’ Regime
- $(V^+, W, V^-) = \varphi$ Mindset Regime (volatile interactions)

Dependent Regimes:
- $(V^+, B^-, X) = \gamma^+$ Receiver’s Instrumental Regime
- $(V^-, B^+, X) = \gamma^-$ Supplier’s Instrumental Regime
- $(B^+, W, B^-) = \delta$ Competent Transactions Regime
- $(W, X, M) = \delta$ Mode of Governance (Common Embodying) Regime

The following sections focus on the Governance Domain with the dependent regimes ($\psi, \theta, \delta$); notice that all (and only) these regimes in the Governance Domain contain the Common Mind module, $W$.

4 The Level-ordering of the Layers of the Common Mind Capacity, $W$

Each Relational Capacity Module is active in three regimes, which means that its performance is dependent on the regime in which it is active. That regime-dependent capacity – when endowed with ordered, empirical characteristics– is called a Layer of the Relational Capacity. So each module is to be distinguished according to some regime.

Consider, for example, the Common Mind Relational Capacity, $W$. It performs a function or role in each of the regimes: the Mode of Governance Regime, $\delta$, the Transaction Regime, $\varphi$, and the Mind-Interactions Regime, $\psi$. These performances are dependent on each other.

The Layers of Common Mind Module Value, $W$, are:

- The Interactors-layer: $W^\psi = W(V^+, V^-)$, where the Common Mind is a function of the opposite micro-values in the Mindset Regime, $\psi = (V^+, W, V^-)$. 

- The **Transactors-layer**: \( W^\theta = W(B^+, B^-) \), where the Common Mind is a function of the opposite micro-transactors in the Transaction Regime, \( \theta = (B^+, W, B^-) \).
- The **Means-layer**: \( W^\delta = W(X, M) \) where the Common Mind is a function of the Legal Means module in the Mode-of-Governance Regime \( \delta = (W, X, M) \).

A Transient Layer has its modular capacities specified and ordered according to Richness and Refinement. That allows for defining a Transient Topography for each Layer, in which an Actor’s Relational Capacity position can be indicated.

The transient **Mind-Modules** in the **Interactors-layer** can be ordered in levels according to the **Richness Ordering**, \( \succ \), which orders the relational values in the Mind-Modules of the Mindset Regime in their capacity to engage in diverse and volatile relations, and combinations of relations, from complex, comprehensive to simple and separable relational structures. It may be represented on a bipolar scale on the \([1,0]\) interval, and can be approached by formal network characteristics, such as star-shaped, relational, autarkic relational capacities; or by a nominal level-ordering, such as **Imperial, Human**, and **Econ** Relational Values, or, more specifically, as **Communitarian, Social, Utilitarian** values in Table 3.1.

The transient or **Means-Modules** in the **Mode-of-Governance Layer** can be ordered in levels according to the **Refinement ordering**, \( \supseteq \), which orders the relational capacity carriers from coarse and strongly interactive relations to fine and separable relations; it follows that a coarse interaction structure’s carrier is confined locally, and that the individual carriers of fine, separable and congruent structures are relatively more local (individuals), but are forming together a network structure that requires a global carrier. It may be represented on a bipolar scale on the \([0,1]\) interval, and is approached by formal inclusion characteristics; or by the legal carrier characteristics ordered by **Public, Cooperative, Private Law** in Table 3.2, as well as by carriers from other disciplines.

The transient **Transactors-Layer** of relational transaction capacities are each a feasible composition of Richness and Refinement; they can be ordered in levels with decreasing Richness and increasing Refinement. These levels are approached by three successive nominal levels of power: **Communitarian, Cooperative**, and **Marketable**; conceived as **Community, Social**, and **Utility** Institutions, indicated by \( B_c, B_h, B_e \), respectively.

The distinction in ‘Imperial, Human, and Econ’ levels follows partly the description proposed by Kahneman (2012). In his definition, people on the **Human** level are fast thinkers because they have incorporated relational capacities from the past, which enables them to assess a complex situation fast, such as: altruistic or selfish, mediating, reciprocity, intrinsic motivation, ethical, environmental, and social values; group-instrumental values as survival of the species, level of sociality: equity and justice. On the **Econs** level, people are slow thinkers because they are endowed with specific but refined separable values, which require computations and cognitive techniques. Their minds converge to an individual’s values. I add the Imperial level to these Mindset-factors, which is the polar extension of an individual thinker: it is a crowd’s mood and her awareness of a threat or opportunity that has been accumulated for a long time and is immediately disposable. This type of values I call **Imperial values**, which incorporate the base of...
emotional and moral values, sensations, feelings, ideologies, religion, imitation, assimilation, fear, hate, and love, indoctrination, inspiration, suppressing individual nuances (a flow), intuitive, instinctive. The lack of boundaries for these values implies the use of coercion when being confronted with incorporating these values.

These orderings in all modules of the Transient Perspective Structure allow for constructing a Topography of the two Micro-Minds producing a Common Mind (see Table 3.1), of the pair of Common Values and Means producing an Outcome (see Table 3.2), and of the pair of Micro-Institutions producing a Common Value (in Table 3.3). Since these layers are dependent, the Layer of Micro-Mind values can be projected on the Layer of Legal Institutions through the Mode of Governance Regime, $\delta$.

5 Topography of the three Layers of the Governance Domain in an Economy

The Common Mind Values results from interactions on three layers: the Interactors-layer, the Transactors-layer, and the Means (Mode-of-Governance)-layer.

<table>
<thead>
<tr>
<th>Levels of Giving Mind Values:</th>
<th>Imperial Giving Mind (Associative, Empathic)</th>
<th>Human Giving Minds (Social Mind, Relational)</th>
<th>Econ Giving Minds (Econ Mind, Cognitive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V$_g^+$ globally empathic</td>
<td>Community Communitarian Mind composed of Imperial giving $\lambda$ and Imperial receiving values: $W_{gg}^\psi$, Community Values, Vision, Morals, Culture, Passion;</td>
<td>Common Mind composed of Imperial Needs $\lambda$ and inspiring support by Human Minds: $W_{g\ell}^\psi$</td>
<td>Common Mind composed of Imperial Needs $\lambda$ and inspiring support by Econ Minds: $W_{g\ell}^\psi$</td>
</tr>
<tr>
<td>Imperial Receiving Mind (Associative, Empathic)</td>
<td>V$_g^+$: globally empathic</td>
<td>V$_\ell^+$ locally empathic</td>
<td>V$_u^+$ separable, utilitarian</td>
</tr>
<tr>
<td>Human Receiving Minds (Social Minds, Relational)</td>
<td>V$_\ell^+$: locally empathic</td>
<td>Common Mind composed of local Human Needs $\lambda$ and a global empathic giving Mind $W_{e\ell}^\psi$</td>
<td>Common Social Mind composed of with local Human giving Values $\lambda$ and local Human receiving values $W_{e\ell}^\psi$</td>
</tr>
<tr>
<td>Econ Receiving Minds (Econ Minds, Cognitive)</td>
<td>V$_e^+$ separable, utilitarian</td>
<td>Common Mind composed of separable Econ Needs $\lambda$ and a global empathic giving Mind $W_{eg}^\psi$.</td>
<td>Common Econ Mind composed of separable giving Econ Minds $\lambda$ and separable receiving Econ Minds $W_{e\ell}^\psi$, $W_{eg}^\psi$</td>
</tr>
</tbody>
</table>

Table 1. Topography of levels of opposing Interactors’ Minds generating a Common Mind Value at the Interactors-layer $W^\psi = W(V^+, V^-)$. 

7
An *interactor* is the near-independent Mind of an Actor, functioning as a Receiver’s or as a Supplier’s Mind, competent to interact with each other. Two opposite Minds are able to discuss or to bargain before arriving at a conclusion in the Common Mind. This interaction concerns values at different levels. Those levels identify the level of the interactor.

Three *levels* of values are distinguished in the previous section, both for the giving mind as for the receiving mind.

Next, a *transactor* is the near-independent embodied Mind of an Actor, functioning as a Procurer of Receiver’s demand or as a Provider of supply, competent to transact between each other. This transaction concerns values at different levels, which identify the level of the transactor. Three *levels* of interaction values apply also on the transactors: *Imperial, Human,* and *Econ* transactors. However, this is only allowed if the values specified by interactors are embodied in transaction-carriers that *fit* these values: the problem of fit is discussed below. When specified to institutions, the transactors are called Communitarian, Cooperative, and Marketable Institutions. The resulting Common Mind values are presented in Table 2.

<table>
<thead>
<tr>
<th>Levels of Competent Supplying Bodies :</th>
<th>Provider of Imperial Values</th>
<th>Providers of Human Values</th>
<th>Providers of Econ Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procurer of Imperial Values</strong> ($B_+^i$)</td>
<td><em>Contract between:</em> Legislative &amp; Executive Branch of Government The public and top-sportsmen and artists, (Attention competition)</td>
<td><em>Contracts between:</em> Government &amp; Human Task Organizations: SGI, Public Agencies, hospitals, scientists</td>
<td><em>Contracts between:</em> Government &amp; Econ Task Organizations; SGEI, PPP, Public Utilities, SOEs</td>
</tr>
<tr>
<td><strong>Procurers of Human Values</strong> ($B_+^h$)</td>
<td><em>Contracts between:</em> Political parties, Pressure groups, Lobbies, NGOs &amp; the Government (the Executive); (Concession competition)</td>
<td><em>Contracts between:</em> social demand enterprises &amp; social supply enterprises; stakeholders &amp; care organizations;</td>
<td></td>
</tr>
<tr>
<td><strong>Procurers of Econ Values</strong> (Market Demand) ($B_+^e$)</td>
<td><em>Contracts between:</em> market participants &amp; the price forming market institutions; Econ parties &amp; Eco Policy, Public Goods, Social Choice Theory. (Competition in Level Playing Fields)</td>
<td><em>Contracts between:</em> Stakeholders, trade unions, supervisors &amp; care organizations</td>
<td><em>Contracts between:</em> buyers &amp; sellers on a market; shareholders &amp; management of firms;</td>
</tr>
</tbody>
</table>

Table 2: Topography of levels of opposing Transactors, Providers and Procurers, generating a Common Mind Value at the Transaction-layer $W^θ = W(B^+, B^-)$

The third column with Econ Providers in Table 3.2 contains congruent enterprises aiming at maximizing profits under budget constraints; they constitute an Equal Playing Field and are supervised by Competition Authorities. The third row of Econ Procurers are the legally competent bodies that represent the Receiver, which Receiver or Demander is economically competent in the sense that she determines the choice by maximizing her utility under the
constraints determined by the Procurer. The first column contains a single Provider: the executive branch of the Government. The first row contains the Government’s legislative branch. The second column contains supply-cooperatives, the second row the demand-cooperatives.

For identifying and assessing the roles of social enterprises in a Societal System the shaded fields of Table 3.3 are quite informative. The three fields in the upper-right corner contain supply oriented social organizations such as community-Supply or ‘Giving’ services that are delegated to finer institutions, such as regulation authorities, public enterprises, or State Owned Enterprises (SEOs), or production cooperatives. The fields in the lower-left corner contain demand oriented social organizations, such as community demand or ‘Receiving’ services that are partly determined by finer institutions, such as political parties, public goods-mechanisms, or consumer cooperatives. This approach has direct policy implications.

The problem of fit concerns the relation between the levels in the Mind Values and the levels in the legal Means that are supposed to carry the Mind Values.

<table>
<thead>
<tr>
<th>Levels in the Common Mind Values:</th>
<th>Levels in the Societal (Legal) Means:</th>
<th>$W_{ag}$ Level of Imperial, Communitarian Values</th>
<th>$W_{eh}$ Level of Human, Social Values</th>
<th>$W_{ue}$ Level of Econ, Utilitarian Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrier at the level of Communitarian Powers and Symbols $M^a$: Broad</td>
<td>Feasible Outcome: enhanced relational capacity through culture, morals, cathedrals, armies, icons</td>
<td>Human Social Values empowered by the State</td>
<td>Feasible Outcome: Economic Policy</td>
<td></td>
</tr>
<tr>
<td>Carriers at the level of Human Power Measures and Symbols $M^β$ (distinctions, Institutions)</td>
<td>Voluntary service of public interest</td>
<td>Feasible Outcome: Enhanced relational capacity through Social Network</td>
<td>Humanized Commodities</td>
<td></td>
</tr>
<tr>
<td>Carriers at the level of Econ Power Measures and Symbols $M^γ$ Fine: (Allowing Decentralization)</td>
<td>Comoditized public services</td>
<td>Comoditized social services</td>
<td>Feasible Outcome: Increased Profits</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. The Topography of the Feasible Outcomes as function of Common Mind Values and Legal Means

The amalgation of the Mind-Layer with the Means-Layer generates the Body-Layers, which contain feasible and measurable Relational Capacities that are fit for being an object in a transaction or contract. Let this set be ordered according to which the Relational Capacity-characteristics go from minimal complexity constrained refinement (or maximal coarseness with a maximal scope of interaction) to maximal complexity constrained refinement in interaction. The amalgation of the corresponding Richness scale in the Mind-Layer with the Refinement scale in the Means-Layer generates the feasible Outcomes in Table 3.
The design and sustainment of fitting transaction regimes is by far the most important issue for a stable societal growth policy. It implies the presence of **countervailing power** in the Institutional Transaction-regime, which is required for a balancing (efficient) outcome. For each actor, the three layers of values, distinguished in Table 1, may correspond with three fitting layers of bodies in the Institutional Transaction-regime in Table 2. That results in the Map of Values in Table 1 that corresponds to a Map of fitting Contracting Organizations in Table 2. The art of Institutional Design is to construct stable institutions that transform the volatile interactions between giving and taking values in the Mindset (Table 1) into solid transactions between Demand and Supply in Table 2. The Demand and Supply carriers distinguished there in the three layers correspond with the main established institutions in a society. It makes a Map of Organizations in Societal Governance. This governance can be also applied to other institutional actors. The institutional capacities and powers of each factor in this macro-actor are empowering micro-actors in their specific roles, which is elaborated in Section 4.

Given an empirical specification of the values that an institution aims for (Table 1), and the available legal means incorporating these values (Table 3). Then a legal embodiment of a Mind-value in Table 2 **fits** the Mind-value if it corresponds with Table 3: the $\delta$-projection of the value in the Mind-plane on the Institutional Transaction space.

The following example illustrates the importance of developing legal carriers of values that allow for fragmentation of services.

**Example 1. Fragmentation and commoditizing of the Means-factor: Transition in a Market Economy**

By the early 16th century Antwerp had become northern Europe’s main center of international trade and finance (Van der Wee 1963, 1993). To sustain the commercial capital of his sprawling empire, Emperor Charles V issued legal rules for key commercial transactions such as the transfer of bonds and bills of exchange, thereby considerably widening the scope of Antwerp's financial market and thus facilitating the city’s fast expanding trade (De Smedt 1940-1941, Van der Wee 1993). Merchants from the Low Countries, roughly the area of present-day Netherlands and Belgium, started to explore ever more adventurous trade destinations: Russia, Italy, the Levant, West Africa, the Americas. The VOC (*United East-Indian Company*) was a hybrid organization, a specific-purpose partnership modified to suit public tasks. Its charter harnessed the commercial aspirations of the merchants leading the 6 *voorcompagnieën*, pre-companies, to the military and political goals of the state by giving the company a monopoly on the Asian trade plus rights to wage war and conclude treaties in the Estates Generals name. The VOC therefore possessed three characteristics of modern corporations, that is to say a separation of ownership and management, limited liability for shareholders, and transferable shares, but lacked three more, i.e. a permanent capital, full limited liability for managers, and legal personhood (Gelderblom, De Jong and Jonker, 2013; Dari-Matiacci). In 1623 the Amsterdam chamber, referring to a dispute with investors over the directors personal liability for debt, adopted a new form of bond contract specifically excluding that liability, thereby indirectly giving the company legal personhood.
This example shows that the legal characteristics of a carrier of values co-determines the fit between the richness of values in the Mind-regime and the possible refinement of bodies the Transaction-Regime.

Can organisms and institutions be ordered in terms of relational capacity? The ordering of institutional capacities in the domain of the railroad industry can be observed in a recent study by Holterman (2011), see Table 2.3. He divides the time period in four phases: Innovation (in the 1830s), Consolidation (in the 1880s), Nationalization (between the two World Wars), and Privatization (after 1980), which indicate the prevailing economic mechanisms in the domain. I have added a fifth period, the 2020s, based on the perspectives of the various capacity-factors. The enterprises (carriers of technical production capacities) align their legal and economic characteristics to their technological complexities and to the available resource mechanisms.

<table>
<thead>
<tr>
<th>Ordering (t)</th>
<th>$V_t^{-}$: Mind-Supplier Perspectives</th>
<th>$V_t^{+}$: Mind-Receiver Perspectives</th>
<th>$M_t$: Means Perspectives</th>
<th>$X_t$: Outcome Governance of Railroad industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020s</td>
<td>Network connection</td>
<td>Relational services</td>
<td>Concession systems</td>
<td>Multilevel</td>
</tr>
<tr>
<td>2000s</td>
<td>Outsourcing</td>
<td>Sophisticated</td>
<td>Relational contracts</td>
<td>Market Regulation</td>
</tr>
<tr>
<td>1980s</td>
<td>International</td>
<td>Mass: efficiency</td>
<td>Public tendering</td>
<td>Privatization</td>
</tr>
<tr>
<td>1930s</td>
<td>National scale</td>
<td>Military: effective</td>
<td>Political tools</td>
<td>Nationalization</td>
</tr>
<tr>
<td>1880s</td>
<td>Physical Networks</td>
<td>Basic transport</td>
<td>Market contracts</td>
<td>Consolidation</td>
</tr>
<tr>
<td>1830s</td>
<td>Local scale</td>
<td>Business, Elite transport</td>
<td>No specific appropriate tools</td>
<td>Market Innovation</td>
</tr>
</tbody>
</table>

Table 4: Co-evolution: Perspectives and Means progressing in time in the Railroad Industry.

6 The Topography of Transactors in a Health Care Organization

The Governance Domain of an Enterprise contains the Mindset Regime, the Transactions Regime, and the Mode of Governance / Institutional Design / Means Regime. These three regimes are dependent, which means that any regime follows from the other two regimes. These regimes are called the layers of the Common Mind. The Common Mind Module $W$ has therefore three meanings, all specifying some aspect of the Common Mind, depending on the regime in which it interacts: the Common Mind Value, the Common Transaction Value and the Common Vision, which values result from interactions on the respective layers: the Interactors-layer, the Transactors-layer, and the Mode-of-Governance-layer.

This section focuses on the Layer of the Transactions of a Health Care organization: indicated by the term ‘Firm’. It is a Topography of Contracts between the Micro-Bodies in the Layer of Transactions, which layer results from the Layer of Mindsets, when an Institutional Design map, $\delta_t$: $\mathcal{Y}_t \rightarrow \Theta_t$, is applied. This map transforms volatile Mind characteristics into stable Transaction Regimes. The Topography of Contracting Bodies (Provider and Procurer) in the
Transactor-Layer of the Enterprise, $W_T^θ$, resulting from the Enterprise Institutional Design Map is presented in Table 4.1.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Levels in the Demand Bodies:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurer of Society’s Expectations about the Care Service</td>
<td>Contract between: Society’s Health Vision and Policy, and the Firm</td>
<td>Contracts between: the State and Care Authorities and the Firm; State Owned Hospitals</td>
<td>Contract between: Society’s Profession and individual professionals (Accreditation)</td>
<td>Contract between: the State and Commercial Medical hospitals (Accreditation)</td>
</tr>
<tr>
<td>Procurers of Cooperative Human Demand (Social Enterprises) (Concession System)</td>
<td>Contract between: Insurers; Patients’ Communities; Medical Research and the Firm;</td>
<td>Contracts between: Stakeholders’ Teams and the Firm’s Professional Teams;</td>
<td>Contract between: Professional Accreditation bodies, Medical Partnerships; and professionals in the Firm;</td>
<td>Contract between: the non-profit Firm and aligned Commercial Medical Projects (Ancillary organizations)</td>
</tr>
<tr>
<td>Procurers of Private Human Demand</td>
<td>Contract between: Patients and the firm</td>
<td>Contract between: Insurance companies and the Firm; Patients' and the Firm’s professional teams</td>
<td>Contract between: Patients’ and Human Medical professionals in the Firm</td>
<td>Contract between: Patients and Econ professionals in the Firm</td>
</tr>
<tr>
<td>Procurers of Econ Demand (Level Playing Fields)</td>
<td>Contract between: Clients; Insurance Companies and the firm</td>
<td>Contract between: Insurance companies and the Firm’s professionals; Clients and research companies</td>
<td>Contract between: ‘Commoditized’ Clients and the Human professionals of the Firm</td>
<td>Contract between: ‘Commoditized’ Clients and Econ professionals in the Firm</td>
</tr>
</tbody>
</table>

Table 5. Topography of opposing micro Provider (Supply) and Procurer (Demand)-levels generating a Common Mind Value in the Health-Care Sector’s Transactions-layer:

The fields under the diagonal in Table 4.1 refer to demand oriented social organizations; the fields above the diagonal to supply oriented social organizations. The State can empower social organizations of a lower level (to the right and downward); organizations at a low level can inspire and enrich organizations at a higher levels (to the left and upward). Organizations at a high supply level can enhance relational capacity by refining and empowering their supply (see Example 3.1). Organizations at a high demand level can enhance relational capacity by refining and empowering their demand.

The ordering of health services at the supply side is represented on the X-axis of Table 5. The demand side is on the Y-axis of the table. A pair of fields form a ternary relation in the Transaction Regime. It is assumed that each factor is competent to enter into a Transaction with the related factor. The Cooperative ‘Human’ hospital is situated at the crossing of patients groups and professions groups. The Commercial ‘Econ’ hospital is positioned at the crossing of the performers’ group and the market, selling hospital products. The Concession Authority receives its mandate from the sector’s ‘Imperial Demand’, which contains the moral, legal, and political values of the sector, and imposes these values on the professions group. The ‘Econ’ ancillary
company exploits innovative commercial products originating from the hospital on the market, whereas the ‘Econ’ commercial hospital commoditizes hospital services and sells them on the markets to patients.

The ‘Econ’ commercial hospital and its network of ‘focus clinics’ may be much larger than the ‘Human’ hospital. They may have accidental ties with the ‘Human’ hospital. But the ties between the ‘Human’ and the ‘Ancillary’ are of a different nature: they aim at a complementary coexistence in different regimes, in order to support the ‘Human’ values involved.

7 The Architecture of an Enterprise in an Economic Sector

Any worker in a firm, as well as the firm itself, is guided by perspectives. These perspectives are reduced to the essentials by the Transient Perspective Structure (see Section 2), viz., the perspectives of the receivers of firm’s services, of the suppliers of firm’s services, and concerning the various means required by the firm for realizing the firm’s perspectives. These perspectives are specified in modules with empirical characteristics; a pair of interacting modules assigns a third module with characteristic relational capacities.

The basic roles or functions of a firm in a market context are represented in Figure 3. The Service Receivers, indicated by $V^-$, interact with the Service Performers, indicated by $V^+$, to produce a relational service, indicated by $W^\psi$ and called Value Interactions. The role of the Provider of the Firm, $B^-$, is carrying the services of the Service Performers to sell these on a market, . The purchaser of these services is the Procurer, $B^+$, who is competent to buy these services on a market in a Value Transaction, $W^\theta$, with the Provider. The Procurer then carries the services over to the Service Receivers, $V^-$. A Procurer is understood to be a demander who is legally competent to enter into transactions, for herself or for a demander or a receiver who is not legally competent. The same holds for a Provider, who is not necessarily the Performer of the service supplied. This implies that the opposition in an employer – employee contract in a subsidized enterprise is actually an opposition in a taxpayer (procurer) – employee (provider) contract.

The transient modules in both the Mind-layer and in the Means-layer can be level-ordered according to their Richness and Refinement, respectively, as defined in Section 4. So the Mind-interactions are assumed to be on the Human-level, whereas the Transactions are supposed to be on the Econ-Level. This implies that there is no fit between the two layers.

The Value Interactions, $W^\psi$, are related with the Value Transactions, $W^\theta$, through the Mode of Governance, $\delta$. Both modules are similar in the sense that their role, indicated by the Common Value $W$, is characterized by result of interaction between opposed (micro) roles: mental needs and mental offers in the Mindset regime and, respectively, monetary demand and supply in the Transaction Regime. The modules are different because their role belongs to different layers associated with the Common Value, $W$: the layer of Value Interactions, $\psi$, and the layer of Value Transactions, $\theta$, related by the Institutional Design Map, $\delta$. 


Next, each module is assigned a level of relational capacity. In Figure 3, these levels are a Human level for the Value Interactions, $W^\psi$, and an Econ level for the Value Transactions, $W^\theta$.

In a static context, the private entrepreneur will only produce services on the Econ level that can be sold on the market, covering at least all the Econ-cost involved to produce that service. This requires that the carriers of relational Human-services have to be transformed and commoditized to the Econ-level. The Human part of a service has to be incorporated in a carrier that allows for Econ-measurements and processing in the market.

The embodying a relational service in a commodity that can be processed in a market mechanism is called the commoditization of that service, if the market-price of that commodity suffices to compensate all layers of the input – including transaction costs – with allocated market-values.

The process of Commoditization of services – whether consumer services or labor services – makes them apt for being subject to transactions and processed in the market. The fictitious productivity of labor in government service (which is situated at a higher level) allows for considering this delegated government service as a commodity.

If commoditization of services in an organization is impossible, then subsidizing services or the organizations in inevitable. It is questionable whether the profit-maximizing behavior of a
competitive firm (with all its services commoditized) implies optimizing her relational capacity. Although the relational values are covered by the market prices, their ‘shadow’ process may be forced to a lower level than sustainable under an appropriate regime.

When the levels of performance in the two layers in a Firm: the Value Interaction layer and the Value Transactions layer (see Figure 4.1), are not fitting, the important consequences for the performance of the Firm as a whole may result, as the following example shows.

**Example 2. The Bankruptcy of Thebe’s ‘Human’ housekeeping care branch**

*Thebe* is a large social non-profit enterprise in the Netherlands servicing vulnerable people, both internally in houses for the elderly and externally, the people in their own home. The holding comprises three main branches: the extramural care, intramural care, and assistance for housekeeping (*HbH*), apart from maternity care, youth health and other care-related activities. The tariffs for *HbH* were classified in levels and determined by the national care-office and paid by a national agency. That regime determines the market price of the service. Thebe paid her *HbH*-employees according the CAO-scales, the Collective Labor Agreement, for housecleaners possible, adding some extra care to the cleaning service, and determining the cost price of ‘*Human’ *HbH*-services. In her drive for budget cuts, the government decided to decentralize her budgetary responsibility from the national agency to the communities. The service level was reduced to ‘Econ’ services, which were contracted out to commercial ‘*Econ’*-tariffs, almost 20% lower than the existing ‘*Human’*-tariffs. After having accepted losses for some years, *Thebe* decided to give up this service and filed the *HbH*-branch in 2014 for bankruptcy. Almost 2000 *Human’* *HbH*-service performers lost their job in *Thebe*, but most of them found another care or housecleaners organization to employ them at some lower compensation.

This misfit between the Human Value Interactions and the Econ Value Transactions has been corrected by downgrading the Human Value Interactions. The other possibility, upgrading the Econ Transactions, was impossible because no adequate and innovative governance mechanism is yet available to follow this course. The downgrading of the Human Value Interactions could be accepted socially, since its consequences were minor and fitted in the established governance mechanism. This mechanism, however, should be innovated and improved to allow for upgrading the Econ Transactions².

### 8 The Social Enterprise

A *Social Enterprise* is an undertaking – an Actor, as defined in Section 2 – of an entrepreneurial social membership community providing and receiving ‘Human’ (possibly in addition to ‘Econ’) services on a specific domain and in a specific region that enhance the relational welfare of her target groups – the enterprise’s social value – as understood by the wider social membership

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² This downgrading of the Value Interactions (as a consequence of mass unemployment) to force them fitting with the Value Transaction in line with the established Governance Mechanism, is the problem Greece and the EU now faces. The solution I recommend is an ‘Imperial’ innovation of Greece’s Governance Design that better guarantees ‘Human’ values to be provided.
community in the economy, from which the social enterprise needs a concession to operate. She aims at enhancing specific relational capacities of the assigned participants, that is, richness of the mind-factors and refinement of the means-factor for both receivers and performers. For attaining this goal under financial viability, she is supported by public means, commercial activities developed from its social services, and/or other financial resources that are incorporated in an ancillary corporation working in the appropriate regimes.

A Social Enterprise depends on the following tools:

A **Concession Authority** in a Social Economy is an Institute having received the power to grant a Concession to operate a Social Enterprise of a certain size in a certain region. The social membership community is the Concession Holder; it is a specification of the ternary relation between the factor ‘receivers’, the factor ‘performers’ and the factor ‘human-value’, which is the relational capacity added by the pair of factors. That Concession is based on the relative performance of the Cooperative belonging to the Social Enterprise in terms of relational capacity. When the ‘Human-value’ – normalized by the Concession Authority – shrinks or expands, so does the concession.

The second tool concerns the connection between a Social Enterprise and the Market Economy in which the Social Enterprise is embedded. With any (Human) Cooperative, an (Econ) commercial and for-profit corporation can be associated, called the Social Enterprise’s **Ancillary Corporation**. The Cooperative the of Social Enterprise is subjected to the rules of the Concession Authority, and the Ancillary Company is subjected to the rules of the ‘Market’ authorities.

When this concept of a Social Enterprise has been established in a Market Economy, this economy may evolve into a real Social Economy. This is characterized by the possibility of an economic policy that can focus on specific ‘Human’ activities of Social Enterprises. It can develop policies where local cooperatives are empowered to enhance local relational capacities. For that purpose, the Social Enterprise installs two accounts, one for itself in terms of the ‘Human value’, and one in terms of euros for its Ancillary Company. The assets in the Cooperative in ‘Human-value’ are exchanged in euros on the basis of commoditization of the services rendered and received by the ‘Human’ Cooperative. Similarly, economic indicators of the Ancillary Company, such as the solvability, are derived from ‘shadow-values’ and translated in euros. The exchange rate can be determined locally, just as the national currencies used to be determined ‘locally’, which may be floating against the euro that covers the whole continent.

The Social Enterprise owns the indivisible Human Cooperative with its social and human capital, as well as its commercial Ancillary Company. It cedes enough assets before commoditization to its Ancillary Company to act as a strong, independent participant in the market. Apart from its social and human capital, its most important assets of the Cooperatives are the capacities for product innovations, products that can be commercialized and sold by the Ancillary Company on the euro-markets. Also in that sense, the Social Enterprise is innovative and entrepreneurial.
9 The Domains of an Economy; the Institutional Design Map

This approach can be extended to other domains than the Governance domain, and to a deeper analysis of the concepts introduced. A domain of an Economy as Actor has been defined as a set of dependent regimes, see Figure 2 in Section 2. The five Domains of an Economy, each containing dependent Regimes, are:

- The (macro) Governance domain: the dependent regimes are \((\psi, \theta, \delta)\), which regimes all contain the Common Mind \(W\);
- The Competency domain: the dependent regimes \((\beta^+, \delta, \beta^-)\), which regimes all contain the Medium \(M\);
- The Instrumental domain: the dependent regimes \((\gamma^+, \delta, \gamma^-)\), which regimes all contain the Outcome \(X\);
- The (micro) Exploration domains: the dependent regimes \((\beta^+, \psi, \gamma^+)\) and \((\beta^-, \psi, \gamma^-)\), which regimes all contain either the Values \(V^+\), or the Values \(V^-\);
- The (micro) Exploitation domains: the dependent regimes \((\gamma^+, \theta, \beta^+)\) and \((\gamma^-, \theta, \beta^-)\), which regimes all contain either Bodies \(B^+\) or \(B^-\).

Each of these domains has a specific function in the economy. First, consider the Governance Domain, \((\psi, \theta, \delta)\) in an arbitrary society. It is considered the central domain in that society as it is not based on the regimes determined by micro-actors. It contains three dependent macro-regimes. The Mind-Interaction Regime \(\psi\), which contains the society’s volatile relational micro- and macro-values, ideals and preferences. The Transaction Regime \(\theta\), contains measurable, solid and legally competent transactors that are incorporating the values in the Mind Regime. The Governance Regime, \(\delta\), that offers the means to transform volatile values into transactors that are competent and able to transact and exchange.

The central role of the Governance Domain is illustrated by the Society’s Institutional Design map, \(\delta_t: \Psi_t \rightarrow \Theta_t\), defined on a set of specific volatile Mind regimes, \(\Psi_t = \{\psi_t\}\), with values in a set of stable modes of governance regimes, \(\Theta_t = \{\theta_t\}\):

\[
(1) \quad \theta_t = \delta_t(\psi_t).
\]

The Society’s Institutional Design map expresses the society’s capacity to transpose some specific societal mind structure (such as a coalition structure), into a mode of governance (a cooperation structure) for that society. Many models in the literature specify this relation. Three examples may indicate the performance of this map.

A competitive Market Economy is an Economy (Def. 3.1) in which the Micro-actors’ Receiving and Giving Capacities are specified by a profile of utility-functions on a commodity space. The Mind-Interaction Regime \(\psi\) in the Market Economy has its interaction possibilities very restricted: the utility functions are separable and only interact through the price mechanism, which mechanism is part of the Governance Regime, \(\delta\). This mechanism maps the utility profile
into transactions in the *Transaction Regime* \( \theta \), in which an equilibrium price results and eventually an equilibrium allocation.

The *Governance Regime* contains the legal prerequisites, such as property rights, that make the Micro-actors competent to exchange and to enhance their relational capacities and welfare.

Increasing complexity of the relational structure in the mindset regime, \( \psi \), requires a stronger duality operator generating a transaction regime, \( \theta \), that is feasible for the complexity of the mind. The more complex and sophisticated an actor’s Mindset is, the more complex and sophisticated has to be her institutional Governance Regime in order to support a feasible and stable outcome. Two theorems by Gilles, Lazarova and Ruys (2014) in the context of a matching economy support this statement.

**Example 3. Stable Behavior induced by institutions in a Network Economy (Gilles, e.a., 2014)**

Consider a matching economy (an Actor) in which the micro-agents are endowed with a network of potential value-generating relationships. An Actor can engage in three types of economic interactions: Autarkic self-provision; bilateral interaction; and multilateral collaboration. We introduce two stability concepts and provide sufficient and necessary conditions on the network structure that guarantee existence, both in the absence of externalities from cooperation as well as under crowding conditions.

Gilles e.a. show that a richer, more complex Mind-space can only be attained by means of a finer institutional role setting. For the simple case of bilateral matching they show that for an efficient and stable allocation of matches a simple bipartition restriction on agents is necessary and sufficient. For more complex behavior, represented by the underlying multilateral relationship network structure, more stringent and more complex restrictions on the institutional structure are required. Thus, we provide support for the theory of co-evolution of institutions and economic outcomes.

Finally, the well-known concept of *Mechanism Design* as it has been developed in the 1970s by Leonid Hurwicz and Stanley Reiter (2006: 14, 266), is an example of the Institutional Design Map. They describe a (decentralized) mechanism as a formal entity in the Competent Transaction Regime (\( \theta \)) intended to represent a system for organizing and coordinating economic activity in the Mindset Regime (\( \psi \)). They focus on mechanisms as message exchange processes in the Competent Transactions Regime. The problem of mechanism design is: find a mechanism that assigns an equilibrium message generating the desired outcome. A desired outcome cannot be generated without adequate signals or messages given to the agents in society. The equilibrium message correspondence \( \mu \) represents the behavior of the agents. When ignoring incentives, this behavior may be known or prescribed; this is customarily assumed in the case of the competitive mechanism, for instance, in general equilibrium theory. Or, when we suppose that the behavior of the agents is chosen by them strategically in a game. A game form may then implement the goal function.

So Hurwicz and Reiter focus on allocation mechanisms based on information signals that may converge to an equilibrium message of a static model. The dynamics in this model is restricted to
the movements of the message path, the famous tatonnement process of market prices, or any other behavioral parameter.

10 Cooperation and Rule-rationality in Governance Design

A body or carrier of values is competent if it has the legal properties, giving the actor the power to enter into a transaction with another competent body in a specific transaction regime. This transaction regime fits a mindset regime if its bodies are the richest possible bodies that are competent for the mindset regime. For that purpose the Institutional Design Map contains Carriers in which values are wrapped to play roles appropriate for some transaction mechanism. Legal and other instruments are used to construct the following functions:

- **Commoditization** of Econ values: Embodying relational capacities and values into fragmented, (separable) measurable and bounded units, such that Property rights can be assigned.
- **Level Playing Fields**, consisting of congruent carriers of capacities, such as the Level Playing Fields in a Market.
- **Councils**, carrying collective values.
- **Architectures**, containing Roles and their Behavioral Rules, among which:
  - Containing a hierarchy in values
  - Defining Balancing outcomes, a Balance of Power, and appropriate welfare indicators
  - Defining Surplus creation and measurement.

The aggregate or macro-actor has micro-actors as constituent members. In a single-layer organization, micro-actors in the same role have all a congruent actor-identity. They constitute a **Level Playing Field** in a specific role of the macro-actor. Due to this congruence, the actors in that regime are governed by the same (isomorphic) rule of behavior. The standard example of a level playing field is the set of firms in a market environment, where each firm has comparable relational capacities, implying that all firms should behave similarly, but not equal, as determined by fair rules of the market.

In level playing fields, organizational structures, practices, and performance are affected through three mechanisms (DiMaggio and Powell, 1983):
- coercion: legal mandatory requirements;
- normative prescriptions: habits, rituals, routines, values;
- mimicry: seeing others switch behavior induces discomfort of the laggard, and stimulates adaptation in case of uncertainty.

These mechanisms impose institutional isomorphism on organizations in a level playing field, creating uniformity, and resulting in a uniform mode of governance for that level playing field. Examples are: the rules of the market for competitive, commercial firms; the rules of bureaucracy for public task organizations.
Consider an Actor with micro-actors governed by their *embodying regimes*, $B^+(V^+,M)$ and $B^-(V^-,M)$, or $B^i(V^i,M^i)$, for $i = \{+,-\}$. A micro-actor $i$ behaves *act-rational* if she chooses a best element in her choice set, $M^i$. That behavior implies individual liberty to choose. However, she might be induced to behave strategically in her *instrumental regime* by choosing in the potential outcome set $X$ a best element for her opponents, $B^i(V^i,X)$, believing that (or forced to believe that), when this behavior is a common rule, it will improve the outcome, $X$, for her.

Let that be called *socially-rational* behavior. This type of behavior cannot be distinguished from cooperative behavior. Examples are:

**Example 4. An Ant Colony: the policing of rule-rationality in a colony**

An Ants Colony is a community of ants, endowed with a hierarchical architecture that is aimed at a common goal: the survival of the colony. For that purpose, various roles are designed: the Queen, the Workers, the Soldiers, and the Males. The Queen is the only egg productive organism in the colony; the Workers care her eggs and assemble food from the external ancillary system; the Soldiers defend the colony against the external system, and the Males fertilize females before they establish a colony themselves. Rule-rationality is imposed on the various roles in the architecture, which makes the colony a smoothly running organization. This rule-rationality is behavioral-stable by an enforcement mechanism on female workers, repressing their act-rationality (originating from an earlier system from which she descends). That is proved by an experiment on an ant population was set up to observe the oppression of unruly behavior in an ant colony. It was expected that enforcement of reproductive altruism (policing) in ant societies is a major force in maintaining high levels of cooperation. In order to be able to enforce altruism, ants need to identify reliably the reproductive cheaters. The authors mimicked reproductive cheaters by applying a compound typical of fertile individuals on nonproductive workers. This treatment induced nestmate aggression in colonies where a cheater was present. It failed to do so in colonies without a queen where workers had begun to reproduce. So the hydrocarbon biosynthesis in the cuticle of an ant gives reliable information about the reproductive physiology of an ant, because it cannot be suppressed by the individual.

The rule of the ant-colony aims to realize a *common value*, $W$: the survival of the species, called the *rule of gene-survival*. Since the species has survived for 150 million years, that rule has been very stable and very successful. But also at a cost: the ‘common mind’ of the ant-species has not changed in 150 million years! The strong policing characteristic in an ant society protects its common mind and value, but at a cost. Although a worker-ant (in a colony or team) may want to produce her own offspring is and is capable to do so (the enrichment phase of Growth), it is costly for her, because, if she acts rational in her own gene’s interest and breaks the rule she will be expelled from the colony or killed.

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3 From "Enforcement of altruism in a social insect (an ant society)", *NRC 2009-01-13*. Referring to Smith, A.A., B. Hölldobert and J. Liebig (2009), *Cuticular hydrocarbons reliably identify cheaters and allow enforcement of altruism in a social insect*, *Current Biology*, 19, Issue 1, 78-81.
Example 5. A Jungle Economy: efficiency under the rule of the strongest (Piccione and Rubinstein, 2007)

Next, consider a Jungle economy; a community in which the common (non-separable) value: the survival of the species, is still predominant, but compared to the ant-community, it adds complexity in the social value-system of the Mind-regime by accepting the value of individual (separable) fitness, or act-rationality. The institutional rule-rationality has been evolved (the governance regime) that integrates both types of rationality. The community goals are: social fitness and a stable and efficient allocation of resources. Piccione and Rubinstein (2007) show that such an efficient and stable competitive equilibrium is achieved when resources are allocated to the strongest individuals, according to the rule of the strongest.

Although this jungle economy is more primitive or poorer (see Section 2.5) than the competitive market economy, implying that the jungle-allocation rule has a lower level of richness, some of its institutional properties are still present and left invariant compared to the market-allocation rule, viz., efficiency and allocative stability. The more primitive jungle mechanism, however, has not the same outcome as the more sophisticated market mechanism, where the rule of the best holds. For in that case, the best producer is making the most efficient use of resources and allocates the expansion of her budget-set under competitive conditions to a Pareto-optimal allocation, weakly-benefitting all. Therefore, the rule of the strongest may be allocative-stable, but it is not institutional-stable because members of a society (the Econs) can collectively improve upon their situation comparable to a jungle-allocation by changing the rule.

These examples can be embedded in the Exploitation Domain, introduced in Definition 3.2, which contains three dependent regimes: an embodying regime, a transactions regime and an opposing instrumental regime, either \((\beta^+, \theta, \gamma^-)\) or \((\beta^-, \theta, \gamma^+)\). The transaction regime, \(\theta\), connects the embodying behavior, \(\beta^+_t = (V^+_t, B^+_t, M_t)\), of a micro-actor with the instrumental behavior, \(\gamma^-_t = (V^-_t, X_t, B^+_t)\) of its opponent. These three regimes have the Body \(B^+\) on which force is exercised, in common.

The Exploitation Domain can be written as a function, expressing the rule in the transaction regime that is required for a micro-actor’s embodying decision, \(\beta\), to correspond with the instrumental decision, \(\gamma\), of her opponent. These capacities have transient characteristics, indicated by the suffix \(t\).

\[
(2) \quad \beta^+_t = \theta_t(\gamma^-_t), \text{ with } i \epsilon N^+, j \epsilon N^- \quad \text{and} \quad \beta^-_t = \theta_t(\gamma^+_t), \text{ with } i \epsilon N^-, j \epsilon N^+.
\]

An example of this domain is the format of a Nash-equilibrium in a non-cooperative game. A Nash-equilibrium only exists if act-rational decisions correspond with expected strategic (socially-rational) decisions, or \(\gamma^+_t = \theta_t(\beta^+_t)\).


Dixit (2006) defines economic governance as “the structure and functioning of the legal and social institutions that support economic activity and economic transactions by
The Collective Contract Enforcement Institutions invoke a Rule- or social-rationality, which is essential for the smooth processing of economic activities.

11 Conclusion

The generality of this approach is attractive for analyzing the interdependencies in social and economic life. It asks for imagination and can therefore inspire students as well as policy makers. But the real task ahead lies in further developing the economic and legal concepts needed for solutions, and the mathematical and statistical tools needed for specifying and applying the conceptual relations.

12 References