# CORPORATE-GOVERNMENTAL NETWORKS IN THE NETHERLANDS
(Traces of Power III)

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## 0. Introduction

This paper is part of a series of publications stemming from a project which was started by the authors at the Institute for Political Science in 1969 concerning interorganizational networks among corporations, financial institutions and the state in The Netherlands. The original main study analyzed the intercorporate network of interlocking directorates of the largest Dutch corporations and banks for the year 1969. Additional studies concerned the development of the network through time, underlining the significance of interlocks with the financial institutions, networks based on capital participations and joint-ventures and networks with the central state-structure. A preliminary study appeared in 1971 (Mokken and Stokman, 1971) and our main publication (in Dutch) in 1975 (Helmers e.a., 1975). Publications in English have covered specific subjects, such as the theoretical background of power and influence (Mokken and Stokman, 1974a) and the interlocking network of the banks (Mokken and Stokman, 1974b). The project itself has expanded with other studies of which we may mention a replication of the study for the intercorporate networks of 1972 and 1976, to be discussed at this conference as well (Mokken and Stokman, 1978), the world multinationals and the European Economic Community (Fennema, 1974), a network study in policy analysis concerning nuclear energy in The Netherlands (Uitham e.a., 1977) and an international and historical survey of studies concerning interlocking directorates (Fennema and Schijf, 1978).

The present paper is a revised version of the 1969 study concerning interlocking memberships of directors of the 86 largest corporations and institutions in The Netherlands with committees, departments, councils and other bodies in the Dutch central government structure (Helmers a.o., 1975, 291 ff).

1. The institutional data of 1969

The research reported here is based on our study of the network of interlocking directorates on the largest 64 industrial and commercial corporations in The Netherlands, together with the 22 largest Dutch financial enterprises (banks, insurance companies, etc.). The criteria of size and the composition of the boards of directors were based on those as given in the annual reports of the institutions concerned for the year 1969. Hence we shall refer to this study as the 1969 study. Among these 86 corporate institutions we included the data for a number of sizeable public or semi-public institutions, which were directly operative in the productive, commercial or financial areas covered by the private sector. These included, for instance, such organisations as the fully nationalized postal and telephone services (PTT), one fully state-owned chemical concern, which operates as a corporate actor in the private sector (DSM), the Bank of the Netherlands (Nederlandse Bank) as another privately incorporated, but fully government owned institution. So were the Bankraad, an advisory council of the minister of finance with respect to the policies of the Bank of the Netherlands, the Bank voor Nederlandse Gemeenten, a state-owned bank regulating finance and credit for the lower communal authorities, and the board of the Schiphol Airport authority, which is controlled by the city of Amsterdam.
These specific state- and government institutions, although more or less clearly belonging to the public domain, were considered by us to be operating fully in the productive or financial area or, for that matter, mainly on the private side of the parapublic sector. We therefore allotted them for the analysis of this study to the side of the corporative sector of 86 concerns and institutions in total.
For an analysis of the interrelation and interpenetration of the corporate sector with the public policy structure of state and government we needed indicators concerning mutual formal or regular communcation structures involving a potentially wide variety of state and govermental agencies and committees. There are no sources which amongst them systematically and more or less exhaustively report these data. The most extensive single source is the annual government directory (Staatsalmanak). In order to achieve the best possible correspondence with the data of the 1969 study

we selected the government directory for the year 1970, which mainly reports data for the prior year. In this sense we hoped to get as close as possible to the interlocks between corporations and state agencies in the period studied.

The government directory primarily reports data concerning the identity and directorial composition of directorates and institutions, (bureaus, offices, agencies, committees etc.), within the framework of the various departments of state, to which they are formally affiliated administratively. The directory lists for the various departments of state their topofficials, ordered according to the different directorates and policy sections. Then the main policy determing agencies and advisory committees are listed, which fall under these departments, as well as affiliated institutions taking part in the execution, implementation or administration of specific policies. To these we could add the governors (Commisarissen der Koningin) and executives (Gedeputeerde Staten) of the provinces, as well as the mayor and aldermen of the largest cities.* We therefore thought to have sufficient reasons to consider the government directory as an approximately reasonable list of the more important decision making and executing units in the general policy areas as covered by the central structure of state and government in The Netherlands.

However, an important caveat should be made. The decision concerning which information is to be listed in the government directory is taken by the ministry or department of state itself, depending also on the administrative efficiency, initiative and rigor of those agencies supplying the necessary annual up-dated information. Moreover, there will be many cases where the existence or composition of committees or other bodies will not be made public for reasons of confidentiality, the safety of the state, the public interest or other reasons of policy. The department of Defense and the intelligence service (BVD) are rather obvious examples. We may therefore have missed many important or relevant agencies. If this lack of information is distributed unevenly over the policy areas (defense!) then our results will be biased correspondingly.

A comparison of the register of persons in the directory and our list of

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* More than 100.000 inhabitants in 1969.

directors of the 86 corporations of the 1969 study enabled us to trace the interlocks of these corporations with the various government and other public agencies. Obviously, due to the very dissimilar types of affiliations in the government directory, these interlocks between corporations and state agencies will vary considerably in significance. For instance, interlocks may concern a member of parliament, a leading official in a department, a chairmanship of a public research institute, or memberships of advisory committees at very different levels of activity and importance. Our data, therefore, are much less homogeneous than those we used for the network between corporations, the latter ones being based only on common membership in the ultimately controlling bodies of these corporations: the boards of directors.

Our survey of the interlocks of these boards with positions in the central structure of state and government consequently mainly serves the purpose to study the global distribution of the points of access of the corporate structure to that of the state. Moreover, this study is by the nature of our data restricted only to the top level, the boards, of these corporations, so that we may well have singled out their more significant linkages. On the other hand, the corporate structure will be more densely interwined with state and government agencies through the participation of officials at other, lower or more specialized, levels in the corporations. Evidently, our study does not provide insight in those.

The data from the government directory allowed us to distinguish different policy sectors in the state structure. This gave us the opportunity to study to some degree the distribution of access of the corporations, or certain types of these, across policy sectors. For instance, one may study whether they concentrate their contacts in certain specific policy areas or whether they have a more general orientation across policy sectors instead. Again, one may investigate the penetration of a set of corporations in a given policy area, a heavy penetration being characterized by a sizeable amount of interlocks in a single policy sector. A high degree of spread on the other hand, can be found when a large amount of interlocks is distributed over a wide variety of policy areas.

For these reasons we have aggregated the government institutions in 28 policy sectors, fourteen of which roughly coincide with the fourteen

departments of state which existed in 1969.
Of these departments we have allotted to separate sectors state corporations and financial institutions which were similar to, but not selected among the large state institutions in our set of 86 large corporations and institutions.
Finally nine sectors relate to different public areas such as the two chambers of parliament (Eerste and Tweede Kamer), the highest public and administrative legal court: the council of state (Raad van State), the royal house, the provinces and the larger cities and townships.
As before, the corporate sector of 86 firms and institutions were arranged in 27 industrial sectors or industries, including the main enterprises and financial institutions of the state.
In the next sections we shall first give some general results concerning the network of interlocks between the boards of these corporations and the state institutions. As we shall find a striking preponderance of the departments of economic affairs and education and sciences, we shall then in the sections 5 and 6 report a more detailed analysis of the interlocks with these departments.

## 2. General features of network

A first survey of the distribution and density of the interlocking network between our 86 large Dutch corporations and the state agencies is given in Table 1. Between their boards of directors and the state and government institutions for 1969 688 interlocks were found, as far as the government directory is concerned: an average of 8.0 interlocks per corporation.
It should be noted that one person can generate multiple interlocks through his positions on various boards in combination with several positions in the government area. These 688 interlocks between corporations and government were generated by 191 persons. They connected 80 of the 86 corporations directly with the state through one or more interlocks.
This number of interlocks may be considered to be high for two reasons. In the first place it is based only on those interlocks involving members of the board of directors, whereas usually a corporation can and often will be represented in state and government agencies through other, lower or more specialized, levels in the intra-corporate organization. Although we do not have data concerning interlocks of the latter type, the partial

picture we get here is one of a very close connection of corporations and government.

The second argument is based on a comparison with the amount of interlocks cementing the inter-corporate network between the 86 corporations themselves. This latter, inter-corporate network in 1969 was built on 873 interlocks and generated by 195 persons. A comparison of these numbers suggests that for the corporate sector of the economy interlocking memberships with the agencies of the state are of similar importance to them as those which are linking the controlling bodies of these concerns. A fortiori, it may then seem likely that on the average such interlocks tend to indicate important contacts between corporations and government in probably relevant policy areas.

The density of the bipartite graph on 86 corporations and 28 policy sectors is .15.* This relatively low density (or number of lines), in the presense of the large number of 688 interlocks, clearly suggests that many of the lines are generated by a large number of interlocks: i.e. a number of these lines have sizeable weights.

The six corporations with no immediate interlocks with state agencies included two large rural dairy cooperatives, and four firms in the sectors garments, shipping, retail trade and rubber. Their marginal position here strikingly reflected their equally marginal position in the intercorporate network which consisted of a connected component of 84 firms. The two isolates there, were also isolated here.

TABLE 1
ABOUT HERE

If we consider the average number of government interlocks per firm (column 5 of Table 1) we can immediately verify the obvious circumstance that the state-owned or state controlled corporations and institutions are among the highest ranking. De Staatsmijnen (DSM), the state-

* The bipartite density gives the proportion of observed lines actually connecting corporations with state (or policy) sectors of the maximum number of possible lines of that type. A line is defined with the existence of at least one interlock. In other words: the multigraphs of interlocks is reduced to a simple graph of lines.

owned Dutch chemicals has 20 government interlocks, followed by the financial state institutions (an average per firm of 18.4); NS (national railroad system) and Gasunie (the half state, half Shell-Exxon controlled natural gas monopoly) each with 14 interlocks. These state institutions therefore may serve as a yardstick for the degree of government interlocks of other industrial sectors. In Table 1 we can select by that criterion as equally strongly interlocked KN Heide Mij, (the largest Dutch rural and agricultural development corporation) with 21 interlocks, chemicals/oil and the commercial banks (an average of 13.7), metals/shipbuilding (11.8) and the agricultural banks (11.5).
As was the case for the intercorporate network, the basic industries (metals/shipbuilding and chemicals/oil) and the commercial banks figure prominently in this bipartite corporate-government network.
Most interesting is the prominence in this policy network of the agricultural institutions which had proved to be rather marginal in the intercorporate network in our earlier analyses. For the agricultural banks it is reminiscent of the farmers lobby (die grüne Front) and a similar policy background may explain the strikingly prominent position of the rural and agricultural development giant (KN Heide Mij). The agricultural policy area and rural or regional development projects depend strongly on state subventions and government contracting concentrated in the departments of agriculture and fisheries, public works and waterways, and economic affairs.

Columns 3 and 6 of Table 1 give insight in the spread of the interlocks across policy sectors. Column 3 gives the number of policy sectors with which firms in a given industrial sector are directly interlocked. The bipartite density given in column 6, controlling for the number of firms in the industrial sector concerned, therefore can be considered as a measure of spread normed for number of firms.*

* The bipartite density here can be considered as the percentage of policy sectors with which on the average a firm in the industrial sector is directly interlocked.

The industrial sectors with the highest spread per firm (bipartite density) are:

| | |
|---|---|
| KN Heide Mij | .39 |
| commercial banks | .29 |
| financial state inst. | .27 |
| chemical-state owned (DSM) | .25 |
| agricultural banks | .23 |

A striking feature is the larger spread across policy sectors of especially the financial sectors in comparison with the other ones. (See the commercial and agricultural banks and, to a lesser degree, also the insurance companies).
Given their low numbers of interlocks (7.8, 6.7 and 6.5, respectively) the sectors transportation, retail trade and electrotechnical/metallurgy have a relatively large spread (bipartite densities: .16, .14, .16.).
On the other hand the basic industrial sectors chemicals/oil and natural gas (Gasunie) and to a lesser degree metal/shipbuilding are characterized by a relatively low spread with respect to a large number of interlocks per firm . Here we tend to have a heavy penetration in a small number of policy sectors.

For a given industrial sector, as a set of firms, the spread of their lines, or the interlocks they carry across various policy sectors, may be considered to induce a secondary network structure linking these policy sectors. This derived structure can be represented by the induced graph on those policy sectors, in which a line between two policy sectors is defined, as soon as they are linked by at least one interlock: i.e. when a director of one of the firms in the industrial sector concerned also has positions within each of those two policy sectors. Each industrial sector generates a specific induced network linking the set of policy sectors to which its firms are connected. However, the density of this induced network can vary considerably, depending on the way these lines are spread across the policy sectors. We may illustrate this with the hypothetical examples of Figure 1. The examples concern various situations for an industrial sector, consisting of three corporations, which are

linked by five interlocks with five government sectors.

FIGURE 1
ABOUT HERE

In figure 1 (a) these five interlocks are carried by three lines, two of which of weight 2, as these are based on 2 interlocks each. Its spread, as indicated by the bipartite density, therefore is .20. The density of the induced graph, however, is zero, as the policy sectors are not interlocked through common interlocks with firms in the industrial sector. In the other cases these bipartite densities are higher: .33, because there each of the five interlocks generates a line (of weight 1). However, the densities of the induced graph vary considerably, increasing from .10 (case (b)) and .20 (case (c)) to 1.00 for case (d), where the five interlocks of a single firm with each of the policy sectors induces a complete graph on these sectors.

Because for a given industrial sector this density of the induced graph on the policy sectors also depends on the spread of the lines of its firms across these policy sectors, we can refer to this density here as the spreaddensity of an industrial sector in the policy sectors. We will observe a low value of the spreaddensity when an industrial sector concentrates on a limited number of policy sectors. A high value we will find when the firms individually or together distribute their lines across various policy sectors, which coincides with a relatively large spread. In this latter case various policy sectors are connected with each other through common interlocks with firms in that sector.

The spreaddensity for our industrial sectors are given by the densities of their induced graphs on the policy sectors as listed in column 7 of Table 1. The largest spreaddensities are found for

| | |
|---|---|
| financial state institutions | .25 |
| transport | .23 |
| metal/shipbuilding | .20 |
| commercial banks | .19 |

Again, the relatively high spreaddensities for the financial sectors should be noted, as well as that for one of the basic industries, metal/shipbuilding. On the other hand, another heavy industry sector, chemicals/oil, is characterized by a very low spreaddensity, again suggesting a high penetration of their interlocks in one or just a few policy sectors. The same is true for the state owned corporations, including the chemical (DSM). If we relate the spreaddensity to the size of the industrial sectors, it can be noted that those sectors with the largest number of firms also have the largest spreaddensity, which might partly be caused by the circumstance that in the density of the induced graph this size is not accounted for. However, this argument cannot explain completely the high spreaddensity of the larger sectors, as can be seen by a comparison of the data for the sectors 'foodstuffs' and 'building trade'. These are of about equal size (six and five firms, respectively) and have comparable numbers of interlocks (averages per firm of 4.3 and 4.8) and densities (.13 and .11, respectively). Yet the spreaddensity of building trade (.03) is considerably lower than that of foodstuffs (.12).
In fact 'foodstuffs' and the sector 'wholesale' trade are quite remarkable in Table 1, showing a very high spread density across policy sectors in comparison with their bipartite policy sector densities and modest numbers of interlocks per firm. For these sectors the interlocks are distributed optimally, promoting spread and the interconnection of policy sectors instead of penetration.

Now let us summarize our main findings as based on Table 1.
A first conclusion is that the 86 corporations were interlocked with the 28 policy sectors at the central state level as tightly as they were interlocked amongst themselves.
If we look at the average number of interlocks per firm, the number of interlocks of the state owned corporations gives a good criterion of the strength of this type of linkage to the state sectors. In terms of that criterion the basic industries (metal/shipbuilding and chemicals/oil) and the financial sectors (commercial banks, agricultural banks), together with the agricultural and rural development corporation (KN Heide Mij) were as heavily connected as the state owned institutions.
Then we considered the way the interlocks of the sectors were distributed across policy sectors in terms of spread, as indicated by the bipartite

density and spreaddensity, or penetration: large number of interlocks, low level of spread. The financial sectors showed a wide spread across the policy sectors. In terms of spreaddensity, this was also the case for metal/shipbuilding. This heavy industry sector contrasted strongly here with the other basic sector of chemicals/oil (and natural gas (DSM)), which instead showed a large degree of penetration, as did the state owned corporations. These two basic industrial sectors therefore showed fundamentally different patterns for their interconnections with the policy structures of the state. We noted also the high spreaddensity, combined with a modest number of interlocks, for foodstuffs and wholesale trade.

3. Orientation of policy sectors

After this general survey we may now wonder with which particular policy sectors these industrial sectors are interlocked most closely. Some results are given in Table 2 where we present only the major results for the relevant policy sectors.* Per policy sector we have given the number of interlocks with the 86 corporations and institutions, as well as the numbers of industrial sectors and individual corporations with which each policy sector is directly interlocked. Data of the two latter types indicate the spread of the interlocks of a policy sector across industrial sectors and individual firms.

From Table 2 it will be immediately evident that the interlocks are overwhelmingly linked with the two policy sectors of 'education and sciences' and 'economic affairs'. 'Education and sciences' is connected to 53 of the 86 corporations by means of 176 interlocks. For 'economic affairs' even more corporations, 61, are connected through 151 interlocks. Both policy sectors have a very large spread across the industrial sectors, as they are directly connected with corporations in 23 of all 27 of these. Far below those two policy sectors come the three policy sectors that

* For reasons of space we have omitted those government sectors, which could be considered to be of minor importance.

are leading the rest in terms of numbers of interlocks: 'foreign affairs', 'finance' and 'public works and waterways'.
Especially the position of 'finance' with respect to 'economic affairs' is striking. On the basis of Table 2 we may conclude that in what in Dutch politics is known as the 'socio-economic triangle' (the departments of state of economic affairs, finance, and social work and public health), 'economic affairs' is by far the most important, where interlocks with the corporate sector are concerned. Next is 'finance', closely followed by 'social work and public health'.
Of course, we should keep in mind that quite a number of interlocks in the area of the policy sector 'finance' have been counted, because of our decision to include a number of the state controlled institutions in this policy area among the 86 corporations in the private sector. The same is true for 'economic affairs', under the competence of which a number of state-owned corporations fall.

TABLE 2
ABOUT HERE

The results for the policy sector 'defense', if taken at their face value, seem to contradict the results directed at the unravelling of the military-industrial complex. Many studies in this area postulate or report close relations between the military establishment and the corporate leadership.*
Very few interlocks are given for defense. Of the 86 corporations only 6 are connected with 'defense' by means of 18 interlocks.
The chapter on defense in the government directory is very concise. Only a small number of committees have been reported. The small number of interlocks found by us may well have been the result of a certain reticence, which the authorities of the department of defense feel obliged to observe, when it comes to publicly reporting information of this nature. The existence or composition of many agencies or committees in the policy area of defence will usually be stamped as confidential

* For a good survey see Rosen (1973).

or secret much easier than in other areas of public policy.

How are the various industrial sectors connected with the various policy sectors? Again we found the policy sectors of 'education and sciences' and 'economic affairs' to have the largest spread across industrial sectors: they were virtually interlocked with all industrial sectors with the largest number of interlocks in each of them. In section 6 we shall see that almost all interlocks of 'education and sciences' originated in that sector in those agencies, which were associated with scientific eduation, science policy or research.
For education and sciences the most prominent connections in terms of number of interlocks are to be found for chemicals/oil with 8.0 interlocks per firm, the partly state-owned Gasunie (natural gas) with 7 and the Dutch state-owned chemical DSM with 6. Only another national enterprise, the Dutch railroads NS, has comparable number of interlocks. Such tight interlocks of state-owned institutions as in the latter cases conform to our expectations. They also are most pronounced for economic affairs: the state-owned chemical DSM (8), Gasunie (6), the national railroads NS (5) and the financial state institutions (4.5 per firm). These are the enterprises in which the state of The Netherlands participates. The next closest links with economic affairs are found for the basic or heavy industries: metal/shipbuilding (4.0) and chemicals/oil (3.3).

The ties with finance are mainly with the state-owned firms and the financial state institutions. It is remarkable that there are no interlocks with commercial banks. This may be due mainly to the circumstance that we included the state-owned institutions not in the state sector, but among the 86 corporations In our analysis of the networks among these 86 corporations we found the commercial banks to be heavily interlocked with these financial state institutions!

With respect to the other policy sectors, where the interlocks are much less pronounced, the data suggest rather clearly that these interlocks are with those policy sectors, which on face value seem to be most relevant to the economic activity of the industrial sectors or firms involved by such ties.

For instance, our selection of the 86 largest Dutch corporations and institutions implied an emphasis on the national scope or orientation of business activity. Consequently, we do not really cover more regionally oriented economic institutions, unless they happened to get selected on the basis of just their size. As we saw before, these proved to be peripheral in the network linking the 86 institutions. They can be found to represent more or less the rural or agricultural sector with the agricultural banks and the rural development company: KN Heide Mij. The interlocks of these have an orientation towards the policy sectors, which differs notably from that of the other sectors. They are virtually the only ones interlocked with agriculture and fisheries. They have the largest number of interlocks per firm with the two Chambers of Parliament, again faintly reflecting something like the 'farmers lobby'. Moreover they have the largest number of interlocks per firm with the 'provinces'. A similar focus on policy sectors immediately relevant to their specific commercial or industrial activity is suggested for the building trade with which public housing and environmental policy in particular is interlocked (0.4 per firm). Defense has most of its (modest) number of interlocks with metal/shipbuilding (1.3 per firm).

## 4. The center of 17 corporations

In our analysis of the intercorporate network of interlocks among the 86 firms and institutions we found one component of 84 corporations with a density of .20. In that component the 17 most central corporations* formed more or less a single center with a high density (.76). This corporate center consisted of

- the two major commercial banks (ABN and AMRO);
- the three main insurance companies (Delta Lloyd, Eerste-Nillmij (Ennia) and Nationale Nederlanden);

* The point centrality of a corporation was measured on the basis of neighborhood size (degree) and mean distance to other corporations in the graph.

- two financial state institutions: the Bank of the Netherlands (Nederlandse Bank) and the national bank for reconstruction (Nationale Investeringsbank);
- two investment companies;
- the Dutch multinational chemical concern AKZO;
- three concerns in the sector metal/shipbuilding (Dutch steel Hoogovens, the American owned Thomassen & Driver Verblifa and the shipbuilding concern Rijn-Schelde;
- three concerns in transport: shipping (NSU), Dutch railways (NS) and the Royal Dutch Airlines (KLM);
- one brewery concern: Heineken

Was this corporate center, were these 17 most central corporations more closely connected with the policy sectors than the other concerns and institutions? In Table 3 we present the data concerning the policy sectors with which these 17 central firms were most prominently interlocked (10 interlocks or more).

All together the 17 had a total of 262 interlocks with the state sector, i.e. 38% of the total number of interlockings for all 86 corporations with the policy sectors. As they among themselves add up to 20% of the firms we studied, this indeed suggests that on the whole the center was more closely connected with the policy sectors than the other corporations. This is consistently confirmed by the second column of Table 3, where for a policy sector the interlocks of the 17 are given as a percentage of the total number of interlocks of all 86 corporations to that policy sector. These are all above their percentage weight of 20%.

TABLE 3
ABOUT HERE

These facts are confirmed if we look at the number of interlocks per individual central corporation. We saw before that all 86 corporations and institutions have an average of 8.0 interlocks per firm with the state sector. Only 2 of the 17 central corporations have a slightly smaller number of interlocks: the shipping concern NSU and the insurance company Nationale Nederlanden (6 each). All the others have 8 (in one

case) or more. These data therefore demonstrate a striking and consistent correspondence between their central position in the Dutch corporate network and the degree of their interlocks with policy sectors in the state.

The distribution of the interlocks of these central 17 corporations across the policy sectors was also different from that of all 86 firms which we presented before in Table 2. It is more concentrated on the policy sectors indicated in Table 3 and less on the others, than was the case for the 86. Had we applied a comparable criterion of 'prominence'* for the data in Table 2, we would have found, apart from the common predominance of education and science and economic affairs, only foreign affairs, finance and public works and waterways among the most prominently interlocked policy sectors for the 86. We can see from Table 3 that for the center of 17 we should add to that list:

- two financial state-institutions for investment, trade and aid with the former West-Indian colonies (Surinam and the Dutch Antilles) and other development countries;
- defense which in comparison with the total corporate structure of the 86 is much more interlocked with the center of 17;
- the 'royal house', an aggregate policy sector in our study based on public functions of members of the royal family and positions of others in such councils and offices as are associated with the constitutional activities and duties of the Queen.

Having analysed the structure of the interlocking network connecting the boards of directors of the 86 corporations and institutions of our study with agencies in the policy sectors of the state structure, we may now study more specificly the nature of these interlocks with particular policy areas within these sectors. As we found a striking preponderance of connections with the policy sectors of education and science and economic affairs, we shall restrict our analyses to these sectors. This will be done in the next two sections.

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* Considering a total of 10 or more interlocks for in total 262 interlocks of the 17, corresponds to 27 or more for the in total 688 interlocks of the 86.

5. The policy sector 'economic affairs'

The reader should keep in mind our prior explanations concerning the nature of our policy sector 'economic affairs'. It covers not equivalently the regular ministry of economic affairs, as we have associated with this sector also semi-public and advisory agencies and committees, which may be considered mainly to operate within the policy area of this ministry. Which are the policy areas within this policy sector showing significant interlocks with the corporate structure of our study? Our results are given in Table 4. They are confined to industrial sectors only,* and only those industrial sectors with interlocks with economic affairs have been reported. Moreover, we have given in the head of Table 4 only those subareas of the policy sector economic affairs with interlocks to some industrial sector.

TABLE 4
ABOUT HERE

The industrial sectors with the largest number of interlocks per firm with economic affairs were the state-owned chemical (DSM), the partly state-owned Gasunie (natural gas), the state-owned national railways (NS) and the financial state institutions. Here obviously controlling relations of the state are involved, as the state of The Netherlands participates in one way or the other in these firms. Top officials of the ministry of economic affairs sit on their boards. As obiously, an important byproduct may well be correpondingly good possibilities of access of these corporations to the state structure and its numerous committees and agencies of economic affairs. As we have here corporations in which, in addition to the state, private capital participates (Gasunie: Shell and Exxon) (Standard Oil of New Jersey), National Investment Bank (NIB)), we may as well assume that the access and corresponding influence of such private actors or corporations is correspondingly enhanced. Of the other industrial sectors we know

* Four of the 27 industrial sectors had no interlocks: garments, leather/rubber, mortgage banks, and the chamber of insurance.

already from our discussion in section 2 that the heavy industrial sectors had the largest number of interlocks per firm: chemicals/oil (3.3) and metal/shipbuilding (3.0). Within the policy sector of economic affairs both of these are connected in particular with the subarea of nuclear energy. Metal/shipbuilding, however, has a much larger spread across subareas within economic affairs, just as was the case for its spread across all policy sectors in section 2. Its interlocks with, for instance, the subareas of 'energy' and 'industrial development' are of equal weight. The penetration of chemicals/oil within economic affairs seems to be concentrated in particular in the subarea of nuclear energy.

Our comparison has been thus far in terms of (average) number of interlocks per firm in a given industrial sector. Implicitly this assumes that in their possibilities to exercise influence in politics or state policy formation corporations operate and use their channels of influence disconcertedly and independently of each other. This seems to be a highly unrealistic assumption in modern capitalist societies also. Theoretical and empirical analyses have repeatedly established, if not monopolistic, highly oligopolistic structures in industrial sectors, certainly in those sectors where giant corporations are found (e.g. Shepherd, 1970; Mokken, 1977). Cartel agreements, joint ventures, gentlemen's agreements, trade and business organizations, lobby and other pressuregroup organisations and many other forms of informal structure are available or will be created to promote the mutual or collective interests. Judged from this view point our statistic of average number of interlocks per firm tells only a part of the story. Just the total number of interlocks for an industrial sector will be the better indicator of the amount of influence available to an industrial sector as a whole. Now if we return to our Table 4 a slightly different picture meets the eye.

It is not different for metal/shipbuilding. This sector looms large above the others with 24 interlocks and a large spread. The same is true for the financial state institutions. It is more interesting to note that now wholesale trade, (11 interlocks, 4 nuclear energy, 3 energy) comes next and is as important as chemicals/oil. Other sectors of importance are electrotechnical/metallurgy (9) and the building trade (8).

In this respect, apart from the spread, the specific orientation towards

certain subareas is a remarkable feature of Table 4. It reinforces the suggestion that these interlocks serve to build up, support, or reaffirm communication and influence channels which are relevant to the economic or commercial activity characteristic of the industrial sector and associated with the policy area. For instance, building is connected mainly with 'foreign trade relations', 'industrial development' and the committee for the regulation of competition. These interlocks seem plausible, given the interests and participation of the major building and construction concerns in big development projects at home and abroad. Their possible involvement in legal proposals for the regulation of economic competition is plausible given the high degree of collusion and coordinate participation in terms of joint ventures, which we found in our study of the joint venture network in the building trade (Helmers a.o., 1975, 282).*

The prominent role of the subarea of nuclear energy should be noted again. It is in particular interlocked with the state-owned natural gas corporation Gasunie (half state of The Netherlands - half Royal Dutch Shell-Exxon (Standard Oil of New Jersey)), the state-owned chemical DSM, metal/ship-building, electrotechnical/metallurgy, wholesale trade and the financial state institutions. The focus of this network appeared to be the Dutch nuclear energy research center Reactor Centrum Nederland, subsequently renamed as Energie Centrum Nederland as one of the consequences of a reformulation of national energy policy after the oilcrisis of 1973. In our study of 1969 it was connected to 13 corporations in our set by 20 interlocks, carried by eleven persons. Our findings here have since been further substantiated by a more detailed network analysis in the area of nuclear energy policy in The Netherlands, showing a tight network of prominent government advisory councils of the ministry of economic affairs, government sponsored research institutions, the provincial or regional electricity authorities, and industrial participants from metal/shipbuilding (VMF, Rijn-Schelde-Verolme), electrotechnical (Philips) and the Dutch nuclear energy division of Shell.

* For instance we found that the network of joint ventures connecting the five major building corporations was a complete graph.

This network of interlocking directorates and committee memberships was in this case found to correspond closely with an industrial joint venture network in the area of nuclear research and development in which these corporations participated. These networks obviously were organizational derivates of the joint industrial and governmental efforts to promote and build up the participation of Dutch industry and the Dutch economy in Western industrial nuclear development (Uitham et al , 1977)*
The subarea nuclear energy, with its 32 interlocks in total shared its position of dominating policy area within the policy sector of economic affairs with that of foreign economic relations (32 interlocks also). The interlocks of this subarea are more widely dispersed over industrial sectors. The position of the investment companies should be noted here: 5 of their six interlocks were in this area.
We may conclude our discussion of this policy sector with the statement, that at the level of their boards of directors the corporations and institutions of our study in terms of their interlocks clearly showed good access to all policy areas in economic affairs as far as they were perceivable within the framework of the government directory. Moreover, as

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* The political impact of the forces behind these networks in Dutch politics are measured by various recent clashes in Parliament. One concerned the disputed export of reactor vessels to the Union of South Africa by Rijn-Schelde-Verolme together with General Electric. Political pressures against this deal built up in parliament in the fall of 1975. The issue did not reach its peak because South Africa at the last moment decided to grant the contract to a French consortium. More recently increasing opposition of Dutch public oninion rose against planned expansion of the uranium enrichment plant at Almelo in the east of The Netherlands as part of a joint Anglo-German-Dutch project. Public action was in particular triggered off by the impending decision to export enriched uranium to Brazil. The issues were evaded in the Dutch parliament through the decision of the prevailing coalition of the Christian-Democratic (CDA) and the conservative Liberal (VVD) parties to split them. In February 1978 they decided to permit the expansion of the enrichment plant and postpone ratification of the proposed export to Brazil to later years, awaiting further security and anti-proliferation guarantees, said to be expected of that country by that time.

was to be expected from our theoretical considerations, the more detailed analysis consistently showed these interlocks (and their resulting means of access and influence) to be oriented towards policy sectors and subareas which were also related and relevant to their industrial, economic or commercial activity.

## 6. The policy sector education and sciences'

In the last section we could demonstrate a number of interlocks in the policy sector of economic affairs, involving top officials in the department of state in that sector. They were due mainly to active participation of the state in some industrial or financial corporate activity and suggested the direct formal control or influence of the state in the areas concerned. Such ties are absent for education and sciences. The 177 interlocks between the 86 corporations and institutions and this state sector do not contain such top level bureaucratic interlocks. Our results are presented in Table 5, where we have given for each industrial sector the interlocks with the various subareas of education and sciences.* Again we have only selected the industrial sectors showing interlocks.**

TABLE 5
ABOUT HERE

We can immediately see that about all interlocks concern subareas associated with scientific education and research and science policy. In 1969 a remarkably large number of interlocks were with the academic institutions: mainly the universities and polytechnics. Especially the heavy industrial sectors, chemicals/oil and metal/shipbuilding have a

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* The total number of interlocks exceeds those mentioned in Table 2, because we have included here the academy of agriculture which organizationally is part of the domain of the ministry of agriculture and fisheries.

** Four of the 27 industrial sectors have no interlocks: chamber of insurance, real estate, glass and garments.

large number of interlocks with these: 11 and 13 interlocks respectively. If we look at the (average) number of interlocks per firm the following industrial sectors come first:

- chemicals/oil (8.0);
  and the (partly) state-owned corporations
- Gasunie (natural gas: 7.0);
- chemical (DSM) (6.0);
- Dutch railways (NS) (6.0).

They are followed by:

- retail trade (3.7);
- metal/shipbuilding (3.3);
- commercial banks (3.3).

About 60% of all interlocks with education and sciences were with the academic institutions: 106 interlocks, which connected 46 corporations and institutions with one or more academic institutions in the country.

In interpreting these results, however, we should point out that they pertain to the situation before the fargoing legal reform of the Dutch university system (Wet Universitaire Bestuursinrichting), which was enacted in the first half of the seventies and still is pursuing its stormy and unsteady course today. Moreover, the government directory only listed the top officials of the main bodies of the universities and their faculties of that time. Not only were those the ones most effected by the reform but our data consequently did hardly cover the faculty staff and other academic leadership positions, which are known also to have sometimes close relations with major institutions of industry and government.

For the then principal executive bodies of the universities (Colleges van Curatoren) we have studied how many of the 97 interlocks could be attributed to the three polytechnics (Delft, Eindhoven and Twente), as we expected those to be especially connected with the corporate structure and, more specifically, heavy industries. More then one third of the interlocks of all university executive bodies (in total a dozen academic institutions) concerned these three polytechnics: 36 of 97. Of these 36 7 were with the industrial sector chemicals/oil, 6 with metal/shipbuilding and 4 with electronical/metallurgy.

Another important center of interlocks was the university council (Academische Raad), which is the national coordinating and advisory body of the Dutch universities. It was connected with corporations by 15 interlocks, carried by seven persons.

The institutions in the area of scientific research also showed significant connections with the corporate structure. The national foundation for pure scientific research, ZWO,* is virtually the sole public institution in The Netherlands supporting academic research by grants. It was connected by 15 interlocks with 12 corporations. TNO, a vast system of semi-public institutions for applied scientific research, showed a similar picture: 14 interlocks connected it with 13 corporations. In both cases seven persons carried the corresponding lines.** Twelve interlocks in the area of science policy linked eleven corporations with the two principal coordinating or advisory bodies at the level of the central government, carried by six persons.

The policy area of nuclear energy in 'education and sciences' again was mainly interlocked with the heavy industrial sectors. Finally, a closer analysis of the interlocks classified among 'sundry' revealed that seven of these also could be considered to concern special topics of academic education or scientific research. Therefore, only two of the 177 interlocks with this policy sector of education and science linking the boards of directors of the 86 corporations, fell clearly outside the area of academic education, scientific research or science policy.

It was interesting for us to note that the Dutch multinationals (AKZO, Shell, Philips and Unilever) in this policy sector showed numbers of interlocks which could be rated among the highest. Except for Unilever, not connected to education and sciences, the others had 6 interlocks or more. Their position here is much more dominant than was the case for the other policy sectors and, for that matter, the intercorporate network among the 86 corporations. In the latter case (excepting the smaller multinational

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* Netherlands Organization for the Advancement of Pure Research (ZWO).

** Nederlandse organisatie voor toegepast-natuurwetenschappelijk onderzoek.

AKZO) their overall centrality was medium and they did not belong to the center of 17 most central firms, although they were closely connected to that center itself. The obvious explanation for us is the one mentioned before. Our selection of the largest Dutch corporations implied an emphasis on the national scope of commercial and industrial organizational activity. As we saw, this resulted in a marginal position in the intercorporate network of those regional or rural oriented corporations which were selected in our study. By a similar argument the transnational or global orientation of the multinationals explains their less than central position. From this perspective these particular ties with the policy sector of education and science suggest a special national orientation.

We may conclude our analysis in a similar strain as was the case for the policy sector of economic affairs in the former section. In education and sciences the corporations we studied in 1969 showed by the pattern of the interlocks of their boards of directors good channels of access to relevant policy sectors in the state sector, as far as these were sufficiently covered by the government directory. The large number of interlocks,restricted wholly to the subareas of academic education, scientific research and national science policy,reflected the importance of in particular these branches of education and research for the corporate structure. From the side of the corporations these interlocks were in particular generated by heavy industry and the multinationals. A strongly technological orientation of these connections is suggested by the conspicuous role of the polytechnics and the prominence of the subareas of science policy, nuclear energy and the foundations of pure and applied research, ZWO and TNO. This clearly evokes the picture of a network spanning the technostructure as one of the characteristic features in popular analyses of (post-)industrial societies.

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Table 1. Interlocks industrial sectors with policy sectors

| industrial sector | (1) nr.of firms | (2) nr. of firms interlocked with govt. | (3) nr. of pol.sectors interlocked | (4) nr. of interlocks | (5) nr. of int.lks per firm | (6) bipart. density | (7) density induced graph govt. |
|---|---|---|---|---|---|---|---|
| natural gas (Gasunie) | 1 | 1 | 3 | 14 | 14.0 | .11 | .01 |
| foodstuffs | 6 | 4 | 14 | 26 | 4.3 | .13 | .12 |
| textiles | 3 | 3 | 8 | 13 | 4.3 | .12 | .03 |
| garments | 1 | - | - | - | - | - | - |
| paper | 3 | 3 | 5 | 9 | 3.0 | .07 | .01 |
| printing/publishing | 3 | 3 | 8 | 14 | 4.7 | .13 | .04 |
| leather/rubber | 2 | 1 | 3 | 4 | 2.0 | .05 | .01 |
| chemicals/oil | 3 | 3 | 7 | 41 | 13.7 | .14 | .05 |
| chemicals/state-owned)DSM | 1 | 1 | 7 | 20 | 20.0 | .25 | .06 |
| glass, pottery | 1 | 1 | 2 | 2 | 2.0 | .07 | .00 |
| metal/shipbuilding | 8 | 8 | 18 | 94 | 11.8 | .19 | .20 |
| electrotechnical/ metallurgy | 6 | 6 | 12 | 39 | 6.5 | .16 | .11 |
| building trade | 5 | 5 | 7 | 24 | 4.8 | .11 | .03 |
| rural development(KN Heide Mij) | 1 | 1 | 11 | 21 | 21.0 | .39 | .15 |
| wholesale trade | 8 | 7 | 14 | 37 | 4.6 | .11 | .11 |
| retail trade | 3 | 3 | 8 | 20 | 6.7 | .14 | .04 |
| transport | 6 | 5 | 15 | 47 | 7.8 | .16 | .23 |
| transport(state-owned),national railways (NS) | 1 | 1 | 5 | 14 | 14.0 | .18 | .03 |
| communications, state-owned | 2 | 2 | 8 | 19 | 9.5 | .18 | .05 |
| commercial banks | 3 | 3 | 14 | 41 | 13.7 | .29 | .19 |
| agricultural banks | 2 | 2 | 10 | 21 | 11.5 | .23 | .10 |
| mortgage banks | 2 | 2 | 7 | 9 | 4.5 | .14 | .03 |
| investment cie.s | 3 | 3 | 3 | 18 | 6.0 | .08 | .01 |
| real estate (EMS) | 1 | 1 | 1 | 1 | 1.0 | .04 | .00 |
| insurance cie.s | 5 | 5 | 18 | 42 | 8.5 | .19 | .14 |
| Chamber of Insurance | 1 | 1 | 2 | 6 | 6.0 | .07 | .00 |
| financial state-institutions | 5 | 5 | 17 | 92 | 18.4 | .27 | .25 |
| total | 86 | 80 | 25 | 688 | 8.0 | .15 | .61 |

Table 2. Interlocks policy sectors and firms

| policy sector | nr. of industr.sectors interlocked | nr. of firms interlocked | nr. of interlocks |
|---|---|---|---|
| overseas territories | 10 | 14 | 23 |
| foreign affairs | 12 | 26 | 31 |
| justice | 11 | 14 | 15 |
| home affairs | 11 | 14 | 18 |
| education and sciences | 23 | 53 | 176 |
| finance | 13 | 20 | 28 |
| finance:partnership cy. Surinam and Dutch Antilles* | 10 | 11 | 18 |
| defence | 5 | 6 | 18 |
| defence:Artillery Plants. | 2 | 2 | 2 |
| public housing,environmental policy | 3 | 3 | 4 |
| public works,waterways | 11 | 21 | 29 |
| economic affairs | 23 | 61 | 151 |
| agriculture and fisheries | 3 | 4 | 8 |
| social affairs,public health | 12 | 16 | 22 |
| culture,recreation,social work (CRM) | 13 | 18 | 19 |
| second chamber of parliament (lower house) | 7 | 8 | 9 |
| first chamber of parliament (upper house) | 10 | 14 | 16 |
| houses of parliament, sundry | 1 | 1 | 2 |
| royal house | 8 | 13 | 24 |
| council of state(Raad v.State) | 7 | 11 | 12 |
| council of state, sundry | 4 | 4 | 6 |
| provincial authorities | 9 | 12 | 15 |
| city authorities | 4 | 4 | 8 |
| total | 25 | 80 | 688 |

* Participatie mij. Suriname en de Nederlandse Antillen

Table 3. Most prominent interlocks of 17 most central corporations*

| | number of interlocks with the 17 | % of total nr. of interlocks to policy sector |
|---|---|---|
| foreign affairs | 13 | 42 |
| education and science | 71 | 40 |
| finance | 12 | 30 |
| finance:partnership cie. Surinam and Dutch Antilles | 10 | 53 |
| finance:national investment bank development countries | 11 | 61 |
| defense | 11 | 61 |
| public works, waterways | 15 | 52 |
| economic affairs | 58 | 38 |
| royal house | 11 | 46 |
| all policy sectors | 262 | 38 |

* Only those policy sectors are given with 10 or more interlocks with the center of 17.

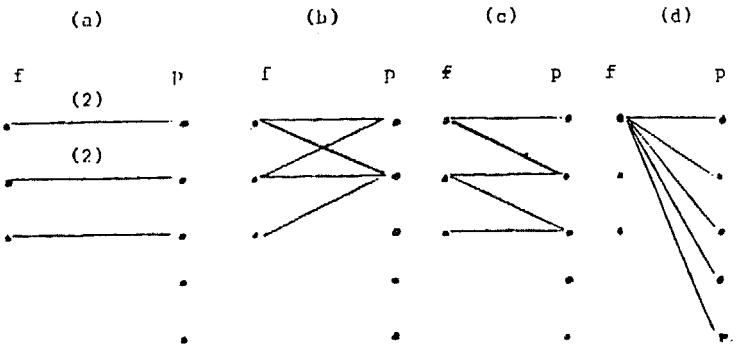
Table 4. Interlocks of industrial sectors and economic affairs

| industrial sector | top department | foreign economic relations | industrial development | committee economic competition | chambers of commerce | energy | nuclear energy | statistics and planning | total nr. of interlocks | nr. per firm |
|---|---|---|---|---|---|---|---|---|---|---|
| natural gas (Gasunie) | 1 | | | | | 2 | 3 | | 6 | 6.0 |
| foodstuffs | | 2 | 1 | 1 | 1 | | | | 5 | .8 |
| textiles | | 1 | | 1 | | | | | 2 | .7 |
| paper | | 2 | | | 1 | | | | 3 | 1.0 |
| printing/publishing | | 3 | 1 | | 1 | 1 | | | 6 | 2.0 |
| chemicals/oil | | 1 | | | 1 | 1 | 5 | 2 | 10 | 3.3 |
| chemicals(state-owned:DSM) | 2 | 1 | | 1 | | 1 | 1 | 2 | 8 | 8.0 |
| glass/pottery | | 1 | | | | | | | 1 | 1.0 |
| metal/shipbuilding | 2 | 2 | 5 | 2 | | 6 | 6 | 1 | 24 | 3.0 |
| electrotechnical/metallurgy | | 2 | 1 | 1 | | 1 | 4 | | 9 | 1.5 |
| building trade | | 2 | 3 | 2 | | | | 1 | 8 | 1.6 |
| rural development(KN Heide Mij) | | | | 1 | | | 1 | | 2 | 2.0 |
| wholesale trade | | 1 | 1 | 1 | 1 | 3 | 4 | | 11 | 1.4 |
| retail trade | | | | | 1 | | | 1 | 2 | .7 |
| transport | | 2 | 1 | | 1 | 1 | 1 | | 6 | 1.0 |
| transport(state-owned)national railways (NS) | 2 | 1 | | | | | 1 | 1 | 5 | 5.0 |
| communications,state-owned | | 1 | 1 | | | 1 | 1 | | 4 | 2.0 |
| commercial banks | | | | 1 | | 1 | | | 2 | .7 |
| agricultural banks | | | | 1 | 1 | | | 1 | 3 | 1.5 |
| investment cies | | 5 | | | 1 | | | | 6 | 2.0 |
| real estate | | | | | 1 | | | | 1 | 1.0 |
| insurance cies | | 1 | 2 | 1 | 1 | | | | 5 | 1.0 |
| financial state institutions | 1 | 4 | 4 | 1 | 2 | 1 | 5 | 4 | 22 | 4.4 |
| total number of interlocks | 8 | 32 | 20 | 14 | 13 | 19 | 32 | 13 | 151 | 1.8 |
| total number of firms | 5 | 22 | 16 | 14 | 13 | 16 | 17 | 10 | 61 | |
| total number of industr.sectors | 5 | 17 | 10 | 12 | 12 | 11 | 11 | 8 | 23 | |

Table 5. Interlocks of industrial sectors and education and sciences

| industrial sector | academic institutions | science policy | university council (AR) | science foundation (ZWO) | institutions of applied research(TNO) | nuclear energy | technical occupational education | sundry | total nr. of interlocks | nr. per firm |
|---|---|---|---|---|---|---|---|---|---|---|
| natural gas (Gasunie) | 3 | 1 | | 2 | | 1 | | | 7 | 7.0 |
| foodstuffs | 3 | | 1 | | | | | | 4 | .7 |
| textiles | 4 | | 1 | | | | | | 5 | 1.7 |
| paper | 1 | | | | | | | | 1 | .3 |
| printing/publishing | 1 | | | | | | | | 1 | .3 |
| leather/rubber | 2 | | | | | | | | 2 | 1.0 |
| chemicals/oil | 11 | 3 | 3 | 2 | 4 | 1 | | | 24 | 8.0 |
| chemicals (state-owned:DSM) | 4 | | 1 | 1 | | | | | 6 | 6.0 |
| metal/shipbuilding | 13 | 3 | 2 | | 5 | 1 | 1 | 1 | 26 | 3.3 |
| electrotechnical/metallurgy | 6 | 1 | | 2 | | 1 | | 3 | 13 | 2.2 |
| building trade | 4 | 1 | 1 | | 1 | 1 | | | 8 | 1.6 |
| rural development (KN Heide Mij) | 2 | | | | | | | | 2 | 2.0 |
| wholesale trade | 3 | 1 | 1 | 1 | 1 | | | | 7 | .9 |
| retail trade | 6 | 1 | 1 | 1 | 1 | 1 | | | 11 | 3.7 |
| transport | 6 | | | | | | | | 6 | 1.0 |
| transport (state-owned), national railways (NS) | 3 | | | 1 | 1 | | | 1 | 6 | 6.0 |
| communications,state-owned | 1 | 1 | | 2 | | | | | 4 | 2.0 |
| commercial banks | 8 | | | 1 | 1 | | | | 10 | 3.3 |
| agricultural banks | 2 | | 1 | | | | | | 3 | 1.5 |
| mortgage banks | 2 | | | | | | | | 2 | 1.0 |
| investment cies | 8 | | 2 | | | | | | 10 | 3.3 |
| insurance cies | 6 | | | | | | | 3 | 9 | 1.8 |
| financial state institutions | 7 | | 1 | 2 | | | | | 10 | 2.0 |
| total number of interlocks | 106 | 12 | 15 | 15 | 14 | 6 | 1 | 8 | 177 | 2.1 |

Figure 1. Hypothetical example of bipartite graphs on three firms (f) and five policy sectors (p)




| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| bipartite density | .20 | .33 | .33 | .33 |
| density induced graph on 5 policy sectors: spreaddensity | .00 | .10 | .20 | 1.00 |

## Zusammenfassung der Diskussion

Die im Anschluß an die beiden Referate von R. Mokken und F. Sto kman geführte Grundsatzdiskussion zum Thema "Interlocking directorates" wies zwei Schwerpunkte auf: Notwendigkeit und erforderliche Beschaffenheit von Nullhypothesen bei der Untersuchung von interlocks einerseits, Bedeutung der durch diese interlocks zwischen den Unternehmen geschaffenen Beziehungen andererseits.

Nullhypothesen bei der Untersuchung von interlocking directorates:

Eine Durchsicht der bisher vorliegenden themenbezogenen Arbeiten zeigt, daß Nullhypothesen praktisch nie explizit formuliert werden, um ihnen dann die gefundenen Untersuchungsergebnisse entgegenhalten zu können. Meistens werden die Erklärungen unmittelbar aus der Deskription des untersuchten Netzes in seinem Kontext gewonnen.

Einhelligkeit besteht jedoch darin, daß wie für jede sozialwissenschaftliche Forschung, so auch für die Untersuchung von Netzwerken die Verwendung von Nullhypothesen zweckmäßig und wünschenswert wäre. Wieweit es allerdings derzeit bzw. überhaupt möglich ist, derartige Nullhypothesen zu formulieren, darüber gingen die Meinungen auseinander. Dabei wurde auch die fundamentale Frage der Eignung von Zufallsmodellen als Nullhypothesen für die Untersuchung geordneter sozialer Strukturen überhaupt aufgeworfen. Insbesondere zwei Aspekte müßten in die Konstruktion der Nullhypothesen eingehen: Graphen bestimmter Größe müssen schon rein zufällig einen bestimmten Grad von Verbundenheit aufweisen. Außerdem kann wohl angenommen werden, daß die Anzahl der Verbindungen, die ein Unternehmen zu anderen Unternehmen hat, in Zusammenhang mit der Dauer seines Bestandes steht. Längere Lebensdauer eines Unternehmens bietet auch längere Möglichkeit des Eingehens von Verbindungen. Es wurde auf die große Bedeutung hingewiesen, die Simulationsstudien in diesem Zusammenhang zukommen könnte.

Erst die Berücksichtigung dieser Aspekte zeigt die wahre Bedeutung der Anzahl und der Art existenter Verbindungen in einem gegebenen Zeitpunkt.

Zur Konstruktion derartiger Nullhypothesen fehlt es aber derzeit nicht nur (tw.) an den mathematischen Modellen, sondern es werden auch vielfach Informationen über das zu untersuchende Netzwerk bzw. seinen Kontext als zu berücksichtigen gewünscht werden, deren mangelnde Zugänglichkeit neue Probleme schaffen dürfte.

Ausdrücklich wurde jedoch unterstrichen, daß trotz des derzeitigen Mangels an Nullhypothesen sich einige Phänomene in den Netzen des Untersuchungsbereiches als so konsistent und auffällig erwiesen haben, daß sie nicht mit dem Hinweis auf die Möglichkeit reiner Zufälligkeit abgetan werden können. Vor allem Verknüpfungen über Personen aus dem Bankensektor sind stets ausgeprägt und über die Zeit stabil. Gerade hier zeigte sich aber auch, daß auch ohne Nullhypothesen Theorien entwickelt werden konnten, die diese Phänomene zu erklären erlauben (Theorie der Informationsnetzwerke, der Ressourcenabhängigkeit etc ).

Bedeutung der interlocking directorates:

Festgehalten wurde, daß Aussagen über die Bedeutsamkeit der interlocking directorates nicht allgemeingültig getroffen werden können. Unterschiede sind sowohl in Abhängigkeit vom Netzwerkkontext als auch im Hinblick auf die unterschiedlichen Arten von interlocks feststellbar. Der Informationsstand von Aufsichtsratsmitgliedern kann bei gleicher struktureller Position äußerst unterschiedlich sein. Es hat sich gezeigt, daß externe Mitglieder in Aufsichtsräten üblicherweise wesentlich schlechter informiert sind als intern. Auch die Möglichkeiten, sich rasch gewünschte Informationen zu beschaffen, divergiert für die einzelnen Mitglieder stark. Personen, die zahlreichen Gremien angehören, gehen von anderen Voraussetzungen aus als Personen, die lediglich zwei Unternehmen verbinden. Es ist daher nicht notwendigerweise so, daß Inhaber zentraler Netzwerkpositionen den tatsächlichen Entscheidungen besonders nahestehen.

An Kontextphänomenen, die die Bedeutsamkeit von interlocking directorates beeinflussen, wurden genannt: Die völlig unterschiedliche Rolle, die ihnen in Wachstumsindustrien einerseits, in traditionellen Industrien andererseits zukommt. Die Bedeutsamkeit hängt auch stark von der jeweiligen Marktposition des Unternehmens ab und vom Grad der Konzentration auf diesem Markt.

Als Beispiel für eine nur aus dem Kontext erklärbare überaus große Bedeutsamkeit von interlocking directorates wurde auf deren Rolle bei der Durchführung von Zusammenschlüssen innerhalb der Schiffahrtsindustrie der Niederlande verwiesen.
Ferner wurde unterstrichen, daß interlocking directorates keineswegs die einzigen personellen Kontakte zwischen Unternehmen sind.
Neben allen traditionellen Formen der Kooperation (Kartelle, joint ventures) zwischen Unternehmen gewinnt die Zusammenarbeit von Vertretern verschiedener Großunternehmen in gemeinsamen Interessenvertretungen immer mehr an Bedeutung. Auch die zunehmende staatliche Einflußnahme auf das wirtschaftliche Geschehen wirkt sich hier aus. Staatliche Koordination und Kontrolle zwingt Vertreter verschiedener Unternehmen zur Zusammenarbeit in und gegen staatliche Gremien. Die Darstellung des Systems wechselseitiger Einflußnahme dürfte daher die über den staatlichen Bereich laufenden Verbindungen nicht ausklammern. Auch die internationalen Verflechtungen, durch die auch inländische Unternehmen untereinander verbunden werden, gewinnen immer mehr an Bedeutung, und sollten daher einbezogen werden.

Überhaupt scheint die Beschränkung auf bloß direkte Einflüsse nicht sinnvoll. Selbst eines der wichtigsten Kontrolmittel, nämlich die Möglichkeit des "to hire und fire" von Unternehmensfunktionären, wird vielfach mittelbar ausgeübt, ohne daß sich diese Einflußmöglichkeit in einer Verflechtung der Aufsichtsräte der beiden unmittelbar betroffenen Unternehmen niederschlagen muß. Um auch die indirekten Einflüsse erfassen zu können, will Coleman eine Matrix erstellen, aus der jeweils der gesamte Einfluß, den ein Unternehmen auf jedes andere Unternehmen und zwar sowohl direkt als auch vermittelt über alle übrigen Unternehmen hat, ersichtlich ist. Auch Einflüsse über den Staatsbereich könnten so berücksichtigt werden. Im Gegensatz zu Hubbell verzichtet Coleman auf sämtliche externe Größen in seinem Modell. Aber auch diese Vorgangsweise stößt in der Praxis wieder auf die Grenze der mangelnden Information über unterschiedliche Gewichte von gleichbenannten Positionen durch Vorzugsstimmrechte etc. .
Auch Unternehmenspolitik kann die Bedeutung von interlocking directorates stark beeinflussen: während es in manchen Fällen - es wurde auf das Beispiel General Motors verwiesen - durchaus üblich ist, daß führende Positionen

im Unternehmen von Personen besetzt werden, die sich über firmeninterne Ausbildungsinstitutionen aus allen Schichten rekrutieren, wird man im allgemeinen eher feststellen, daß Führungskräfte aus einer verhältnismäßig kleinen Schicht gewählt werden. Dadurch wird aber die Bedeutung der interlocks gemindert, die sich nunmehr als bloß eine von zahlreichen Kontaktmöglichkeiten (z.B. Clubs etc.) zwischen Personen gleicher Schichtzugehörigkeit erweisen können.

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