Two national models of infrastructure co-opetition

an Anglo-Dutch comparison of regulatory regimes for provision of rail and telephony services

by Martin de Jong and Heleen de Vlaam
Delft University of Technology
Faculty Technology, Policy and Management
Martinj@sepa.tudelft.nl, heleenv@sepa.tudelft.nl

The technological, economic and administrative environment of the various infrastructure sectors is changing, making some of the characteristics of infrastructures as they were recognised in the 1970s outdated. At the brink of the year 2000, the public sector is giving away at least part of its role of planner and financier of transport and telecommunications facilities. A dominant centralist role has been replaced by a hybrid relation with private parties in which co-opetition (co-operation at the level of construction of physical infrastructures themselves and competition at the level of attached services where most added value is captured) seems to best describe how various players are kept together. Though evolution in the environment of national policy-models drives countries to converge in their outlook and regulation of infrastructure services, the paper presented here makes clear that national interpretations in Britain and the Netherlands become more similar and cope partly with the same issues, but still choose different models to regulate their market for transport and telecommunications. Despite national interpretation of international development and regulations, we can say that in sectors which are evolving from scratch in an anarchic way, national models cannot be recognised even though some differences remain. Technological turbulence has created such a situation in the telecom sector. In policy sectors where change is slower and national models are not replaced but modified within the historical path dependency, national styles remain more visible.

International convergence is taking place to some extent in new regulatory regimes, but the results for various countries are not identical and the results sometimes seem rather more amorphous and incomprehensible in terms of national styles.

1. Introduction

By the end of the 1980s and all through the 1990s the member states of the European Union have promoted the liberalisation in those policy sectors where it expected increased competition would lead to a larger choice and more innovative services for the consumer. All EU countries have gradually followed this painful path of divesting the public sector of a non-negligible part of its competencies to the supposed benefit of the ‘consumer’, but to a different extent and in a different manner.

In this article, we explore and classify the newly arising regulatory regimes in two infrastructure sectors which par excellence are deemed susceptible to privatisation and liberalisation, namely telecommunications and transport. Economists are less and less inclined to consider customer services from both sectors as natural monopolies. A combination of political, economic and technological developments have enabled the entrance of new market players and investors. Were public transport and telephony seen as natural monopolies to be taken in by the state until the beginning of the 1980s, nowadays the introduction of competition between two or more providers is assumed to lower prices, improve service quality and boost innovation.
Nevertheless, universal access to basic telephony and public transport is still widely acknowledged as being crucial to the economic and social well-being of all EU citizens. This public access right causes both infrastructure services and their regulatory regimes to take on public and private characteristics, an institutional situation which has become known as ‘hybrid’.

This article will present an international and intersectoral comparison of regulatory regimes for the provision of utilities. They will show how general European regulation and international economic and technological developments are translated and interpreted in a national institutional context. The two regulatory regimes are basic telephony and rail. The two countries are Britain and the Netherlands. This double comparison is interesting for at least two motives:

1) Britain has adopted the privatisation philosophy in a rather radical sense, probably even more radical than most EU members intended the communal guidelines to be, and can be considered a pioneer. This is true both for basic telephony and for rail. The Netherlands usually is not as quick to respond to new developments and this time was no exception. The Dutch government rather tried to learn from foreign experiences and to avoid mistakes as they were made elsewhere. In rail and in basic telephony, the national monopolies are threatened only very slowly.

2) The telecommunications and transport sectors have many conceptual similarities as to the technical and economic characteristics: they both have infrastructures with networks characteristics which in principle can be separated from services. Yet their most recent technological and profitability developments are widely diverging. The international character of telecommunications increased the importance of harmonised policy making, making deviant models harder and harder to maintain. This is happening much more quickly in telephony than in transport, partly as a result of quicker technological innovation. Therefore, national models of policy-making in telecommunications are more under threat than in other, more nationalised policy areas. Institutional structures in the telecommunications sector are heading towards autonomous agencies and regulators, both in Britain and in the Netherlands, where there is no such tradition of independent regulators. In transport, on the other hand, the British also have agencies and regulators. The Dutch still hold on to their traditional national structure with a strong national ministry, though new intermediary bodies are also slowly conquering a position here.¹

The issues we are going to address are the following:

1. How can we describe and explain the similar developments taking place in various, apparently different, sectors for the provision of public services? We find the answer in the since the 1980s increasingly relevant distinction between infrastructure networks and provision of services (section 2).

2. How can we describe and explain the existence of policy situations where the distinctions between the public and the private spheres become increasingly blurred? The concept co-opetition provides a clue to understand situations where value is created by co-operation at the infrastructure level and divided by competition at the services level (section 3).

3. How can the regulatory regimes for the management of the telecommunications and transport sectors in Britain and the Netherlands be characterised and classified? What

¹ Probably, the same national policy styles apply to energy infrastructures, water facilities and waste disposal provisions too. But as not enough empirical evidence is available for these sectors, we shall not deal with them here.
diverging institutional translations have been made in these two national models to cope with the augmented public-private hybridity in the two infrastructure sectors? What critical choices and decisions in the evolutionary history of the four infrastructure sectors have led to the current regulatory regimes (section 4)?

Both the telecommunications and the transport sectors are multiple in the sense that various types of services (mobile telephony versus basic cable telephony and car use versus public transport) are provided which are sometimes submitted to different regimes. In order to delimit this paper’s subject area we have chosen to explore the introduction of competition only in the infrastructure subsectors of basic telephony and rail transport.

2. **Infrastructure networks and services provision**

The disappearance of some natural monopolies can be explained to a large extent by technical, economic and administrative changes that have taken place in the telecommunications and transport sectors. To put this differently, the infrastructure networks needed to move information, people and goods have in the course of the last two decades been subjected to a changing environment that has radically altered the philosophy of their construction and management.

It has never been easy to develop a proper definition of ‘infrastructures’. Yet in 1977, Jochimsen and Gustafsson (in: Simonis 1977) have defined them as place bound facilities with a high capital intensity and a low capital productivity that strengthen the economic basis for other, private economic activities in nations or regions. They then made a valiant effort to delimit the range of mainly public policy fields that one can catch under this particular heading. They came up with some fifteen technical, economic and administrative characteristics to indicate whether in that decade a particular field could be seen as ‘infrastructure’ or not. Among these (sometimes mutually overlapping) technical, economic and administrative characteristics they list:

1. **Longevity**: infrastructure facilities are expected to last many decades or even centuries.
2. **Indivisibility**: infrastructure facilities are big projects which are only useful if constructed as a whole.
3. **Mutual interdependence of elements**: infrastructures have network characteristics that make the construction of only parts of them futile. Only the connection of various nodes to each other makes them valuable.
4. **Sectoral reach**: infrastructure facilities usually correspond with recognised sectors of public policy, whereas their connection to other sectors is limited to non-existent.
5. **Varying performance across sectors**: the facilities within the various sectors constitute worlds of their own of which the performances cannot be compared to each other.
6. **High risk of investment**: infrastructures are extremely costly to develop and investments can only be regained, if ever, after many years. Individual investors are not inclined to take the initiative here.
7. **Economies of scale**: infrastructure facilities become easier and less expensive to build when the financial and other means of several actors are joined together.
8. **Non-excludability of individual users**: use is normally open to a great number or all citizens/consumers at the same time and it is impossible to individualise payments.
9. **Costs paid by general taxes**: infrastructure facilities are paid for by collecting general taxes and not by profit principles or any other alternative contributions.

Apart from the traditional material and physical civil infrastructures, they also distinguished defense, justice and the bureaucracy as potential infrastructure sectors, but they did not have all of the 15 typical characteristics.
10. **Limited capacity to estimate future demand:** the need is very hard to predict in the far future and yet this is necessary in some way as the facilities will have to be used for many years to come.

11. **Limited consumer sovereignty:** in contrast to individual goods, it is impossible to modify infrastructure facilities to fit everybody’s precise needs.

12. **Operations running at budget deficits:** construction of infrastructure facilities can generally not be run as profit-generating enterprises, as their benefits derive from positive externalities and not from internal profits.

13. **Central planning and allocation:** central government needs to both plan and fund infrastructures in order to co-ordinate the evolution of a proper network structure and to provide the necessary financial means to realise it.

14. **Absence of regular market price mechanisms:** As a result of central planning and funding according to the budget mechanism, consumer prices will not evolve by a matching of supply and demand along the respective economic curves.

15. **Tendency to under supply:** without government intervention, an insufficient number, quantity or quality of facilities and services will arise.

Looking back to this list by the end of the 1990s, a large number of the aforementioned characteristics do not seem to apply any more or have at least become of reduced importance. Technological developments have not altered the first few characteristics fundamentally: physical infrastructures such as stations and rails, power stations and cables and water repositories and tubes have remained difficult and expensive facilities that must form integrated wholes to become a meaningful production factor. On the other hand, a certain diversification of consumer services around these physical constructions has taken place. Goods and services related to the physical constructions themselves and using these constructions have been organised separately and have sometimes turned out to be profitable. Secondly, the connections between the various infrastructure sectors which were previously unrelated have strengthened markedly. Telematics can be seen as a combination of telecommunications and transport facilities. The use of traditional gas pipelines for the transport of other liquids shows the complementary natures of energy and transport infrastructures and the fact that a development is taking place to make the use television broadcast cables and cables for basic telephony interchangeable may be yet another example of infrastructures growing together in the modern era. The internet, perceived as the network of the knowledge economy, uses mostly the telephone infrastructure at the moment, but the cable infrastructure also offers internet access through cable modems. Economies of scope seem to partly replace economies of scale here (Teubal e.a. 1996). Infrastructure sectors are fragmentising, splitting up and getting reconnected in new configurations that undercut many of the 15 aspects they used to be characterised by. Though high investment risks for the basic physical constructions have not disappeared totally, parties within the European and national contexts are striving more and more to frame public-private partnerships in which financial and other competencies can be shared or divided among a whole group of actors. Central governments maintain an active role, but this role is evolving from sole or predominant planner to process director and involved player. The traditional central planning of railway projects is under revision in many countries and being replaced by a new trend of public-private programmes of projects in which intermodal transfer points, commercial side activities, spatial development and housing are also contained. Profitable and non-profitable bits and pieces are put together by various players to create total package deals. As the management of consumer services related to the use of infrastructures has gradually divorced itself from the management of infrastructures themselves, new options have been offered to private companies to seize lucrative opportunities. The traditional monopolists and
incumbents of telephone services to the public still own the telephone cables and are responsible for their maintenance, but in the domain of direct customer services, they have had to allow rivals to use their net, a phenomenon known as ‘interconnection’. As physical infrastructure networks and customer services have been split up to a large extent, excludability of individual customers has increased, estimating future demand has in some sectors been taken over by private parties and consumer sovereignty has become stronger than it used to be. As technology push is giving way to market pull, services become more specific, specialised and customised. At the institutional level, profitable operation of infrastructures has come closer to reality than ever, central planning in some countries seems to be slowly replaced by various types of multi-player negotiation processes and road pricing or cost based use of telephone cables by new private providers either are or are growing to be the norm.

To understand the current organisation of the telecommunications and transport sector, it makes sense to split up their operations into a bottom layer of physical infrastructure networks themselves and an top layer of infrastructure dependent customer services (Weijnen 1996). The physical network then consists of hardware such as nodes, connections or transmission networks and carriers (railways, stations, rolling stock, telephone lines, switches, grids and power stations). The related products and services layer comprises all types of commercial supporting services such as communication or transportation at a particular price, extra customer information, various possibilities for subscription, shopping etc, which can be described as software (Timmermans 1997). Capturing added values from infrastructure use mainly happen at this more specific and specialised service level, but in order to create these added values the maintenance of a basic or even high level of physical infrastructure capacity is required. The role of competition between service providers is much more predominant now than it was in the 1970s, but privatisation or liberalisation of the hardware construction is definitely less self-evident than allowing competition to happen at the services level. The costs of building alternative infrastructure networks are such that rival providers will not develop their own, but insist on interconnection enforced by some regulator to present their services to the customer. This places the former monopolist and the newcomer in a situation of co-opetition; they are competitors forced to co-operate at the infrastructure level. If the former monopolist and incumbent is the owner of the network, he finds himself in a janus-faced position: he is both a manager of the infrastructure and a service provider. If not he but the state is the owner, he comes to be the market leader among the service providers. Neither privatisation nor liberalisation necessarily mean that monopolies are automatically dismantled.

Considering the changes that have taken place in the line of thinking dominant on the role of the state and private parties, we can conclude that the technological, economic and administrative trend coincide with the ideological turn that has occurred in the past two decades. In the 1970 a social-democratic approach permitted the central state to take the lead, co-ordinate and finance the development of all economic substructures. Despite the rule of (modernised) social-democratic parties in most European countries, the liberal 1990 have seen the institutional formalisation of a declining possibilities to make or steer societies and economies dating from the 1980s. The well-known sociologist Manuel Castells who was written extensively on the development of infrastructures symbolises this societal development. A former Marxist who thought the state was able to take full responsibility for the building of portuary and industrial technopoles in ‘Monopolville’³ (1974) to promote the interests of big capitalist players, has recently converted to a polycentric penchant in ‘The rise

³ Monopolville refers to the French-Flemish town of Dunkerque, in the Northwest of France.
of the network society’ (1996) where technopoles are no longer in the hands of vile and collusive monopolists, but have become information hubs and links in constant flux and beyond the control of anybody. The state is no longer a strong instrument serving the interests of big capital, it is globalisation which helps the strong and leaves the state in a position of relatively powerless facilitator trying to help its territory be part of the ‘Net’.

It is not true that liberal ideologies leave no place for social goals at all. European policies explicitly proclaim that efficiency and effectiveness should not endanger universal service provision or access to networks. Even citizens living far away from the big infrastructure nodes have to some extent a right to affordable telephone lines and public transport connections. Competition also ought to lead to higher and more varied customer services, lower prices and more innovation. To prevent providers from making excess profits and pervert the market mechanism, government supervision of some form remains necessary. Furthermore, public bodies should remain responsible for decision making on capacity management, the costs for providers to use infrastructure networks and for the observance of reliability and safety requirements.

As we have seen, several developments in the environment of infrastructure sectors and European regulations have paved the way for a deep transformation of the role of the state in the provision of basic economic facilities in the post-industrial era. These strongly promote the arising of hybrid, public-private structures. The manner in which these operate in various countries diverge widely however, as well as the way in which they deal with the linkages that exist between the capturing of added value at the services level and the creation of added value at the physical infrastructure level. Various countries appear to have organised this public-private hybridity in different ways. Before we can go and analyse the differences between Britain and the Netherlands, we will present a theoretical framework on co-opetition, the concept we think describes best how state-market relations will be organised from the 1990s on.

3. Infrastructure networks, service provision and co-opetition

Co-opetition, access and interconnection

The first authors to circumscribe the concept of ‘co-opetition’ were Nalebuff & Brandenburger 1996, p xiii. They applied a sociological interpretation of game theory to describe and explain strategic firm behaviour in oligopolistic market structures where conflict and co-operation can be seen as archetypal attitudes.

co-opetition offers a theory of value. It’s a book about creating value and capturing value. There’s a fundamental duality here: whereas creating value is an inherent co-operative process, capturing value is inherently competitive. To create value, people can’t act in isolation. They have to recognize their interdependence. To create value, a business must align itself with consumers, suppliers, employees and many others. That’s the way to develop new markets and expand existing ones. But along with creating a pie, there’s the issue of dividing it up. This is competition. Just as businesses compete with one another for market share, consumers and suppliers also are looking out for their slice of the pie. Creating value that you can capture is the central theme in co-opetition.

When observing the liberalised markets of infrastructure sectors, co-opetition – a carefully balanced mixture of competitive as well as co-operative strategic behaviour - can be seen as the rising new paradigm that goes together with the currently dominant liberal ideology. The network characteristics of public infrastructures make co-opetition especially effective as a strategy for competing firms in liberalised infrastructure markets. Organisations competing in these infrastructure sectors are known as ‘embedded organisations’. A dynamic mix of
competitive and co-operative behaviour characterises their inter-firm relations. They must find a balance between competitive and co-operative postures in their relationships towards other organisations in their surroundings. Each relationship with a buyer, supplier, competitor, institution or government agency can be placed on the continuum from competitive to co-operative. As they all maintain several relations at the same time, we can say they are embedded in a network structure which is fundamentally different from either (near) perfect markets or hierarchies (Williamson 1975, 1985; Powell 1990). Oligopoly in all its collusive and non-collusive forms is a much more adequate characterisation of the situation. Strategies are more or less co-ordinated or at least interdependent and disputes are resolved, not through formal top-down power, but by mutual adaptation. Networks neither rely on the visible (central authority) or invisible (market forces) hand to guide their relationships. Rather the continuous handshake is employed. The game is potentially positive-sum (win-win), but this need not be so and depends on the way interactions are structured. Collaboration can be tactical, but also strategic; companies can accept some measure of interdependence if the co-operating network achieves more than the companies independently. The question that arises at the level of strategic management is whether network level strategies are formed and whether they should be formed. In short, strategists must grapple with the paradox of competition and co-operation. Although private sector actors can shape this regime by forming agreements with each other, usually a regime of forced co-operation is imposed on the players by external imposition by public regulators (Young 1984).

We would suggest that the type of market form described above applies very well to the access and interconnection complications associated with the construction, management and use of modern infrastructures. In order to create value, the use of a commonly used infrastructure network is required, which needs to be maintained and improved to allow all providers sufficient capacity to provide their services to the customer. Only when networks are connected can services be offered to as many customers as possible and can network externalities and increasing returns to scale be realised. Co-operation at this level is needed to cough up enough financial means to make this happen. The players have the role of ‘complementors’ to each other, not competitors. They have the possibility to make each other’s products more instead of less valuable.

On the other hand, competition is more desirable in the provision of the attached consumer services. Co-operation here would be tantamount to forming a cartel among all providers. Value is created at the infrastructure level and is due to be captured at the services level. But there is an important organisational and institutional complication. A heritage of the old monopolistic regimes is that the (former) state monopolist dominates the market, in terms of market share, existing infrastructure and access to the customer. This dominance, combined with having the disposition of an infrastructure with public relevancy complicates the creation of a ‘level playing field’, where all players involved, incumbent and competitors alike, can compete on equal terms. National PTTs do not need other companies for the generation of their added value, but the converse is not the case. The same goes for the market shares of former national railway companies; they have nothing to gain when new rivals generously get access to their railway lines. This situation explains why the presence of some form of regulation and/or regulator is necessary. It is highly improbable that self-organisation in the sector will lead to desired results here.

If the natural current situation were left to its own devices, the incumbent would not allow access for other providers to its network; the interconnection crucial to a constructive type of co-opetition could not evolve. So liberalisation of infrastructure involves new issues and forms of regulation. A dynamic balance has to be found between sector specific regulation and competition regulation. To allow effective competition between unequal negotiating partners, the conditions for competition can be levelled by asymmetrical regulation to support
the transition towards a competitive market. This asymmetrical interference by the regulatory authorities is based on an anti-monopoly perspective (preventing a private monopoly) and an anti-fragmentation perspective (infrastructures need to stay intact) at the same time (Noam 1995). The anti-fragmentation perspective focuses on the positive network externalities - referring to the increase in value of a network, when more people are connected to it - , providing for a public interest in the linking of infrastructures (interconnection). This perspective is strongly related to the common carrier-consideration - operators of public infrastructures must provide their services to anyone requesting these services, regardless whether it concerns a customer or a competitor. Another related concept is the provision of universal services – operators must provide a minimum set of services of a certain level for reasonable rates and conditions. Thus, the incumbent is usually obliged to offer a number of infrastructure-related services (rails, stations, integration in timetable schedules, leased lines, voice telephony, public data services, ISDN) to the competitor. This framework prescribes the application of the principles of cost-orientation, transparency and non-discrimination on rates and conditions.

Interconnection is a crucial key to effective competition and the emergence of a level playing field. It means the linking of networks of competing market players. Its goal is interoperability, the possibility for subscribers to different services or network to communicate with each other, independent of their provider ("any-to-any"-communication). This is especially relevant for newcomers in the telecommunications sector, who do not have full infrastructure coverage and want to obtain market share. When more infrastructures co-exist, interconnection is necessary for the termination of each other’s traffic to the end-user. Because of the limited number of providers in rail and the comparatively limited opportunities to make profits with public transport facilities, access to the railway network is an important issue in this regard and not so much interconnection between various co-existing networks.

The terms and conditions for interconnection are partially determined by commercial contracts which are negotiated between the parties. Controversy about the interconnection conditions is especially strong considering the contradictory interests. Newcomers have to provide at a lower rate and a higher quality than the incumbent to get a reasonable market share. The margin between KPN retail end user tariffs and wholesale interconnection tariffs determine the competitor’s viability. The incumbent does not need its rival and only sees him as a threat, leading to a lack of incentives to come to an agreement.

The embeddedness of firms engaged in infrastructure networks and provision of services to end users competition and their interactions in this field require a specific mode of regulation. Government interventions are relevant when competitive forces dominate when co-operation should prevail - resulting in a reduction of the network benefits for society - or when co-operative forces instead of the desirable competitive interactions result in a reduction of the benefits of competition for the consumers, favouring one or more market players instead of consumers. So when regulating interconnection and access to infrastructures, a dual regime is applied to these sectors. On the one hand a regulatory regime is established to ensure network characteristics and benefits can be obtained and to ensure that society – and not the market players - reaps the benefits of competition. On the other hand the competition laws are applicable to these sectors to prevent abuse of significant market power and cartellisation. It is to the way two countries have organised their regulatory systems in two infrastructure sectors that we now turn.

FROM HERE ON THE ARTICLE IS FAR FROM PERFECT, BUT THE READER WILL PICK UP THE GENERAL TENDENCIES. THE DATA ALSO REQUIRE VERIFICATION
4. **Four regulatory regimes and their evolution**

General international and transnational developments do not speak for themselves when it comes to national implementation. We will explore central issues concerning access and interconnection in the regulatory British and Dutch regulatory regimes for transport (rail) and telecommunications infrastructures (basic telephony).

We have made listed up several aspects that can be used as indicators for the regulatory role the public sector in the 1990s:

<table>
<thead>
<tr>
<th>Infrastructure aspect</th>
<th>UK Transport</th>
<th>NL Transport</th>
<th>UK Tele-communications</th>
<th>NL Tele-communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal service, price levels</td>
<td>Not in danger, prices have risen markedly</td>
<td>Not in danger, but prices are up at more than inflation level</td>
<td>Not in danger, prices have declined markedly</td>
<td>Not in danger, prices have declined, but not as much</td>
</tr>
<tr>
<td>Ownership of infrastructure</td>
<td>Owned by Railtrack, a privatised regulator that manages access to 25 regional private monopolies.</td>
<td>State, in this case the national Ministry of Transport</td>
<td>Owned by British Telecom, the former British national incumbent</td>
<td>Owned by KPN, the former PTT and Dutch national incumbent</td>
</tr>
<tr>
<td>Regulator and its role</td>
<td>Railtrack, which manages access and payment and checks safety standards and access prices. Is privatised and profit-oriented.</td>
<td>Ministry of Transport for concessions, with Railned for access conditions and future prices and Railinfrabeheer for maintenance and safety. Both are public, part of the Ministry and non-profit</td>
<td>OFTEL, which is independent from the Ministry and creates jurisdiction and interconnection conflicts between rivals. Does provide licences. Takes a reactive role, because it has an information format in the licence</td>
<td>OPTA, which is independent from the Ministry and creates jurisdiction and interconnection conflicts between rivals. Does not provide licences. Takes a proactive role to obtain information</td>
</tr>
<tr>
<td>Ownership of services/present service providers</td>
<td>Sold to 25 regional private monopolies. Former incumbent no longer exists.</td>
<td>Former incumbent plus a few very small rivals. Rivals have not got any lines in the core net.</td>
<td>A few rivals, of which BT is still the biggest, but at a declining market share</td>
<td>A few rivals, of which KPN is by far the biggest</td>
</tr>
<tr>
<td>Number of players at regional and national markets</td>
<td>One, as they have divided up their respective regional markets.</td>
<td>One. On the main lines the incumbent is operating, on a few less</td>
<td>Several. Cherry picking is possible in principle, but complicated by</td>
<td>Several, but few serious ones. Cherry picking is possible in principle, but</td>
</tr>
<tr>
<td>Competition on the net or about the net/infrastructure and/or services competition</td>
<td>Competition on the net; in principle anybody can ride each other’s tracks, but this does not usually happen. Network and services privatisation without liberalisation. Local (‘light’) rail and freight is different. Opportunities for co-opetition have been cut off.</td>
<td>Competition about the net; rivals can submit proposals to get five year licences for a particular track. They will then be local monopolist. Ministry is very prudent about this. No privatisation or liberalisation of the network, very limited liberalisation of services. Opportunities for co-opetition have been cut off.</td>
<td>Competition on the net. BT offers network capacity to rivals and gets paid. Privatisation and liberalisation of both infrastructure and services. Regulator aims at co-operation at infrastructure level and competition at services level</td>
<td>Competition on the net. KPN offers network capacity to rivals and gets paid. Privatisation and liberalisation of both infrastructure and services. Regulator aims at co-operation at infrastructure level and competition at services level</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Market shares of various rivals</td>
<td>100% at the regional level, they have divided up the national network</td>
<td>95% or more at the national level, rivals only get the leftovers</td>
<td>BT is dominant, but dominance is declining rapidly</td>
<td>KPN is very dominant, dominance is declining slowly</td>
</tr>
<tr>
<td>Realisation of cost-oriented pricing</td>
<td>Not necessary, interconnection has been made superfluous</td>
<td>Fees to the government will be introduced in the future</td>
<td>Yes, OFTEL uses benchmarking to determine access prices</td>
<td>Yes, OPTA uses intricate models to determine access prices</td>
</tr>
<tr>
<td>Demarcation of markets, intermodality</td>
<td>Intermodal transport is a matter for the private company and does not get much attention</td>
<td>Intermodal transport is a matter for the incumbent, that does not give it high priority</td>
<td>Interconnectivity with other types of telephony and information spread is under consideration. Situation is in a state of constant flux</td>
<td>Interconnectivity with other types of telephony and information spread is under consideration. Situation is in a state of constant flux</td>
</tr>
</tbody>
</table>
We are now inclined to draw the following conclusions:

1. We have defined the constructive role of regulators in the 1990s and after as the promoter of co-opetitive relations in the market, being:

   1. for the infrastructure regulatory regime: network advantages, connection advantages for society. Co-operation between incumbent and rivals.
   16. for the services competition regime: prevention of power abuse of the incumbent and prevention of cartels.

For the moment, we can say that both Britain and the Netherlands have kept large chunks of their old regime in the transport world and that there is no clear view of how, where and why co-operation and competition should prevail. The national models undergo a lot of change, but not drastic changes. Their systems have not been shaken up here. As a result, the traditional national models are still visible: a clearly delineated difference between the public and private sector and Britain (Dobbin 1994): things should be either public or private, but not both. The Dutch do not work with regulators here, which they have never know. They are very careful with privatisation here and have kept their railways public as they used to be. They are very prudent institutional changers. The British started off earlier than the Dutch. Telephony gives us a slightly different picture. One can say that the regulatory systems here have been totally shaken up here. Once again, the British began their institutional ‘critical juncture’ in the beginning of the 1980s, the Dutch only in the 1990s. But in both cases, it becomes much more difficult to recognise the traditional national models: though there are differences between them, one can say that they are looking much more at each to see how their institutional systems are developing from scratch. The Dutch have installed a regulator, which is unusual and in some respect illegal from state law point of view. Legal scientists are grappling with this problem: common law constructs entering a civil law system. The countries are insecure, copy each other’s solutions. Their ‘national’ models do converge! They do not become the same, however. It is hard to see through a clear picture in what the
new models here are going to look like (it’s still in flux, and we need more time to work things out).

5. Preliminary conclusions
Two things can be said, at this moment, however:

1. As we see things, all institutional structures bear the footprint of the era in which they arose. The British have usually chosen institutional solutions firmly within their common law framework and functional attitude to rule and regulation; they will change them if so required (Zweigert and Kotz 1992, De Jong 1999). The Dutch have gone through various waves of foreign influence. French transplants in the 18th and beginning of the 19th centuries and German influence later on (Schama 19??, Toonen 1987, De Jong 1998, 1999). It is now not under foreign domination, but it tends to take over policy solutions developed in the Anglo-Saxon world (sometimes without recognising) and then adapting them to its own situation. This is what is happening here. An interesting, but complicating factor is the rising of international law: this cannot be plainly attributed to one or some of the various national models. It has become a world of its own, which is hard or impossible to characterise in traditional terms. Possibly other sectors will undergo the institutional effects of internationalisation and globalisation and then also lose their national characteristics. If they do not change in a revolutionary way they keep on changing within their national path-dependency (adapting foreign influence in their own way).

2. The regulatory systems evolving in various countries in the 1990s may seem amorphous and incomprehensible in terms of national traditions, functionally they may be much more adequate to deal with the requirements posed by the ‘co-opetitive relations between government and the private and between market players. The anarchic situation in which the telephony sector is now developing creates opportunities to adapt the structure to the needs of a new era, whereas the rail sector which is still entangled in a particular historically dependent path can be understood by academics in terms of some national model, but may hamper its policy relevance. As it appears to us now, we may have to prepare for a future in which all newly evolving policy sectors undergo international influences to such an extent that national political and administrative tradition can explain them only to a very limited extent. We may need new schemes of understanding, such the mixing of international legal influence and locally based cultural and situation dependent interpretations.

6. References
Nalebuff, Barry J. and Adam M. Brandenburger: Co-opetition.
Weijnen e.a.: Design and management of infrastructures, Faculteit Technische Bestuurskunde, TU-Delft, November 1996.
Omnitele Ltd., (1998), Study on technical and regulatory requirements for open access to broadband telecommunications networks and services for customers, service providers and content providers, Report for DGXIII/A, 72p
Noam, 1995
Young, 1984
Teisman (1992),
O’ Toole, 1988
Vlaam, Heleen de: ITER report