TILBURG ◆ UNIVERSITY

Tilburg University

The Governance of Services

Ruys, P.H.M.

Publication date:
2005

Citation for published version (APA):
Ruys, P. H. M. (2005). *The Governance of Services*. (TILEC Discussion Paper; Vol. 2005-024). TILEC.

TILEC Discussion Paper

The Governance of Services

Pieter H.M. Ruys[1]

CentER and TILEC, Tilburg University, the Netherlands

Version 2005-08-30

Abstract: *The problem of assessing a system of governance for composite services in the social economy is approached by means of original methods. The main innovation is that the welfare structure of a society is separated from the legal transaction- or institutional structure. As both the various types of services and the various modes of management are defined in terms of relations between sets of persons, these structures can be compared and the performance of a management-system can be assessed. The dynamics of a wide range of hybrid forms of organization – between market and hierarchy – is analyzed in this framework. The approach elaborates on the new institutional economics, and the social theory of micromotives and macrobehavior in exchange and transactions.*

1   Introduction

Adam Smith has taught us that, although our goal in life is achieving welfare-values, we only can attain that goal by engaging in exchange transactions that generate monetary values. The separation between the set of all imaginable services and the governance required for managing and realizing a subset of these services forms the base of the analytical framework introduced here.

The design of a Social Economy, an extension of the Market Economy, requires new concepts and models. One of the new concepts to be modeled is the Service of General Interest (SGI). The dominant approach to analyze SGIs is to define this concept from the legal point of view in terms of institutions. In this paper I make a distinction between the welfare generating interactions between persons, called services, and the legal transactions between organizations of persons required for managing the services, codified in governance. The *service structure* contains welfare generation as the driving force of society; the *institutional structure* focuses on transaction-value generation and describes the powers to realize services. The service of

---

general interest is one specific type of service that is an element of the service structure rather than the institutional structure. So both structures are described separately. They are also connected, however, because legal transactions are required for managing and realizing the services; and an institutional tool as governance is also service of general interest. The interaction between the service structure and the institutional structure is described in the same relational framework. That approach allows for deriving criteria for governance from the characteristics of the different types of services.

A second departure from established neoclassical economic theory is that not commodities, but services are the corner stones of the theory. A service is a relation between interacting persons who generate welfare by means of the service. That way of modeling creates both opportunities and serious problems. Proponents of the relational and reciprocal approach are Hirsch (1976), Kolm (1984), and Gui (1994). Reciprocity may be analyzed in social networks and results in social capital, which is analyzed in a fast growing literature in sociology, starting with Coleman (1990).

The third departure from the important literature on "institutional structures of production" (Coase, 1991), or on "hybrid forms of organizations" (Williamson, 1991), is the extension to the consumer side and to the external organization of firms. The framework introduced allows for a symmetric treatment of producer and consumer organizations, such as voluntary and cooperative organizations constituting the 'civil society'. Since the same person can play different roles, obeying different types of rationality, it may be called the role approach in governance.

Finally, the social economy can only be analyzed in connection with a market economy and a public sector. Concepts such as efficiency and consistency have only sense if one can compare outcomes under various types of governance. That requires a general equilibrium framework, which is also the fourth departure from the standard approaches. It is evident that this new approach is not fully elaborated, but the model can at least partly be reduced to the established neoclassical microeconomic model.

The motivation for this research was to get a better understanding of the the role and behavior of organizations in the public and non-profit sector of the economy. These organizations are also referred to as 'hybrid organizational forms' between market and government. What is their role in relation to the other organizations in society, and what kind of criteria one can apply to assess their efficiency and their contribution to value generation? In short, which governance contributes most to their value-generating performance?

This paper is organized as follows. The relational framework is introduced in the next section on service relations between actors and contractual relations between parties. I analyze modes of governance for 'pure' services in Section 3, and introduce the dynamics of this approach. Hybrid forms of organization come close to actual policy problems and form the empirical base of this research. Section 5 concludes. The new concepts introduced are formally defined and analyzed in the Appendix.

2 The relational approach: services, contracts, and organizations

2.1 Services generating personal welfare; the service structure

Consider a society with a finite number of persons. Those persons interact with each other, causing each other pleasure or pain. Some interactions are deliberate and reciprocal in the sense that two persons agree to act in a way that pleases the other and improves the welfare of both. These two persons, called actors, agree on a service between each other. An actor can be an individual or a group of persons, such as a teacher giving courses to a class of students, or a medical team performing a surgical operation on a patient. These examples show that actors in a service assume a role, either as performer, or as receiver. In each role, an actor consists of a group of interacting persons.

So a service is a relational activity between persons whose interaction generates welfare for all involved. Every member of the society has a utility function defined on the set of services in which he or she is involved. A **standard service**[2] is a service with a content that defines two roles: a group of receivers of the service, and a group of performers of the service. The size of each group is such that it contains all and only persons who interact in that role, so any external effect of an actor is internalized. In the sequel a service is understood to be a standard service.

The definition implies that two services with the same content have the same characteristic relational form; but services with the same form may have a different content. For example, the service of selling ice cream on the beach and the service of selling soft drinks on the beach have the same form. It also implies that an actor, be it a **team of service-performers** or a **club of service-receivers,** is the smallest group of performers or of receivers cooperating and interacting with each other for that service.

Let there be a finite number of different services in the service space, each with its characteristic form. This service space is given a structure. A service may be very simple, such as buying an ice cream from a vendor, or very complex, such as safety provided by the police. These services may be ordered according to a nominal index from 1 to m, as commodities are ordered, but we also may order services according to the size of interaction between persons within an actor. Since the receiver of an ice cream is one person, the interaction with other persons is absent. On the other hand, the set of people receiving safety in a country covers the whole society and does not exclude one person; so all persons interact as receivers. A **separation index** on the set of receivers and on the set of performers is defined, going from 0 to 1, where 0 means no separation or full correlation between persons, and 1 means full separation. That allows us to characterize services according to their form. Since each service has a characteristic form, we can design a *typology of services*. We simplify the separation index to three categories: 1. No separation, covering a single closed group; 2. Local separation: a few groups with limited exit possibility for members; 3. Global separation: many small groups with easy exit possibility for that service. Since there are two types of actors, receivers and performers, we distinguish nine types of services in Table 1.

---

[2] You may find formal definitions of the concepts introduced in the Appendix.

Service **Performers** Service **Receivers**:	Participate in a community wide team performing on all aspects of life	Participate in large professional teams performing on some aspect of life (sector)	Participate in small teams performing on a specific aspect
Participate in a community wide club with values on all aspects of life	S_{11}: Comprehensive community service by a community-wide team	S_{12}: Specialized community service by a professional team (SGI)	S_{13}: Business-like community service by a private team (SGEI)
Participate in a large club with particular values on some aspects of life	S_{21}: Comprehensive service for a particular group by a community-wide team	S_{22}: Social service for a particular group by a professional team (SSGI, civil service)	S_{23}: Business service for a particular group by a private team
Participate in small clubs with values on a specific aspect of life	S_{31}: Comprehensive private services by a community-wide team	S_{32}: Private service by a professional team	S_{33}: Private business services (private goods)

Table 1. The service structure: value-generating relations between
three types of performers and three types of receivers

Table 1 represents the service structure, including the *technology of taste and craft*, both of receivers and of performers. A person needs personal capabilities to interact in any of these services, as well as the legal authorization from some contract parties. Authorization implies also acceptance of or submission to the institutional rules of the game, as encoded in a mode of governance in Table 3. In this approach a person chooses the institutional environment in which she feels good[3], included possible egalitarian and ethical consequences of that choice for her. So the individual utility function on the service structure reveals indirectly the ethical norms and all other social values of the individual person, as far as these are manageable in a mode of governance. This two-stage decision resolves the problem of interpersonally comparable utility as described by Fleurbaey and Hammond (2004). The set of all persons in society defines the scope of the Table 1. These persons have attributes in several dimensions, such as time (long and short run), space (global or local), or in the service content (from an all encompassing, comprehensive service to an irreducibly single service). The Separability Scale identifies the degree of separability in the characteristics.

Service S_{11} is at the left extreme of the Separability scale. It fits the description of a closed community service; the interaction within each actor may be *relatively* communicative, emotional, inspiring, and integrative. The individuality of a person in an actor-group may vanish

---

[3] Her preference may include a preference for flexibility, see Barberà, Bossert, and Pattanaik (2004), to decrease uncertainty.

in the egalitarian and interactive values, but the service as such is valued by the individual person's utility function. National celebrations for a country or religious festivities in a community are examples. From this type of service going to the right, we arrive at S_{12}: 'the community service by a professional team'. The receivers are still community-wide, but the group of performers is specialized in some task. One may think of a ministry in the government, a regulatory agency, or a professional group as teachers or the medical profession, but also officers with a public task for social housing service or transport infrastructure. The recently defined 'service of general interest' (SGI) has a position in this field, because in this relation the community defines and receives the SGI and the professional group is the performer of the task. Although modes of governance belong to the institutional structure, they are also services of general interest that are assessed by individual members of society[4].

When performers may compete for performing this service for the community, the service becomes a 'service of general economic interest' (SGEI), positioned in field S_{13}: 'Community-wide business service by a private team'. An example is a private firm offering the service of waste management to a local community. A service is called an *economic service*, if it can be processed by an economic system (see Section 2.2), so its transaction value is measurable in terms of money. A sufficient condition is that the performers can be split up in small units and can compete, which is the case for services in the last column. The service S_{23}: 'Business service for a particular group by a private team' can be interpreted as a security service offered by a private firm to a group of receivers, or a private school service, or a standard in a network industry, such as an word-editor with user-wide externalities. The most separated service is located in field S_{33}: 'Private business services'. The service is open to all, so impersonal, anonymous and global; both the receiver and performer are rational and utilitarian. A pure private service has no external interaction or relation: it is a 'hit and run'-service. It is a generalization of a neoclassical private good, as the performer who sells a car may - in this case - be identified with the commodity 'car'. The receiver has also lost personal identity in the service relation and only has identity in that she has her own preferences over commodities, such as cars. This reduction to the bare essentials of an individual in an economic decision situation is the cornerstone of neoclassical economics and has generated a deep insight in social decision making, with tremendous, practical consequences and benefits.

In the bottom row of the Table 1, the receiver is not interacting with other receivers and the group of interacting performers varies in size. In service S_{32} there is a group of performers, such as a ballet, and a non-interacting audience with each other. This type of service reduces to a public good, when a commodity replaces the team of performers; a commodity from which no receiver can be excluded (the non-exclusive criterion) and no receiver (consumer) experiences external effects in receiving the service (non-rivalry). If the receivers in the theater interact in enjoying the performance, the service shifts up to the type S_{22}: 'Social service for a particular group by a professional team', or equivalently, 'a professional service for a group with special interests'. The particular group, or the group with special interests, is the audience in the theater in the example. This type contains a large set of civil services, or social services of general interest (SSGI), such as consumer-run projects and client organizations. These are the services of the 'civil society', indicated in grey fields of the Table 1.

The dynamics of change of the service technology shows a trend from 0 to 1, a trend towards liberalization and individualization asks for private services that allow accountability, replica-

---

[4] This approach endogenizes transaction costs of institutions; see also Gilles, Diamantaras and Ruys (2003). Modes of governance may decrease uncertainty and increase flexibility, which institutional aspects are expressed in terms of services of general interest that are assessed by the individual members of the society.

tion, efficiency, specialization and rationalization. A trend in the other direction, from 1 to 0, is equally forceful. A need for cohesion, integration, and coherence asks for comprehensive and protective community services. I propose to formulate these trends in terms of two 'laws of motion' in Section 3.3.

The individual utility of a service is best explained in terms of subjective expected utility. The individual has to assess not only the welfare generated by interaction between performers and receivers in which she takes part, but also the probability of realization of that type of service. This probability is strongly increased by a mode of governance supporting the management of a certain service. The first point, the welfare-value generated by interaction, is more difficult than traditional way of asking an individual receiver to reveal – directly or indirectly – information about her individual preference ordering of a set of commodities. If there are sufficient substitutes or alternative performers available, such as for private services in the field S_{33}, then that procedure can be applied again. In the case of a group service, the individual receiver may compare different groups or different intensities of group activities, as is done with assessing public goods by a utility function. In case of a community service, the assessment of potential alternatives is the subject of social choice theory. The derivation and determination of welfare-indicators falls outside the scope of this paper[5].

2.2   Contracts, managed services, and transaction value

There are many potential services in the service structure. Only some of these will be selected and realized, namely the services that are managed into realization. There are, for example, many places where you may go on vacation, which are possible services between your group – the receivers – and some other group – the performers – the travel industry. The management of your vacation requires a contract between your group and the travel industry. You have to be authorized to enter that transaction and to pay the bill. The travel agency should have the power to provide the service and to engage an airline, hotels, and so forth. These are all elements of a contract aimed at realizing a specific service.

So a **service-contract** is a formal agreement between two parties, both having the force of law or custom to exchange resources and commitments, to create the conditions for rendering that service. A **transaction** is the act of carrying out the exchange through to an agreement. The two parties are the **procurer of a service**, which is a set of persons that has the power to obtain necessary resources from its constituency for realizing some service, and the **provider of a service**, which is a set of persons that has the power to provide the service with the resources received. The terms of trade for this transaction is called the **transaction-value**. These terms are determined by the system of governance in force; in a market economy these is expressed in terms of money, it may also be votes[6], relational assets, payment in kind, or a social means of exchange.

So a contract is defined on the same set of persons as the service was. The goal of all relational effort by persons, welfare-interaction, is defined in the service-space; the tool, transaction-value, is defined in the contract-space. Tools being separated from goals, we are now

---

[5] See also the report *Services of General Economic Interest in Europe. Regulation, Financing, Evaluation, Good Practices*, 2000, published by CEEP, Brussels, and CIRIEC, Liège.
[6] This has been proposed by Anthony Downs (1957).

able to assess the performance of tools such as management and governance for a wide range of services.

First, a map is designed which gives a typology of contracts, comparable to the service-map in Table 1, based on the transaction-power needed for some contract. Assuming that every group has authority over its members according to the subsidiarity principle, there exists a correspondence between the size of a group and its power, we define a **decentralization index** on the set of partners going from 0 to 1, where 0 means centralized authority over the combined aspects of a service and over all members of the society, and 1 means decentralized authority, but over single aspects of a service. The decentralization index represents transaction-power, which can be interpreted in terms of political power (votes), social power (reputation) or economic power (money). The exchange or transaction values are determined and expressed in these terms. The more power is separable and decentralized, the smaller is the group that receives such power. So there exists a correspondence between power and the size of a group[7].

We again simplify the index to three categories: 1. Centralized transaction power attributed to a single group by and over its members (public powers), who have no exit options; 2. Local transaction powers, which are attributed by and over the members of a local organization; members have limited exit options; 3. Decentralized transaction power (private powers); implies competition between many agents based on voluntary transactions. Since there are two types of agents, procurers and providers, we distinguish nine types of contracts in Table 2, for each with an example in accordance with the transaction-power or legal competence of the contract-partners.

Providers: **Procurers:**	Centralized transaction power with strong legal (public) competence	Local transaction power with some legal competence over its members	Decentralized transaction power with voluntary, private contracts
Centralized transaction power with political competence	T_{11}: 'Legitimating for administration': a social contract	T_{12}: 'Authority for tasks' contracts	T_{13}: 'Political budgets for outcome' contracts
Local transaction power with some legal competence over its members	T_{21}: 'Political influence for administration' contracts	T_{22}: 'Stakeholders for tasks' contracts (civil or nonprofit organizations)	T_{23}: 'Stakeholders budgets for output' contracts
Decentralized transaction power with voluntary, private contracts	T_{31}: 'Private contributions for administration' contracts	T_{32}: 'Private contributions for specific tasks' contracts	T_{33}: 'Price for product' contracts

Table 2. The map of contracts and terms of transactions based on a party's legal competence

---

[7] Li (1999), for example, argues that self-governance in groups is a diminishing-returns system optimal on a small scale, whereas a formal state legal system is an increasing returns system that becomes better beyond a certain scale of economic activity. Dixit (2002) has modeled this idea.

The contracts in the top-left field concern comprehensive, complex services and are concluded between only two parties – the legislative and the executive – which may cause the distinction between being blurred, unless a good constitution separates both powers. A 'social contract'[8] in which the legislature legitimizes by means of laws societal goals as well as the coercion required by the executive for obtaining resources to realize these goals, forms the basis of this transaction. This type of transaction is therefore called a 'legitimating for administration' or government transactions and placed the field T_{11} of Table 2, where 'legitimating' may be considered as a generalization of a (market)price for some complex administrative service. The basic distinction between public law and private law goes back to the Roman republic.

Economic transactions in the right column are characterized by full decentralization of transaction-power, causing the transaction-value being fully expressed in terms of money[9]. The set of legal persons in private law is also well defined and is not equal to the set of natural persons in a society: one has to meet certain competence criteria. In addition, there exist legal persons representing a group of people having some common purpose.

A private service with a high degree of separation – in the bottom-right fields of Table 1 – can always be realized by a centralized contract, although it is not efficient to do so. But not vice-versa: a public service with a low degree of separation cannot be realized by decentralized contracts. So a contract T_{ij} is said to be **feasible** for some service S_{kl}, if $i \leq j$ and $k \leq \ell$. A **managed service** is defined as a service that has a feasible contract. A managed service is **contract-efficient**, if a contract with a higher degree of decentralization cannot feasibly render the service any more. Finally, the **transaction loss** of some contract is defined[10] as the excess of transaction-power used to realize a service.

2.3 The firm; interaction between service-technology and internal organization

The various concepts introduced above can be applied on the management and organization of a private firm producing a private service. The firm's service is a welfare-generating relation between performers and receivers. The performers, engaged and organized by the provider, are positioned at the front of the organization and interact with the receivers, generating *welfare-value*: see Diagram 1. The value-transaction is a relation between the firm (provider) and customers (procurers). The provider of the service is specialized in managing an organization of performers and in selling their services. Its CEO is legally competent to engage in transactions, as employer (principal) in internal transactions, and as producer (agent) in external transactions. The customer (procurer) purchases the service of the performers for a receiver, who in the case of private services is the customer herself. The CEO at the top of the organi-

---

[8] Introduced by Jean-Jacques Rousseau (1762) in his *Du contrat social, ou principes du droit politique*.
[9] It follows that in a market system transaction-values can be attributed to the labor of individual persons – if some conditions are met – which allows for using concepts as the 'market value' of a product or a person. Neglecting the human and social values of an integral person, we arrive at a slave market. So it is the historical value-complex of a society that determines economic value.
[10] The formal definitions can be found in the Appendix.

zation – representing the provider – generates the *transaction-value* with the customers (pro-curers)[11].

The internal organization of the firm is a nexus of managed services aimed at enhancing the productivity of the service performers of the firm, which is based on cooperation. The size of the organization also depends on the external organization of the firm, based on competition generating market prices. The size is eventually determined by the profit-maximizing provider.
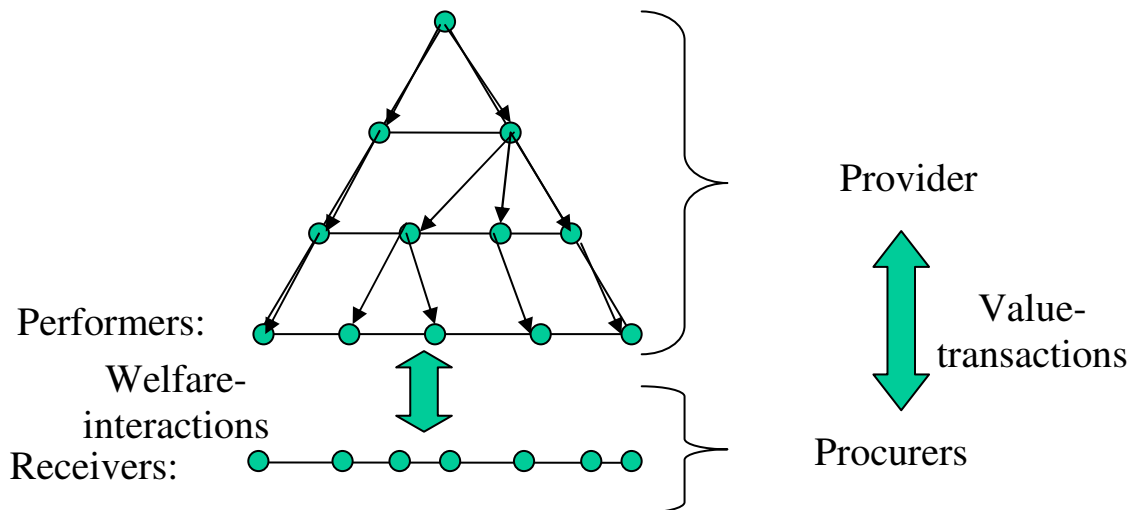

Diagram 1. Internal and external management of services

The interaction between the service structure and the organizational structure follows from the fact that when the structure of services – the production function – has been given, the management will choose an organizational structure that maximizes the transaction-value of the firm. A Cobb-Douglas function, in which labor – the performers – can be substituted, causes the management to prefer a deep organization. A flat organization fits best for a Leontief production function. Van den Brink and Ruys (2005) show that the management determines the internal organizational structure top-down, depending on the form of the production function. The problem is more complicated, of course, for the choice of sector governance, such as health care governance.

---

[11] This distinction corresponds with the distinction between *user-value* and *exchange-value* in classical economic theory.

3 The governance of pure services

3.1 Rationality and governance

Whether contracts are used for internally organizing a firm, or according to the external organization between firms, they mould human behavior. For people to understand and use these often complex rules, regularity is helpful if not indispensable and diminishes transaction costs. The concept of 'transaction between parties' is a fundamental cornerstone in the social sciences, as is the regularity in contracting behavior, which defines the social concept of rationality. **Rational behavior** by a person in a specific role is understood as standard behavior for all persons in that role, which can be modeled as optimal behavior for each person in that model-context. It has been shown, for example, that an entrepreneur in a market economy with pure private goods behaves rationally if he maximizes profits. The benefits of rational behavior, however, are not necessarily for the individual entrepreneur (his individual context is never identical with the model-context), but rather for the economy as a whole. Schelling (1978) has described this interaction between micromotives and macrobehavior, which interaction can be described by evolutionary models. And Adam Smith (1776) already showed that when all people in a market economy were systematically behaving rationally, then society will gain. An efficient allocation will result upon nobody can improve with voluntary exchange. Corruption, for example, may be individually rational for an entrepreneur, but as systematic entrepreneurial behavior it will ruin the performance of entrepreneurs in a society. So it cannot be a part of rational behavior. Rational behavior is **social behavior**, often culturally determined, but not all social or cultural behavior is rational. The benefits of rational behavior are the systematic properties, such as consumer orientation, efficiency, growth, transparency of individual behavior and predictability of market behavior: prices, supply and demand will move to equilibriums when people behave rationally. No wonder that this system, which is at the root of political economics, has been governed carefully by the government.

3.2 Modes of governance

Modes of governance belong to the meta-level in the hierarchy of structures introduced here. They determine the rules of the game for the contract-parties and are needed to support and to enforce the transactions on the contract level. North (2005:62) calls the whole set of rules determining social behavior of organizations the institutional matrix of society. When these organizations are partitioned into service-providers and service-procurers, I call the rules governing their behavior a **management-system** or – following Dixit (2003) – a **mode of governance**. Dixit focuses "on the governance of economic transactions, that is, enforcement of *contracts.*" He observes that all economic transactions (…) offer opportunities to cheat, and therefore need governance. However, much of economic theory assumes that an official legal system provides this service, both perfectly and costlessly. That is a strong assumption for most countries. So alternative modes of governance emerge, sometimes coexisting with the official legal system. In his paper, Dixit (2003) develops a model of governance by private for-profit intermediaries, and relates this mode to self-governance on the one hand and the official legal system on the other. In this paper, I develop a model of governance that covers more than economic services and transactions. The motive for governance is also different: it is the plain inability to manage a service by a provider without sufficient legal and social

power to realize the conditions required for rendering that service by the two interacting partners, the receiver and the performer of the service.

A mode of governance is composed of standard transactions derived from rational behavior. So the governance-systems can be characterized along the same lines as the map of contracts in Table 2. A transaction implies reciprocity and a kind of equilibrium or countervailing power between the two parties and defines the terms of exchange between these two parties. This check-and-balances is fundamental when analyzing governance-systems.

The Government-system, G_{11}, has a procurer with a political rationality and behavioral rules and norms. It is the Legislator, designed to identify community interests and services by means of the political system and to generate acceptance of burdens required for realizing these community services. The provider is the Executive who receives public powers from the Legislative and may use force upon members to realize the contracted community services. The internal organization of the administration has roots in the bureaucracy of the 19th century, as described by Max Weber.

The Market system, G_{33}, is based upon voluntary exchange between buyer and seller. The buyer is called a procurer, because she has the means to realize her wishes. She usually also assumes the role of receiver of the service. She has private norms and interest, which she realize through market rationality. The seller is the provider, who usually employs performers who interact with the receivers. He has a commercial rationality and behavioral norms.

Providers: \\ Procurers:	Centralized transaction power with strong legal (public) competence	Local transaction power with some legal competence over its members	Decentralized transaction power with voluntary, private contracts
Centralized transaction power with political competence	G_{11}: Government system	G_{12}: Administration systems with public tasks (regulators)	G_{13}: Outsourced and regulated systems (PPP)
Local transaction power with some legal competence over its members	G_{21}: Interest groups system (political parties, NGO's, media)	G_{22}: Stakeholder systems with group tasks (non-profit sector, social enterprises)	G_{23}: Capitalist system (firms)
Decentralized transaction power with voluntary, private contracts	G_{31}: Citizenship (voting, approval)	G_{32}: Membership systems with private tasks	G_{33}: Market system (customers and sellers)

Table 3. Modes of governance characterized by
the transaction power of the contracting parties

The Stakeholder system, G_{22}, is composed of providers' and procurers' organizations with voluntary access, but with an own internal organization that is not fully based on voluntary participation. Examples are: the rules of cooperatives, of professional organizations, or of religious congregations (the rule of Benedict is a famous management-system, defining social

codes of behavior aimed at preserving specific social values), non-profit organizations, et cetera.

The top row of Table 3 is characterized by public resources made available by the community-wide procurer or legislator to obtain services of general interest. The executive may be the Administration system, G_{11}, characterized by full public powers, or public agencies, G_{12}, exercising power on a partial domain, such as a ministry or another public organization, with a rationality of such an organization used to be close to Mintzberg's professional bureaucracy. Public-private partnerships (PPPs) are situated in field G_{13}, where public services are outsourced to private providers.

The left column of Table 3 consists of modes of governance that legitimize the execution of public tasks with public powers. The first is the public support, usually not organized. Next is the public Interest-group system, G_{21}, where parties are formed with particular values that they try to impose on the administration. Examples are: political parties, but also pressure groups adhering apartheid, or fundamental ideologies. The field G_{31} contains systems of direct democracy in which voters don't interact with each other. It may be noticed that Arrow's impossibility theorem applies to a specification of this mode of governance!

In this context, the concept of the **governance of a service** is described as the care and cure of the management system for that service, reckoning with external effects on the whole society. It is concerned with defining people's role and setting standards for their behavior in the context of the regime or management-system in force, in order to let the service be managed optimally.

3.3 *Dynamics and growth in the governance structure*

Since both the services and tools of management change in type over time, the correspondence between a service and its management is only temporarily adequate and contract-efficient. The computer is a good example of a service that required local centralization in the seventies and is fully decentralized today. The telephone industry is a good example of an originally compound service that developed in a composite service. When services as long distance and short distance networks, the operations of phone calls and the installation of telephones were closely correlated, a centralized management system was efficient. Technological innovation and legal procedures pushed this compound service into a composite service that could be separated in a single service and be provided by competitors, which made unbundling and a decentralized market regime feasible. This trend of shifting a type of service and its corresponding institutional change from the left-upper corner to the right-lower corner in Table 3 can also be observed in soft sectors, as health and education. North (2005:119) identifies this decentralization process as a shift from personal to impersonal exchange, which requires institutions to alter the pay-offs in exchange to reward cooperative behavior. Those new institutions change the economy and cause its growth, according to North.

The inverse trend, from the right-lower corner to the left-upper corner, is equally important and also context-dependent. When privatization has disrupted connections between the services that were present before the separation and decentralization, new services such as civil services or regulation may restore the cohesion between privatized services. When too many exchanges have become anonymous and impersonal, people look for new services that offer

coherence, certainty, security and protection. People ask for more fairness and fine-tuning in the modes of governance, which ethical values require somehow more cooperation and centralization. That all asks for the design of more sophisticated and stronger[12] modes of governance.

Both trends contribute to growth, but the term growth is ambivalent. Economic growth is measured in monetary terms by the Gross Domestic Product (GDP). This type of growth benefits directly from the first trend, because the increase of marketable private services directly adds directly to GDP. The Anglo-Saxon growth policy[13] stresses this type of growth, which is based on the trend of separation, and on the belief that technological progress will cause the vanishing social services to be replaced eventually by private services in the markets. So it a question of accepting the burden of transition costs, with voluntary assistance and private generosity taking away some of the pain. Hirsch (1976) and others have pointed on other drawbacks of this philosophy for developed economies. On the other hand, proponents of the European social economy focus on the second trend. They describe growth in a wider perspective, including benefits for the civil and durable society. But in my opinion, these social services have to be integrated in the economic system. If one thinks that growth in *welfare* goes without growth in transaction-value, or without integrating the services of the civil society into a social economy with a decentralized market system, one waits for a miracle that will never show up. It is essential to improve the governance for those services such that the transaction-value of these social services and of the services of general interest increases in terms of money. The problem is, of course, that the contracts for these services – in the middle fields of Table 2 – are usually weak with respect to validation and verification. Cooperation and voluntary organizations imply more stakeholders and usually less accountability. Contracts in the bottom-right fields allow for competition, which implies a degree of external organization with validation and enforceability (Greif, 1993).

The two trends mentioned above are driven by human forces such as welfare maximization and enhancing power to control. These forces must explain the dynamics in society. I propose two 'laws of motion' that explain the two trends above, one for the service structure and one for the governance structure.

Let us assume that we can compare, for some society at a certain time, the total governance capacity of a society with the service capability of that society: a kind of production frontier. If there is an excess supply of total governance capacity of a society over its service capability, there is a **governance surplus**. Such a surplus exists if people expect that they can find sufficient opportunities and resources for their individual capabilities, and for realizing the potential services they see into actually managed services. So providers are willing to entry innovative and competitive markets, and procurers are willing to take risks as they trust the rules of the mode of governance. Aghion and Howitt (2005) have elaborated on this 'Schumpetarian paradigm' and show empirical evidence. This Schumpeterian 'creative destruction' also applies to modes of governance, such as deregulation. In that situation people have a preference for tailor-made private and marketable services, stressing their individuality. On the other hand, there is a **governance shortage** if there exists an excess supply of total service capability over society's total governance capacity. The actual mode of governance does not offer opportunities for realizing individual capabilities and desires, or people are not happy

---

[12] Fukuyama (2004) draws attention to the need of the building and strengthening of states.

[13] This policy model is called the "Washington consensus" and consists of combining full market liberalization, macroeconomic stabilization, and privatization. It has failed in many developing countries.

with the private services offered. In that situation people have a preference for group services, where they may lose some individual identity but find egalitarian and common values. This implies a demand for more integrated types of services and 'creative construction' of more sophisticated modes of governance.

This governance surplus or shortage may be felt society-wide, in a sector, or even within an organization. It is a relative concept in that it serves to identify the context giving orientation to social forces. This context is determined by cultural and sociological factors, as well as by economic conditions and 'transaction costs' of governance. I summarize this regularity in the following 'laws' of motion.

First Law of Motion (on the service structure):
> If there is a governance surplus, then individual welfare is increased by creating more separated types of services. If there is a governance shortage, then people care more for integrated types of services.

So in case of a governance surplus, people value taste differentiation to meet own preferences. This is the private product-variety model of economic growth. The type of service preferred shifts from the left to the right in Table 1, or from the top to the bottom. But this shift is usually complemented and counterbalanced by the creation of a more integrated service. However, in case of a governance shortage, people value group services they can trust and give cohesion. The type of service preferred shifts from the right to the left in Table 1, or from the bottom to the top.

In the service structure, the driving force for movements is personal welfare. In the institutional structure, the driving force is increase in power from transaction-values. These forces interact. Contract-efficiency increases both transaction-value and the trend of decentralization of a mode of governance. But it usually goes with a complementary centralized mode of governance to manage the coordination of the newly decentralized decisions. Centralization increases transaction-value and the power derived from it. It has, however, to be counterbalanced by a complementary decentralized mode of governance to legitimize and manage the control by the decentralized stakeholders. These regularities are expressed by the following law of motion.

Second Law of Motion: (on modes of governance)
> In the case of a composite service, a more decentralized mode of governance increases both the efficiency and the transaction-value of the decomposed services, but only if complemented by a more centralized coordination rule;
> In general, a more centralized mode of governance for a set of services decreases contract-efficiency, but increases the transaction-value for the group in power.

Empirical examples of this law have been given by Greif (1993), who analyzes the difference between a relation based system and a rule based system. It also explains the emergence of markets and of regulation, as observed by Ménard (2004). Bruil and Ruys (2005) present some evidence on the modes of governance in the social housing sector in a companion paper.

4 Governance of composite services

4.1 From compound to composite services; aggregation of services

The concept of a pure service serves to model the structure of services. In real life, there exists no pure service, just as the pure straight line exists only as a mathematical concept. If a real-life service is a composition of more or less pure services, there are two options. One can draw satisfactory boundaries between the elementary services, in which case the service can be decomposed or unbundled into several types of 'pure' services that are related in a network. That service is called a **composite service**. A service that is too interdependent in its various interactions to be decomposed, but relates groups of receivers and performers with different degrees of separation in a network, is called a **compound service**. Since all services in a society are related, one may conclude that there is only one, compound service. That does not help much, because its management cannot do more than serving everybody practically the same ration, which results in a low social welfare. So we may accept some fuzzy boundaries within some compound service as clear boundaries separating some single services. This acceptance is determined by the trade-off between transaction costs and welfare benefits. The finer the delineation, the higher the welfare but also the transaction costs; the coarser the delineation, the lower the welfare and transaction costs.

So we consider most services in the civil society are composite services. Consider a health care service. A medical service may be a direct doctor-patient relation in S_{33}; or group service in S_{32}, such as a hospital-patient relation; or a prevention service in a community-patient relation in S_{31}, such as a law against contagious diseases. All these relations include the individual receiver as an endpoint. From the performers point of view, we may distinguish again various types of relations. Apart from the direct doctor-patient relation in S_{33}; we have a service by an interest group in S_{23}, such as a charitable foundation engaging medical doctors; or a community-performer relation in S_{13}, such as a service of general economic interest in performing medical services. The fact that all types on the service map can be interpreted as medical services shows the complexity of the health sector. Some services may be unbundled in a network of pure services, but usually a number of compound services remain. Examples are infrastructural services and public-private partnerships (PPPs).

The feasibility constraint requires aggregation of services. A first approach is to decompose in any composite service the labor service and to consider this service as a private service. That allows for adding labor services, which sum may not exceed the total number of members in society.

4.2 Hybrid forms of organization

Technological progress and the increasing multiplicity in consumers' wishes push a compound service to a composite service. There are several managerial answers to this trend. The most efficient answer is to unbundle the organization managing the original compound service, as discussed above. That leaves the problem of externally coordinating the various organizations, each with specialized tasks. Another option is to leave the task of providing the composite service to one organization, which now manages and coordinates the various single

services within that organization. The first option is called a **hybrid arrangement**; the second option is called a **hybrid organization**. Both types belong to the class of hybrid forms of governance.

Ménard (2004) situates the large class of hybrid forms between markets and hierarchies, in line with Williamson (1991). He analyzes hybrid arrangements to discover regularities in the characteristics of interfirm networks. He focuses on multilateral agreements, because "multi-lateral structures better reveal the key characteristics of hybrids". Hybrids include, according to Ménard, arrangements as subcontracting, networks of firms, franchising, partnerships, co-operatives, alliances, clusters of venture capitalists, and so forth. The common characteristic of hybrid arrangements is that they relay on partners who (i) are committed to make invest-ments that create not only rents, but also significant and durable dependence, while (ii) prop-erty rights and decision-making remain distinct. Two strategies are available.
- Each partner develops specific assets, the resulting network being based on their com-plementarities;
- Partners decide to pool resources and to create joint investments for part of their ac-tivities.

Ménard substantiates the proposition that "the more specific mutual investments are, the higher are the risks of opportunistic behavior, and the tighter are the forms of control imple-mented." That again asks for forms of "private government, or authority", for coordinating and policing the relationship. He observes that "what matters most for understanding what form of hybrid is chosen is the intensity of the interdependence, i.e., *the degree of centraliza-tion* (italics are mine) and of formalization in the mode of governance required for coordinat-ing and checking partners that are legally independent."

This observation fits perfectly with the classification criterion introduced in Table 2 for con-tracts, and in Table 3 for modes of governance. Predictors for a high degree of centralization are, according to Ménard:
- A high appropriation concern, which grows with the specificity of investment;
- A high degree of consequential uncertainty, causing a high risk of opportunism;
- A high risk of miscoordination, causing bad adaptation and flexibility, or caused b y a lack of control, and of safeguards;

So when a high degree of centralization is required the mode of governance of a hybrid ar-rangement will shift to the left in Table 3.

Another observation concerns the change in the service structure of a hybrid arrangement. Ménard (2004:366) has "shown the presence of *private government* (or authorities" as distinct from "hierarchies") as a core element in the architecture of hybrid organizations". This sup-ports the 2nd Law of Motion in that it shows the presence of a counterbalancing force towards cohesion, when the force of separation has moved services to the right, or to the bottom, of Table 1. That generates a new service, together with the unbundled services. It also explains why Montesquieu proposed a *Trias Politica*: the separation of the Legislation from the Execu-tive requires a new independent service: the Judiciary. Regulatory Authorities or Agencies fulfill a comparable role, in the United States more so than in the European Union.

The second type of a hybrid form is the hybrid organization. In that case the task of providing the composite service to given to one single organization, which now manages and coordi-nates the various types of services within that organization. What mode or modes of govern-ance will then be imposed by the organization for managing some type of service? Some pro-pose a **hybrid mode of governance** for such a hybrid organization. In the Netherlands the

government tried to put separation of modes of governance into legislation[14], but this proposal experienced strong opposition not only from the many hybrid organizations, but also from legal experts, see a.o. in 't Veld (1997), SCP (2000) and de Ru, Peters & Sylvester (2003). The discussion in the Netherlands, however, was very much a debate on normative issues and mostly politically biased. All agreed that the missing of a theoretical foundation caused this confusion. In a companion paper Bruil and Ruys (2005) analyze the governance of social housing sector from 1950 in the Netherlands and show that the social costs of a hybrid mode of governance are appreciable.

The *hybrid mode of governance* for an organization is characterized by the fact that public and private competences and rationalities are intertwined. This has the effect that its transactions don't fit any more the standard rules imposed by the external governance. It may disturb the level playing field and cause unfair competition. A hybrid organization may also select and mix arbitrarily decision and accounting rules from the two types of governance, causing a lack of transparency and inadequate accountability. That again hinders supervision. A hybrid mode of governance cannot meet the standards of good governance.

Hybrid organizations, however, may have advantages. The first is the fact that cross fertilization of behavioral standards may improve the overall quality of a service. Secondly, innovation of services may produce services that don't fit well in the existing moulds of governance. One needs to experiment with new forms to arrive at a satisfactory solution. Thirdly, traditional managerial solutions need innovation by incorporating new elements or internalizing external values. However, no general rule has yet been established to manage hybrid organizations; therefore designing experiments and developing theory are appropriate.

Hybrid consumer organizations are hardly mentioned in the literature, although many consumer organizations exist. The reason is that these are considered 'institution-free', in the sense that anything will do, as it is costless. That is not correct, of course. One important function of this type of organizations is, in my opinion, to organize stakeholders and to legitimize the use of power (see Section 3.2).

4.3   *Governance polic, rationality, culture, and transaction costs*

What governance policy is to be preferred: letting management-systems emerge bottom-up from experience, or imposing them top-down? Two methods are distinguished. Usually both ways are combined, but for analytical reasons we prefer to separate them. Vernon Smith (2005) addresses the question of how rationality does evolve. He distinguishes two kinds of rationality. Constructive rationality derives from the standard socioeconomic science models based on the argument that all worthwhile social institutions were and should be created by conscious deductive processes of human reasoning[15]. It uses reason to deliberately create rules of action, and design human socioeconomic institutions that yield outcomes deemed preferable, given particular circumstances, to those produced by alternative arrangements. The art of

---

[14] Operatie *Marktwerking, Deregulering en Wetgevingskwaliteit*. A committee presided by M.J. Cohen (1997) proposed in its first report *Markt en Overheid* that a combination of public tasks and commercial activities in a single organization should be forbidden. Legal separation was not sufficient; full economic separation should be imposed, according to the proposal and also to the cabinet (Tweede Kamer, 1996-67, 24036;45). This proposal was strongly resisted by the many hybrid organizations in the Netherlands and until now no political consensus has been reached.

[15]   This concept stems from Descartes, followed by Bentham and John Stuart Mill in the 19th century.

governing consists of designing such governance that the available human capabilities create the highest welfare-value.

The second kind of rationality is an ecological system, designed by no one mind, emerging out of cultural and biological evolutionary processes: home grown principles of action, norms, traditions, and 'morality'. People may follow rules without being able to articulate them, but they may nevertheless be discoverable by applying constructivist tools. It is the intellectual heritage of Adam Smith and Hayek, who described and interpreted the social and economic order they observed, and its ability to achieve desired outcomes, according to Vernon Smith. Both approaches are complementary: constructivism is a top-down approach, analyzing functions of systems and setting criteria for performance; existing ecological rationality emerged bottom-up from the practical solutions invented by society. These practical solutions have to be scrutinized, as has been done by Greif (1993). However, just as practical medicine, management-systems cannot perform well any more without reconstructing and analyzing their functions. Those constructive tools for analyzing existing rationalities are presented here in this paper.

The decisive factor determining the choice of management-system, top-down or bottom-up, will be the difference between the net transaction-value – that is the transaction benefits minus the transaction costs of some form of governance – and the welfare-value generated. Some systems of governance cannot process all types of services, and a fortiori cannot generate the corresponding welfare-value. Due to market failures, for example, the market cannot process public services. If one wants to provide these services, one has to change governance. But there may be circumstances that such a change involves additional transaction costs that are higher than the marginal welfare-value generated. Those services will then not be provided to the society.

5 Conclusions

The purpose of this paper is to give the governance of services a firm foundation in the civil society. The social enterprise and services of general interest contribute strongly to welfare-interactions, but experience problems in generating value-transactions. This research may contribute to remedy the unbalance.

Appendix: Formal definitions and theorems

Let N be a set of persons in a society and M a set of objects called services, and u^N a utility profile on the set of services with $u^i \geq 0$.

Definition 1
A **service** S_m, $m \in M$, is a relation $S_m \subset R^N \times R^N$ between a set, R_m, of receivers and a set, P_m, of performers, such that $h, i, j \in R_m \cup P_m$ if and only if
$u^h(R_m \setminus \{i\}, P_m) = u^h(R_m, P_m \setminus \{j\}) = 0$.
A service S_m is a **standard-service** if similar services have identical form, i.e., $l=k$, some l,k in M, implies $R_l=R_k$ and $P_k=P_l$.. $\|$

So the set R_m contains all and only those receivers who interact within R_m, and the set P_m contains all and only those performers who interact within P_m. It follows that all external effects between receivers or between performers are internalized. Furthermore, any standard-service has a unique relational form.

Definition 2
A **separation index** of a standard-service S_m is defined by:
$s_{mR} = \dfrac{|N|}{|R_m|}$ for receivers of the service, and $s_{mP} = \dfrac{|N|}{|P_m|}$ for its performers. $\|$

The complement of a separation index is its correlation index, representing the required internal interaction for professional competence or for the ability to enjoy a service.

Definition 3
A service is **manageable** if there exists a **contract** or **transaction** for that service, that is, $T_q(S_p)$ for $q \in Q$, $p \in M$, is a relation $T_q \subset R^N \times R^N$ between a set, X_q, of procurers and a set, Y_q, of providers, such that $T_q \supseteq S_p$. $\|$
So only a transaction T_{kl}, if $k \leq i, l \leq j$ in Table 2.can manage a service S_{ij} in Table 1.

Definition 4
A **decentralization index** of transaction T_q is defined by:
$d_{qX} = \dfrac{|N|}{|X_q|}$ for the procurers of the transaction q, and $d_{qY} = \dfrac{|N|}{|Y_q|}$ for its providers. $\|$

The complement of a decentralization index is the power index, representing the required internal interaction for legal competence.

Definition 5
A **mode of governance** G_q determines the terms of transaction for a contract T_q. $\|$

Definition 6
A **manageable service** is a service, S_p, and a contract, T_q, such that $T_q(S_p)$ is **feasible**, that is, the terms of exchange for the transaction are empowered by the chosen mode of governance, G_q. $\|$

Definition 7

A manageable service $S_m(T_m)$ is **contract-efficient** if there exist no feasible service $S_m(T)$ such that $T \subset T_m$. An allocation of manageable services is **efficient** if it is feasible and no other feasible allocation exists that is weakly preferred by the utility profile u^N. ‖

So the contract-efficient service can just be managed by the contract. A more decentralized transaction has not enough legal power. Notice that this efficiency concept is defined in the transaction structure. The efficiency concept is defined in the welfare-structure. It coincides with Pareto-efficiency in a private institutional setting, that is, the mode of governance empowers individual property rights and voluntary transactions.

Definition 8

A **society** is a specification of the concepts $E = \{N, M, (S, u^N, s_0), T(G)\}$, defined above, where s_0 is the total labor services (resources) available in the society. ‖

Theorem 1

Consider a corporate market economy, that is, a competitive economy in which a firm is a coalition Y of workers with an internal organizational structure and a cooperative pay-system – satisfying budget neutrality, vertical monotonicity and symmetry – with reservation wages determined by the markets, and with a Cobb-Douglas technology (see Diagram 1). Then the contract between the profit-maximizing coalition of workers in the firm and the coalition of owners of the firm is efficient.

Proof:

See van den Brink and Ruys (2005) for the uniqueness of the profit-maximizing size of the firm.

This example shows that the relational approach creates an isomorphy between the service structure and the legal contract or power structure. That isomorphy performs as a medium between the two structures and allows for making a correspondence between the two. I call it therefore the mediated-duality approach: there exists a common denominator to relate the two structures of relations between people.

These cost represent the excess of legal power used, or the shortage of private information needed. This representation is very rough, of course, and can be refined in many ways.

Definition 8 (tentative)

Gross Domestic Product = $p_\ell . \sum |Y_\ell|$, where Y_ℓ represents private labor transactions.
Gross Domestic Welfare = $p_\ell . \sum |P_\ell|$, where P_ℓ represents private performers' services.

References

Aghion, Ph., and P. Howitt (2005), "Appropriate growth policy: a unifying framework", Schumpeter Lecture at the EEA-meeting, Amsterdam.

Barberà, S., W. Bossert, P.K. Pattanaik (2004), "Ranking sets of objects", in: *Handbook of Utility Theory, Vol 2*, S. Barbera, P.J. Hammond, and C. Seidl (Eds.), Springer Verlag, 893-978.

Brink, R. van den, and P.H.M. Ruys (2005), "Positional wages, market wages, and firm size", DP 05-020/1, Tinbergen Institute, Amsterdam-Rotterdam.

Bruil, J, and P.H.M. Ruys (2005), "Hybrid modes of governance in the Dutch social housing sector", Discussion Paper, TILEC, Tilburg University.

Coase, R.H. (1991), "The institutional structure of production", Alfred Nobel Memorial Prize Lecture, reprinted in: *American Economic Review,* 1992, 82, 713-719.

Coleman, J.S. (1990), *Foundations of Social Theory,* Harvard University Press, Cambridge.

Dixit, A. (2003), "On modes of economic governance", *Econometrica, 71*, 449-481.

Dixit, A. (2002), "Trade expansion and contract enforcement", DP, Princeton University.

Downs, A. (1957), *An Economic Theory of Democracy*, Harper & Row.

Fleurbaey, M., and P.J. Hammond (2004), "Interpersonally comparable utility", in: *Handbook of Utility Theory, Vol 2*, S. Barbera, P.J. Hammond, and C. Seidl (Eds.), Springer Verlag, 1179-1285.

Fukuyama, F. (2004), *State-Building. Governance and world order in the twenty-first century,* Profile Books.

Gilles, R.P., D. Diamantaras and P.H.M. Ruys (2003), "Optimal design of trade institutions", *Review of Economic Design, 8*, 269-292.

Greif, A. (1993), Contract enforceability and economic institutions in early trade: The Maghribi traders' coalition, *American Economic Review, 83*, 525-548.

Greif, A. (2005), "Institutions and the path to the modern economy: lessons from medieval trade", in: *Handbook of New Institutional Economics,* C. Menard and M Shirley, eds., Springer Verlag, 727-786.

Gui, B. (1994), "Interpersonal relations: a disregarded theme in the debate on ethics and economics", in *Ethics and economic affairs,* A. Lewis and K.E. Warneryd, eds., Routledge, London.

Hendrikse, G. (2004), Governance in chains and networks; in: *Chains & Networks. Bridging Theory and Practice*, eds. Th Camps, a.o., Reed Business Information, 189-204.

Hirsch, F. (1976), *Social limits to growth*, Harvard University Press, Cambridge MA.

Hofstede, G. (1980), *Culture's Consequences: international differences in work-related values*, Sage.

Kolm, S.-C. (1984), *La bonne économie: la réciprocité générale,* Presse Universitaire de France, Paris.

Lazarova, E., R.P. Gilles and P.H.M. Ruys (2005), "Social roles and stable economic relations", DP, CentER, Tilburg University.

Li, S. (1999), "The benefits and costs of relation-based governance: an explanation of the East Asian miracle and crisis", DP City University of Hong Kong.

Ménard, Claude (2004), "The economics of hybrid organizations", *Journal of Institutional and Theoretical Economics, 160*, 345-376.

North, D.C. (2005), *Understanding the Process of Economic Change*, Princeton University Press.

Perotti, E. (2002), Lessons from the Russian meltdown; The economics of soft legal constraints, *International Finance, 5,* 359-399.

Ru, H.J. de, J.A.F. Peters en J.J. Sylvester (2003), *De Wet markt en overheid. Beschouwingen over een omstreden wetsvoorstel,* Sdu Uitgevers, den Haag.

Ruys, P.H.M. (2003), *Gezonde en zieke economische stelsels; separatie en interactie van sterke rationaliteiten.* Rede, Universiteit van Tilburg.

Schelling, Thomas C. (1978), *Micromotives and Macrobehavior*, W.W. Norton & Co.

SCP (2000), *Hybrid governance; The impact of the nonprofit sector in the Netherlands*, Workdocument 65.

Veld, R.J. in 't (1997), *Noorderlicht; over scheiding en samenballing*, VUGA.

Wetenschappelijke Raad voor het Regeringsbeleid (2004), *Bewijzen van goede dienstverlening*, Amsterdam University Press.

Williamson, O.E. (1991), "Comperative economic organization: the analysis of discrete structural alternatives", *Administrative Science Quarterly, 36*, 269-296.