

Co-operative capitalism: corporate networks in Germany and Britain*

ABSTRACT

This study examines the capital network (ownership) and the network of interlocking directorates among the 623 largest business firms in Germany and the 520 largest in Britain. Three major differences are identified in the structure of these networks in the two countries: (1) In Germany ownership is highly concentrated, i.e., shareholdings – generally by the non-financial sector – tend to be sufficiently large to allow the owners to dominate the firm. In Britain ownership is much less concentrated, with almost half of all shareholdings – generally by the financial sector – amounting to less than 5 per cent of company stock. (2) In Germany – in contrast to Britain – the network of interlocking directorates is closely related to the capital network, i.e., it serves to enhance the power of the owners. (3) In Germany – in contrast to Britain – both networks are concentrated within the same industry, i.e., potential competitors are associated with one another. Germany thus illustrates ‘co-operative capitalism’ whereas Britain exemplifies ‘competitive capitalism’.

People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.

(A. Smith 1979[1786]: 232)

1 REGULATED COMPETITION

According to Chandler (1990), the development of capitalism at the end of the nineteenth century was based upon different forms of market regulation: the USA exemplifies a pattern of competitive capitalism whereas Germany was a model of co-operative capitalism. In his analysis of the differing course that capitalism was subsequently to take in the two countries, Chandler (1990: 395) identifies two events that set the juridical seal on the different patterns of development. One was the passage of the Sherman Act in 1890, which prohibited ‘conspiratorial’ agreements among companies such as those establishing price cartels. The other was the 1897 verdict of the German Supreme Court (*Reichsgericht*) upholding

cartel agreements as legally binding contracts under civil law, even in cases involving a restraint of trade. Thus, intercompany agreements on pricing and supply were enforceable by the courts in Germany but were punishable by law in the USA.

Enactment of the Sherman Act in itself by no means consummated the characteristic pattern of capitalist competition in the USA. Violations of the Act continued and often were not even prosecuted either by the administrative or by the judicial branch of government (Gellhorn 1986: 27). Nevertheless, this Act did serve as the basis for a series of subsequent laws¹ that progressively institutionalized the competitive form of capitalism throughout the USA and proscribed the co-operative form which characterized the market in Germany.

In Germany, the Supreme Court verdict confirming the binding force of price cartels did not mark the beginning of such agreements, but those which had existed previously proved unstable, lacking the force of law behind them. By the inter-war period the 'regulated competition' of cartels had become a fully legitimate and accepted form of market organization in Germany, and virtually every sector of the country's economy was in fact subject to cartel regulation. In 1931, for example, the Economics Ministry registered some 2500 cartels (Feldkirchen 1988: 118). Furthermore, this restriction of economic competition was seen as being in the public interest.² In an address before the 'Verein für Socialpolitik'³ Gustav Schmoller (1906: 249), a leading German economist, summed up the German attitude thus: 'I have always maintained that economic freedom is a blessing only in certain areas, and that ultimately only moderate, sometimes even substantially regulated, competition is healthy.' Abelshauser (1984) even describes Imperial Germany as the first 'post-liberal' state, having succeeded in combining co-operation and competition as well as corporatist regulation and economic innovation.

Chandler traces the different priority associated with competition and co-operation in the two countries to the export orientation of German firms as opposed to the concentration upon domestic market in the USA. The domestic market that American firms faced was large enough that efficient mass production and marketing strategies would generally suffice to guarantee corporate success, and they therefore usually limited their concentration to this market. Such was not the case in Germany, however, where the relatively small size of markets *forced* firms to compete for survival on the world market; here they were under constant pressure to prove their competitive efficiency (Newman 1964). Thus, the cartel agreements that German firms entered into *nationally* represented only one aspect of their *international* survival strategy: cartels were 'internally' co-operative and 'externally' aggressive.

Chandler's view finds support through comparison with another country, Japan, whose rise to economic superpower status likewise rested upon an export orientation. Until the Second World War relations among Japanese companies were dominated by the six large *zaibatsu* – groups of

co-operating firms in various sectors that were under the common leadership of a single clan. Following the War, the American occupation authorities dissolved these corporate groups. However, in the 1950s they managed to recombine, albeit with more autonomy than previously, into groups referred to now as *keiretsu* (Morikawa 1992). As in Germany, regulated competition became an accepted form of market organization, as the pressure that firms faced to look outward increased their willingness to co-operate on the domestic market – what Gerlach (1992) refers to as ‘alliance capitalism’. Only the institutions through which the competition is regulated differ between the two countries; in Japan it is the *keiretsu* while in Germany it is the combine (*Konzern*).

Nevertheless, both the *keiretsu* and the combine represent forms of corporate networks that facilitate intercompany co-operation and the regulation of competition. It is the thesis of the present study that corporate networks in Germany (and in Japan) demonstrate one form and those in Britain (and the USA) another, and that the former tends to be more co-operative and the latter more competitive. German cartels have been superseded by corporate networks which are modernized forms of a regime of regulated competition. These networks may be characterized by a limited number of variables, such as network configuration, concentration of ownership and type of owner.

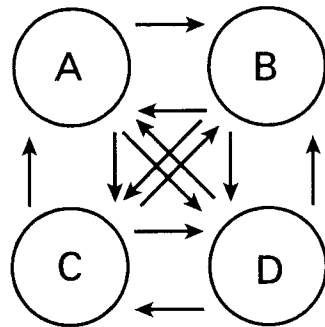
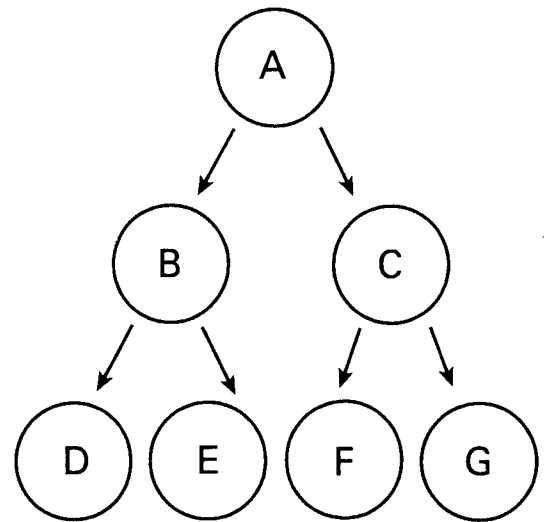
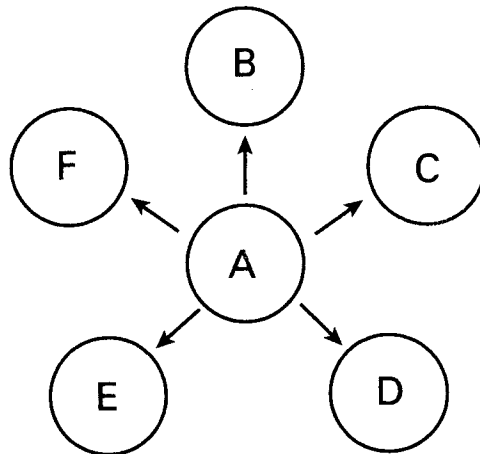
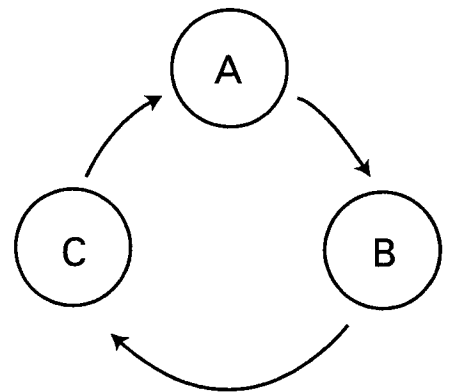
In the following sections an analysis of corporate networks in Britain and Germany will be presented. A data base has been collected on capital networks and on interlocking directorates for the 623 largest German firms and the 520 largest British firms. The next section examines the concept of network configuration and the subsequent analysis compares national networks in terms of ownership concentration and type of owner. It follows then an interpretation of interlocking directorates in both countries. To extend the comparison, data for Japan and the USA were included in some sections, but only where possible on the basis of a secondary analysis.

2 THE STRUCTURE OF CORPORATE NETWORKS

The corporate network is an organizational form that has grown up ‘between’ markets and hierarchies and which possesses a ‘structure’ just as markets and bureaucracies do. Bureaucracies can have centralized or decentralized structures, and flat or steep hierarchies; markets can be characterized by perfect competition or by oligopoly. A number of the various organizational structures that have developed for corporate networks are illustrated below.

Figure Ia presents a *clique*, in which each company is tied to every other company through a series of reciprocal relationships. Cliques show a high degree of integration as a result of the multitude of relationships obtaining among the participants (density). If the capital shares each,

FIGURE I:

FIGURE Ia : *Reciprocal clique*FIGURE Ic : *Pyramid*FIGURE Ib : *Star*FIGURE Id : *Circle*

member holds of the other members are roughly equal, the network can be said to have an 'egalitarian' structure, that is, no single member is in the position to dominate the others. Collective decisions are reached in a reciprocal clique only by consensus. A non-co-operative member, however, can be put under pressure by the other members, for each company is enfranchised to participate in the decisions of every other company in the network, and this say in its affairs can be exploited so as to influence its decisions. Because of this, Williamson (1985: 169) refers to this structure of relationships as one of 'mutual hostage'.

The Japanese *keiretsu* provides an example of a reciprocal clique. Yamauchi (1994: 156) reports that the central member companies of the six *keiretsu* groups hold reciprocally about 2 per cent of shares; all members together then hold some 32 per cent of the stock of each

individual member – enough to repel external affronts (e.g., hostile takeovers) but not enough for any one alone to dominate another. In his study on ‘alliance capitalism’ Gerlach (1992: 77) reports reciprocal relationships among the 60 largest Japanese firms of which 18 per cent are connected by mutual capital participation. In Germany, on the other hand, only five reciprocal relationships can be identified among the 623 largest firms.⁴ The ‘clique’ is not a dominant network configuration in Germany.

The *star* network is represented in Figure Ib, with one dominant firm surrounded by a number of ‘satellite’ companies in which it has a relatively high capital participation. In contrast to the reciprocal cliques, star networks have a hierarchical structure (Baker and Faulkner 1993: 849). In terms of both capital ownership and interlocking directorates, the parent company dominates the subsidiaries which do not interlock with one another, and hence the central enterprise of the network controls all formal communications and decision making. German combines frequently have such a star structure and, therefore, differ from the Japanese *keiretsu* by their hierarchical form and the lack of reciprocal relationships.

If the arrows in Figure Ib were turned around, the structure would be that of an *inverted star*. The ideal-typical structure of capital networks in Britain (and in the USA) is the inverted star with relatively limited participations of several companies in a single large corporation. Firms in the financial sector (pension funds, insurance, investment funds) own 3–5 per cent of the shares of a large enterprise, as for example, in British Aerospace, British Petroleum (BP) and Amec in Britain; or IBM, General Motors, and Ford in the USA (Brancato 1991).⁵ The structure of capital networks in Britain and the USA is *fragmented*⁶ in a way which Scott (1990) terms as a ‘constellation of interest’. Up to 20 financial institutions own a small part of a company’s stock which, as such, is not large enough to yield dominant power. Whereas the star structure has only ‘one chief and many Indians’, as it were, with the inverted star just the opposite is the case.

The *pyramid* structure in Figure Ic is one in which a single dominant firm (A) owns a large share in other firms (B, C) which in turn dominate still further firms (D–F). Through its multi-tier organization the pyramid structure (which actually combines a series of star-patterned groups) enhances the hierarchical character of the corporate network. Firm A invests its own resources to control firms B and C, and can thereby utilize the resources of B and C to exert (indirect) control over firms D–G. The complete structure of a Japanese *keiretsu* consists of a reciprocal clique (of large enterprises) and numerous pyramids (primary and secondary supplier firms) and therefore combines hierarchical with egalitarian features (Gerlach 1992: 102). The pyramid structure is also common in Belgium (Daems 1978), and many German combines also belong to this form of network organization.

Figure Id shows a circular network; here firm A is able through a series

of intermediate steps (indirectly) to own part of itself. The *circle* is a functional equivalent of the reciprocal relationship, and has the effect of strengthening the hand of management *vis-à-vis* shareholders, who in effect stand 'outside' the circle. Through a series of 'vassal' firms a company can conceal its true ownership and indirectly control itself; this is sometimes employed as a protection against external influences (e.g., hostile takeovers).⁷ German banks, insurance companies, and large enterprises in the 'core' component of the capital network are linked to each other by circular capital holdings (Adams 1994: 150); 'circles' are also often exploited in France to ensure family control of large enterprises.

These four configurations do not exhaust all the possible structures that corporate networks can take,⁸ but they illustrate some of the basic patterns that may be combined into more complex forms. While it is often remarked that new organizational forms have developed 'between' markets and hierarchies (Powell 1990), the question as to what *structures* these new organizational forms show is seldom asked, or whether countries differ as regards the typical structures that these take.⁹ So far the structure of different corporate networks has been presented. In the next section we ask which network structures may facilitate co-operation between competing firms.

3 COMPETITION AND CO-OPERATION IN THE CORPORATE NETWORK

A corporate network bound together by ownership and/or interlocking directorates can be regarded as a collective actor whose freedom to manoeuvre is constrained by features of its own organizational structure. Among the possible forms that network structures can take, some are more favourable in promoting co-operation among members and the coordination of common strategies. Examination of the configuration of a network thus indicates the chances of co-operation among its members.

In the clique network each member is dependent upon each other member, and no single member enjoys hegemonical power over the others. Co-operation is made possible by reciprocal dependence, but collective actions require a universal consensus. Cohesion in the Japanese *keiretsu* is further strengthened by the network of interlocking directorates. The reciprocal dependence combines with the group's ethos, and structural and normative elements become mutually supportive in the *keiretsu* clique. 'In the case of what [is] called diffuse reciprocity, co-operation is contingent not on the behaviour of particular individuals but on the continued successful functioning of the group' (Keohane 1986: 6).

Co-operation in the star network is guaranteed by hierarchical coordination. Here the dominant company buys a sufficient proportion of

shares in the firm that it wishes to control in order to ensure that the latter is in a relationship of dependence.¹⁰ German law ascribes to the dominant enterprise the responsibility of combine leadership (Hommelhoff 1982) which is reflected in the structure of interlocking directorates: members of the management board of the dominant firm also sit on the supervisory board of the dependent firm. The combine resembles the *keiretsu* in the high overlap of the capital network with the network of interlocking directorates, but it is different in its structure: Whereas the *keiretsu* is integrated by the group's ethos and by consensus, the combine is governed by hierarchical co-ordination.

The inverse star network can be described in terms of the 'prisoner's dilemma': among the owning enterprises (the periphery of the star) there obtains a balance of power, as the relative capital participation of each is fairly equal to that of the others. Each of these actors, however, has its own specific set of interests, and there no formal organizational structure exists to co-ordinate their behaviour. Co-operation must be *negotiated* on an *ad hoc* basis.¹¹ The ability to take collective action is relatively undeveloped in the inverse star network, as no institutional framework exists to co-ordinate the autonomous shareholders. In a group of 'rational' egoists no one would be prepared to bear the organizational costs of co-ordination. Co-ordination generally results not from co-operation but from competition. Financial institutions which *jointly* own a substantial part of stock in large corporations may follow the option 'exit' or 'voice', but 'voice' requires the coordination of strategies among minority shareholders which is difficult to obtain in a competitive environment.

The network structures which are shown in Figure I are ideal types and the inferences we have drawn with respect to the chances of co-operative behaviour are *hypotheses* which cannot be tested with our data base. We have collected data which allow a structural analysis of capital networks and interlocking directorates in two countries but we cannot test the behavioural consequences of these structures. We shall show in subsequent sections that the 'inverse star' is a dominant network configuration in Britain, but we cannot verify the absence of co-operation among British financial institutions.

4 CONCENTRATION OF OWNERSHIP

Corporate networks can be based upon several types of exchange relationships: capital ownership, interlocking directorates, credit or supplier relationships, joint ventures. The following analysis considers only capital ownership and interlocking directorates, as no information is available on the other forms of networks. Data on corporate networks for 1992/93 have been collected for the 623 largest firms in Germany and the 520 largest firms in Britain.¹²

TABLE I: *Distribution of stock ownership in Germany and Britain: Proportion owned in the 500 largest firms in each country (1992)*

Type of owner	Proportion of stock owned (%)												Total	
	-4.9		5-9.9		10-24.9		25-49.9		50-74.9		75+		Total (%)	
	G	GB	G	GB	G	GB	G	GB	G	GB	G	GB	G	GB
Individuals/families*	19.2	7.1	17.2	8.1	12.3	25.3	18.4	37.0	22.6	16.0	21.1	2.2	18.9	10.1
Non-financial firms:														
Domestic	19.2	6.3	25.0	4.5	30.1	12.4	21.1	10.9	49.2	8.0	46.3	20.9	36.1	7.3
Foreign	6.4	1.8	6.3	2.9	2.7	7.2	5.3	26.1	9.4	12.0	21.4	72.5	11.7	7.0
Financial firms:														
Banks	20.5	13.4	20.3	8.8	23.3	5.2	18.4	6.5	2.8	4.0	0.6	2.2	10.8	10.2
Insurance	16.7	23.8	26.5	21.3	12.3	4.1	19.3	6.5	3.8	-	4.2	2.2	10.6	18.8
Funds**	2.5	47.3	3.1	53.7	8.2	45.8	3.5	13.0	0.9	-	0.6	-	2.8	44.6
Public bodies	15.4	0.3	1.6	0.7	11.0	-	14.0	-	11.3	60.0	5.8	-	9.1	2.0
Total														
	N= 78	901	64	577	146	194	114	46	106	50	313	91	821	1859
	%= 9.5	48.6	7.8	31.0	17.8	10.5	13.9	2.6	12.9	2.4	38.1	4.9	100	100

Notes:

Unit of analysis: shareholdings (= proportion of stock).

Germany (G): N = 821; Britain (GB): N = 1859.

Each column adds to 100%, which means that each column category (= size of shareholding) can be compared between the two countries. For example: 78 holdings in Germany (= 9.5%) but 901 in Britain (= 48.6%) make up less than 5% of company stock. In the case of Germany these 78 holdings are distributed as follows: 19.2% to individuals/families, 19.2% to domestic non-financial firms, 6.4% to foreign non-financial firms, 20.5% to banks, 16.7% to insurance companies, 2.5% to investment funds, and 15.4% to the government and other public bodies (e.g., labour unions). The bottom row adds separately for Germany and Britain to 100% and presents the percentage of holdings in each country falling within the respective share-size category. The two last columns give the proportion of shares in each country owned by the respective type of owner.

* Includes (family-) foundations. It was not possible in each case to determine whether family ownership was concealed behind the foundation.

** German sources designate only few investment funds (Vermögensverwaltungs-Gesellschaften) as owners; in Britain investment funds hold 44.6% of all shares (see last column). At the time of data collection (1992), only shareholdings equal to or larger than 25% have to be published in Germany; in Britain shareholdings equal to or larger than 3% had to be published. The different legal requirements to notify shareholdings in the two countries do not affect our main conclusions, since the *large* shareholdings have to be notified in both countries.

Table I describes the ownership structure of German and British enterprises in terms of two features: proportion of stock owned and the type of owner.¹³ For the 500 largest German firms 821 shareholders were identified, and for the 500 largest British firms, 1859. The concentration of ownership (last row) in Britain is relatively low: 48.6 per cent of shareholders own less than 5 per cent of company stock, and only 4.9 per cent own more than 75 per cent, while no more than 7.3 per cent control a majority interest.¹⁴ In Germany the concentration is higher: only 9.5 per

cent of holdings are smaller than 5 per cent, and 38.1 per cent are larger than 75 per cent, with 51 per cent commanding a majority interest in the firm. This greater concentration of holdings means that in many large German companies only one shareholder exercises effective control over the company.

The second structural difference concerns the type of owner. In Britain investment funds hold 44.6 per cent of shares, and a total of 73.6 per cent are owned by the financial sector (last column), whereas in Germany 36.1 per cent of shares belong to domestic firms not in the financial sector while those that are in the financial sector hold only 24.2 per cent. This means that a *majority* interest in a high proportion of German firms belongs to other, non-financial firms. These data indicate an initial difference in the structure of corporate networks: the combine structure is the dominant pattern in Germany whereas the 'inverse star' configuration characterizes the ownership structure in Britain, with a relatively high number of institutional investors owning only limited shares in large companies.

The percentage of stock in Germany possessed by individuals, families, and (family) foundations is noteworthy: 18.9 per cent of all holdings (versus 10.1 per cent in Britain). Even among large holdings the proportion belonging to private persons is high: 21.1 per cent of holdings accounting for at least 75 per cent of the company stock (versus 2.2 per cent in Britain) and 22.6 per cent of those between 50 per cent and 74.9 per cent (versus 16.0 per cent in Britain).

Studies of the ownership distribution structure of the largest firms in the USA and Japan¹⁵ show that the five largest owners hold an average of 24.4 per cent of stock in the former and 33.1 per cent in the latter. Assuming an equal distribution of these holdings among the five largest owners¹⁶ would give an average of approximately 5 per cent in Japan and 6.5 per cent in the USA, thus resembling the actual case in Britain. From other sources, however, we know the corporate network patterns in Japan and the USA differ, in that the former has the typical 'clique' form and the latter the 'inverse star' configuration. This demonstrates that various distribution structures can be combined with differing network configurations. An analysis that only considers the concentration of ownership without looking at the network *configuration* may miss the point: the power relationship within a network of companies.

Since the early 1970s the structure of ownership and control in large corporations has been changing in many countries to give rise to a new type of capitalism which has often been termed 'institutional capitalism' (Rappaport 1990; Clark 1980).

The owners of the largest modern enterprises are other enterprises, which are, in turn, owned by yet other enterprises. . . . In this system enterprises are linked to one another through chains . . . of never-ending circles of connection – 'vicious' or 'virtuous' circles according to taste'. (Scott 1986: 1)

Banks, insurance companies and pension funds have replaced individual shareholders and have shifted the balance of power between managers and owners in favour of the latter.

Individuals and families have become less important as shareholders whereas non-financial enterprises and financial institutions gained a dominant position as owners of large corporations. In 1950 individuals/families owned 42 per cent of all shares in (West) Germany, non-financial firms 22 per cent and financial institutions 2.7 per cent; by 1979 these percentages had changed as follows: individuals/families 19.2 per cent, non-financial firms 40.4 per cent, and financial institutions 13.2 per cent.¹⁷ A similar development is observed in Japan. In 1949 about 70 per cent of all shares were owned by individuals/families; 5 per cent by non-financial enterprises; and 15 per cent by financial institutions. In 1985, the proportion of individual shareholdings had dropped to 25.5 per cent, whereas non-financial firms held 25.6 per cent and financial institutions 45 per cent of all shares (Gerlach 1992: 60). In the USA the institutional shareholders have become more and more important during the last two decades: in 1950, they held 8 per cent of all shares; in 1980 33 per cent, and in 1988 45 per cent (Coffee 1991: 1291).

Our cross-national comparison has shown that there is more than one type of 'institutional capitalism' and that these types vary with the legal and cultural environment within which large public corporations operate. We have identified three dimensions which characterize different variants of 'institutional capitalism': the network configuration which furthers co-operative or competitive relationships among firms; the concentration of ownership which may be high (Germany) or low (Britain); and the type of shareholder which may be a financial institution (Britain, USA) or a non-financial firm (Germany). Cross-classifying these dimensions we obtain different types of 'institutional capitalism' which provide a more accurate picture of the evolution of ownership and control in the advanced countries.

The managers of the central company in large German combines are managers *and* owners: They are managers of the parent company *and* represent the owner towards the dependent companies (see Figure Ib). In institutional capitalism owners have recaptured power from managers, but the puzzling fact is that the owners are managers.¹⁸ Managerial power and the power of ownership are not divorced in institutional capitalism but they join and reinforce each other.

5 THE STRUCTURE OF CAPITAL NETWORKS

The data presented in Table II demonstrate that the 'star' pattern is a dominant form of corporate networks in Germany while the 'inverse star' is more frequent in Britain. Figure I gives an intuitive idea of national

TABLE II: *The structure of capital networks in Germany and Britain (1992)*

Position of firm in network	G (%)	GB (%)
Parent/outdegree		
One participation	6.7	1.5
More than one participation	5.0	2.5
Subsidiary/indegree		
One owner	32.9	24.8
More than one owner	7.9	38.2
Intermediary	13.6	8.6
Isolated	33.9	24.4
Total	100	100

Notes:

Unit of analysis: firms

Germany: N = 623 firms; Britain: N = 520 firms

differences in network configurations, whereas Table II provides the empirical evidence for these differences.

Each of the companies examined was assigned to one of the categories in Table II. 'Parent' here refers to a company owning part of one or more other companies, without itself being owned by another large company in our data matrix (only outdegree),¹⁹ and 'subsidiary' to one belonging to one or more other companies, without itself owning another company. An 'intermediary' is one which both belongs to other companies, and which owns still others in our data matrix; these are situated within a pyramid network (see Figure 1c) dominant *vis-à-vis* those at the lower hierarchical levels but subject *vis-à-vis* those at the higher levels. 'Isolated' companies are those which have no (capital) relationship with any of the other companies examined here.²⁰

The data on Germany in Table II are drawn from 623 firms. The set of their reciprocal relationships gives a network matrix of $623 \times 623 = 387,506$ cells, of which 628 are non-empty, which gives a density of 0.162 per cent. The larger a network matrix, the smaller is the density coefficient because any single firm can realize only a fraction of all possible network opportunities. Similar considerations apply in the case of the British matrix (density 0.299 per cent).

The rows of the matrix show in which other firms a particular company participates (outdegree), and the columns show to which other firms it belongs (indegree). Every firm has a network *structure*, i.e., it has a particular configuration as shown by its indegree and outdegree; it was on the basis of this structure that it is categorized in Table II.

A total of 11.7 per cent firms are parent companies (outdegree) in Germany and thus constitute centres of hierarchical control. These include not only banks and insurance companies but also many enterprises in the manufacturing and service sectors as, for instance, Daimler

Benz (Mercedes), Volkswagen and Siemens. This compares to only 4.0 per cent in Britain, where the respective firms are almost exclusively those of the financial sector and participate only rather minimally in the other large enterprises.

An important structural difference between the two countries is found regarding the indegree: in Britain 38.2 per cent of all firms show multiple ownership, with most shares being smaller than 5 per cent (as seen in Table I), but in Germany only 7.9 per cent do so. Most subsidiary firms in Germany have only one parent (32.9 per cent), which generally enjoys a controlling interest; in Britain, on the other hand, most subsidiary firms have multiple parents, no one of which commands a position of dominance. The data in Table II thus confirm to some extent the combine nature of German corporate networks (star pattern) and the 'inverse star' configuration in Britain.

6 A TYPOLOGY OF COMBINES

A comparison of the matrix of capital networks in Germany with that in Britain shows a major difference in the networks of the two countries: in Germany many firms of the non-financial sector are interlocked with other firms of the non-financial sector, while this is rarely the case in Britain (and the USA, see Davis et al. 1994: 556). What is the reason for this difference?

Both countries have witnessed economic concentration, as certain large firms have absorbed others, but the structure of corporate networks in the respective countries nevertheless differs. A firm that is absorbed by another generally retains its independence as a legal entity in Germany while in Britain (and the USA) it typically ceases to exist outside of company-internal structures, thus losing not only its economic but its legal independence as well and becoming merely a division or 'profit centre' of the new parent (Baker 1992).

Does it make a difference whether a subsidiary that is 100 per cent the property of a parent retains its legal independence from the parent or is completely absorbed within it? Is this independence nothing more than a mere façade for the pretense of economic autonomy? To answer these questions one must first consider the distinctions in German corporate law among different types of combines.

In 1965 (West) Germany became the first Western industrial nation to pass a law on corporate combines which defines the rights and responsibilities of owners when these are not individuals but rather, themselves, other enterprises.²¹ The law on corporate combines pertains to interlocking firms and regulates relationships 'between' markets and hierarchies, which is the subject of the present analysis. German Combine Law recognizes that increasing numbers of firms belong to others, i.e. that firms own firms and that it *makes* a difference of whether owners are

individuals or corporations (Windolf 1994). It follows a brief description of two types of combines as defined by German Combine Law to show that the configuration of networks in Germany – as in other countries – is shaped by the institutional and legal environment.

(1) In a *de facto combine* there is a relationship of economic dependence between parent and subsidiary, but the organs of the subsidiary (management board, supervisory board) are required to continue representing the specific interests of the subsidiary. The dependent firm is an independently functioning unit, and its management must guarantee the maintenance of this organization. The *de facto* combine involves economic dependence, but 'at arm's length'; subordination to combine direction, but autonomous running of the firm's own business; co-operation on 'common' interests, but protection of the firm's own specific interests. It is this mixed nature of relationship that makes the *de facto* combine an exemplary organizational form 'between' markets and hierarchies.

In the *de facto* combine the relationship between parent and subsidiary is no longer regulated through the market. The dominant of the two firms is able to influence the behaviour of the dependent firm in a way that would not be permitted in the market. Complete subordination is nevertheless avoided, and therewith the inefficiency associated with large bureaucracies. A *de facto* combine comprises a system of semi-autonomous companies stabilized by legal regulation and hierarchical coordination.

The dependent firm enjoys a degree of autonomy and is responsible for its own debts. The principle of limited liability applies in *de facto* combines, with the parent liable only to the extent of its participation in the stock of the subsidiary.

(2) In the *contractual combine* an 'enterprise contract' binds parent and subsidiary, stipulating that the former may mandate certain actions on the part of the latter even if these are disadvantageous to it (Windolf 1993). Here it is therefore possible to do that which is precisely forbidden in the *de facto* combine, i.e., act against the interests of the dependent firm. On the other hand, the parent firm in a contractual combine is liable for all the debts incurred by the subsidiary. The legislation on combines intended this as the standard form of combine: the enterprise contract sets out clearly both the ultimate power of parent *vis-à-vis* the subsidiary and its ultimate liability as regards debts. The practice, however, has proven otherwise: the most frequent form of corporate network in Germany is not the contractual but the *de facto* combine.²²

An enterprise contract can be concluded between two firms when the parent controls at least 75 per cent of the stock in the subsidiary. Our sample included 313 cases of this level of participation; however, among these we counted only 54 cases (17 per cent) of enterprise contracts. Since we can presume combines involving less than 75 per cent capital

participation to be of the *de facto* type, it is safe to say that the majority are of this type.

The difference between a British (or an American) firm and the *de facto* combine in Germany lies in the (limited) autonomy enjoyed by the subsidiary in the latter type and the resulting privilege of limited liability. A 'profit centre' or a 'division' does not constitute a legally independent subsidiary. This explains why we have included legally independent subsidiary firms in our network matrix even when the firms in question belong entirely to another.²³ One must also consider that the legal independence of the subsidiary increases the opportunities for interlocking relationships in the overall system. If the subsidiary were to be completely absorbed, it would cease to have a supervisory board, which is the meeting place for interlocking directors.²⁴

7 SECTORAL NETWORKS

A cartel is a group of firms in the same economic sector that form an association for the purpose of controlling prices and/or production. In the inter-war period virtually all economic sectors in Germany were subject to cartel agreements. If it is the case that this form of 'regulated competition' continues to influence the structure of corporate networks in Germany, one could expect to find more intrasectoral than intersectoral networks, that is, the interlocking structures would bind firms with one another that are in the *same* economic sector more frequently than they would firms in *different* economic sectors. The association of the combine structure (hierarchical co-ordination) with intrasectoral networks creates favourable circumstances for the co-ordination of competing firms.

We have computed two matrices which show the capital network (ownership) within and between economic sectors both in Germany and Britain. The figures in the matrix are standardized density coefficients that represent the frequency of relationships between firms of different (same) economic sectors. Because of lack of space the two matrices are not printed here but are available upon request from the authors.²⁵ The coefficients on the diagonal refer to the network density *within* the individual sectors. Virtually all of the highest coefficients in the matrix for Germany are on this diagonal, which means that German firms form interlocking networks principally with other firms in the *same* economic sector. This confirms the thesis of 'regulated competition' in the German market. The combine is thus a group of firms in the same or closely related economic sector(s) that comprises the functional equivalent to the pre-war cartel. The highest intrasectoral network density is found in the sectors of gas and petroleum (32.1), mining (23.8), and insurance (23.3).²⁶

We have also computed the marginals²⁷ for the matrix of capital ownership in Germany and these marginals show that the strongest network activity (outdegree) are found in the sectors of banks and savings

associations (6.0) and gas and petroleum (5.5). In the sectors of mining (4.2) and nonferrous metals (3.8) there is a relatively high proportion of dependent firms (indegree).

One might argue here that the only reason why the intrasectoral density is so high in Germany is that the purely subsidiary firms (100 per cent dependence) are included in our dataset. To test this objection we eliminated all firms with 95–100 per cent dependence and calculated a new matrix.²⁸ The coefficient for intrasectoral density is highest in 18 of the 21 sectors in our original matrix; when the 95–100 per cent dependent firms are excluded, the intrasectoral coefficients are still highest in 12 of the 21 sectors. Although the existence of pure subsidiary firms does increase the intrasectoral density, even without these considerable interlocking is evident among the firms within most sectors.

The capital network matrix for Britain differs from that for Germany in two respects. First, in only 7 of 30 sectors is density highest within the sector (highest coefficient on the diagonal). In contrast to the German matrix, no pattern is evident here regarding the highest coefficients, and the distribution seems to be random. Second, the capital network matrix for Britain shows a clear participation by financial institutions in firms of the other sectors. The highest coefficients for network activity across all sectors (outdegree) are those for banks (23.9) and insurance (28.5).

The *intrasectoral* network activity is clearly lower in Britain than in Germany. British firms are often in association with firms in other sectors (conglomerates), and those in the financial sector with others in non-financial sectors. Networks among competing firms are rare and the structure in the British matrix is more compatible with a model of market regulation.

8 INTERLOCKING DIRECTORATES

The existence of an interlocking directorate can provide an enterprise the opportunity to exert power and influence over another.²⁹ A member of the management board of one firm who is elected to the supervisory board of another is enfranchised to take part in company decisions, can demand delicate information from the management, and can attempt to influence his colleagues on the board. Why does a company extend to another this power over it? Below, four potential answers are put forward to this question, which provide hypotheses on the importance of interlocking directorates (Koenig et al. 1979).

(1) The thesis of *resource dependence* begins by observing that firms are not self-sufficient but depend upon resources from their environment. These resources include goods, services, and information which are essential for the survival of the firm, and the acquisition of which is problematic. Firms develop strategies to reduce their environmental dependence, one of

which are interlocking directorates. The theory of resource dependence sees the structure of the interlocking directorates as reflecting the environmental dependence of the enterprise (Pfeffer 1992); thus, one would expect to find an interlocking of the enterprise with those organizations upon whose goods and services it is especially dependent.³⁰

(2) Almost all firms are dependent upon capital in the form of credit or securities. As a result, firms in the non-financial sector generally depend in some way upon institutions in the financial sector (banks, insurance companies). This dependence gives rise to the thesis of *bank hegemony*. The financial sector can exert influence upon the non-financial sector because the latter is dependent upon this difficult-to-acquire resource which the former controls. A number of studies have shown the interlocking directorates between financial and non-financial sectors to be particularly dense and that this network reflects the dependence upon capital. The centrality of banks and insurance companies in those networks is often taken as an indicator of the importance of financial institutions (Mintz and Schwartz 1985; Ziegler et al. 1985).³¹

(3) German corporate law prescribes that the shareholders' meeting elect the supervisory board, and that this board appoint the management board (executive managers) and supervise its practices. This set of relationships is intended to guarantee the influence of shareholders over the running of the company. However, in addition to these formal procedures there exist informal recruitment channels which have the effect of counteracting the legal stipulations. A list of candidates for the supervisory board are proposed by the management board to the shareholders, who then ratify the list. The managers recruit as their own 'supervisors' persons whom they know and trust, thus giving rise to an 'old boys network'. This is the case not only for supervisory boards in Germany but also for 'external' directors in the USA (Brudney 1981) and Britain. The third thesis is that interlocking directorates stabilize *managerial domination*. The supervisory board is not actually elected but merely co-opted, and this in fact means that the influence of the owners is effectively negated. The supervisory board is supposed to be a puppet in the hands of executive managers.

(4) Networks strengthen the *social cohesion* of a group (Friedkin 1984). The more dense a set of social contacts, the more integrated and capable of undertaking concerted action it is (see Figure 1a, clique). In managerial capitalism, in which the control of the enterprise is entrusted to its managers, interlocking directorates are an important instrument for strengthening the social cohesion of the economic elite. Useem (1984) maintains that the 'big linkers', i.e. managers with three or more positions in the network, are particularly prominent in sponsoring the interests of large enterprises. In his view, the structure of interlocking directorates is

TABLE III: *Overlap of interlocking directorates with capital network: Germany and Britain (1992)*

	Size of shareholdings (%)					
	-9.9	10-24.9	25-49.9	50-74.9	75-94.9	95-100
G (%)	22.5	50.6	61.5	68.8	51.3	64.8
GB (%)	0.8	7.1	*	*	*	12.5

Notes:

Unit of analysis: Shareholdings; Germany: N = 575; Britain: N = 808

* Fewer than 10 cases in the capital matrix.

Interlocking directorates: only directed (primary) relationships

diffuse, and neither a resource dependence nor a bank hegemony can be discerned. Because of this the 'big linkers' are not tied to the promotion of company-specific goals but can represent an overarching class interest. The network of interlocking directorates thus enhances the social integration of the economic elite.

These are the principal hypotheses that have been put forward to explain the structure of the network of interlocking directorates. We test them below on the basis of our data on such networks in Germany and Britain.

First, Table III examines the degree to which the interlocking of directors and that of capital are related to one another, and reports the percentage of cases at each level of capital participation in which the parent firm sends a member of its management board to sit on the supervisory board of the subsidiary. In Germany the overlap of the two networks is rather strong: a director is sent in 22.5 per cent of cases with capital participation under 10 per cent and in 50.6 per cent with participation between 10-24.9 per cent. In Britain, however, there is only negligible interlocking: in our matrix of British data 88.5 per cent of all cases involve participation of under 10 per cent, and at this level 0.8 per cent of firms send a manager as non-executive to the board of directors of companies of which they are part owners.³²

The relationship between capital networks and interlocking directorates can also be observed to some extent in Japan. On average 11 per cent of the members of boards of directors in Japanese firms come from the boards of other firms in the same *keiretsu* group (Yamauchi 1994). However, in contrast to the case in German firms, the overall coordination of the group derives not from the dominance of a single firm but through the agreements reached at the weekly meetings of the presidents of the various *keiretsu* members (*shachokai*).

In Germany concentration of ownership is high, i.e. firms own high proportions of stock in other firms and the degree of overlap between the

two networks is also high; in Britain concentration of ownership is low and the degree of overlap between the two networks is also low. Thus, in Germany interlocking directorates are used to strengthen the hand of the parent in the affairs of the subsidiary, for the parent's presence in the decision-making bodies of the subsidiary guarantees it an influence in planning the strategic course of the latter. In the case of a combine, erecting a comprehensive network of interlocks makes it possible to unite its various associated firms behind a common policy.³³

In Britain there are no combines, as are common in Germany. As noted above, most of the network associations in the British data matrix are between firms in the financial and non-financial sectors, and although banks and insurance companies may invest simultaneously in several firms, the extent of capital participation rarely exceeds 5 per cent in any of them. The costs would be prohibitively high for establishing a comprehensive network of interlocking directorates under these circumstances. Even if the financial institutions have a strategic interest in the firms that they invest in they would not be able to establish interlocking directorates with them, since they are part owners of too many of them.

We now turn to a comparison of the *sectoral* structure of interlocking directorates in the two countries. For each of the two countries we have computed a matrix which shows interlocking directorates (density) by industry.³⁴ We have noted above, first, that capital networks in Germany are concentrated intrasectorally, and, second, that German corporate networks tend to be based on the interlocking of both capital and personnel with the same firms (Table III). Therefore, it is not surprising to find that the interlocking directorates of German firms are also concentrated *within* rather than between economic sectors. This structure of interlocking directorates provides additional support to the thesis of regulated competition and co-operative capitalism in Germany (Schönwitz and Weber 1982: 18).

The structure of the marginals in the matrix (outdegree) illustrates the strong position of German banks in the network of interlocking directorates: banks are the firms that most frequently send representatives to the supervisory board of other firms (18.3). The next highest coefficient (gas and petroleum is only 8.5; similar results are reported in a study by Ziegler et al. (1985)). The question of whether these findings support the 'bank hegemony thesis' is difficult to answer given the type of data we have collected. We can show that banks are most central in the network of interlocking directorates but whether this structural configuration really entails bank hegemony cannot be verified with the type of data we have collected.

As for the matrix of capital networks, the matrix on interlocking directorates in Britain shows no clear pattern. In only two out of 30 sectors is the intrasectoral coefficient (diagonal) higher than the intersectoral ones.³⁵ The dominance of the financial sector, which was evident in the matrix for capital networks has disappeared. The fact that British banks

and insurance companies lack significantly higher outdegree coefficients contradicts the bank-hegemony thesis for that country. Banks do, however, have the highest indegree (4.1) of all sectors. This figure shows British banks to be a meeting place for managers from other industrial sectors: German banks *send* managers to other sectors, British banks *receive* the managers from other sectors on their boards.

Table IV contains a part of the matrices on interlocking directorates in Germany and Britain, namely that part with the highest network density. Clique analysis was used to identify a core component of 15 firms with the highest density. The figures in the table are the sums of directed and undirected interlocking directorates. The largest and most prestigious German corporations, such as Allianz (insurance), Daimler Benz (Mercedes), Volkswagen, Deutsche Bank are connected to each other by interlocking directorates. For instance, the same five directors sit on the supervisory board both of Allianz (4) and of Deutsche Bank (15). It would be hard to find a core component with such a high density in any other Western country. In the case of Britain one can hardly speak of a core component, as the density of the network is substantially lower than in Germany, and the network does not show every degree of closure (clique) that is attained in Germany (see the cross-national studies in Stokman et al. 1985).

In summary, we can observe that interlocking directorates in German enterprises parallel capital networks; that they are concentrated particularly within rather than between economic sectors; that they support and strengthen the power of ownership; and that there is a core component to which the largest corporations in the country belong. None of these features can be maintained in the case of British companies.

9 INTERLOCKING DIRECTORATES AND INTEREST REPRESENTATION

In Germany the principal organizations representing corporate interests in the political system and *vis-à-vis* labour unions and other social groups are the Federation of German Employers (Bundesvereinigung der Deutschen Arbeitgeberverbände, BDA) and the Federation of German Industry (Bundesverband der Deutschen Industrie, BDI). This section examines the hypothesis that the leadership of these organizations is recruited principally from the network of those sitting on many management and/or supervisory boards of the largest enterprises (so-called 'big linkers' or multiple-directors).

On the management/supervisory boards of the 623 largest German firms one can identify a total of 1,423 multiple-directors with two or more positions in the network. In his study on firms in the USA and Britain, Useem (1984) demonstrated a personal union between the leaders of formal interest organizations and the network of 'big linkers'. The directors of large enterprises who occupy multiple positions in the,

TABLE IV *Interlocking directorates — core component**

															Germany															Britain														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	2	1	2	1	2	1	2	1	2	1	1	1	1	2	1	2	1	2	1	2	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	2	2	1	1	1	1	2	2	2	2	1	1	2	2	2	1	1	2	2	1	2	2	2	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	2	1	2	2	4	1	2	2	1	1	2	1	2	2	2	1	2	2	1	2	2	2	2	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	3	2	1	1	1	2	1	1	2	2	2	1	1	5	1	1	2	1	1	2	2	1	2	2	2	1	2	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	2	1	2	2	2	1	2	1	1	2	1	1	1	1	2	2	1	2	2	1	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6	1	1	2	1	2	2	3	1	1	1	1	2	1	2	2	2	1	2	2	1	2	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
7	1	1	4	2	1	2	2	1	3	1	1	2	3	2	2	2	1	2	2	1	3	2	2	2	1	2	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	2	1	2	2	2	2	1	1	1	2	1	2	2	2	1	2	2	1	2	2	2	2	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9	2	3	2	1	1	1	1	3	2	2	2	1	3	1	3	3	1	1	1	2	2	1	3	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
10	1	2	2	2	1	1	3	1	2	1	1	1	1	1	3	3	1	2	2	1	2	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
11	2	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
12	2	2	1	1	1	1	1	2	1	2	1	2	1	2	1	1	1	1	2	1	2	2	2	2	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
13	1	1	2	1	2	2	2	2	1	2	1	1	1	2	2	2	1	2	2	1	2	2	2	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
14	1	2	1	2	1	1	2	1	1	2	1	1	2	2	2	2	1	1	2	2	1	2	2	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
15	1	3	2	5	1	1	3	1	1	1	1	1	1	1	3	3	1	5	1	1	3	3	3	3	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

1 RWE AG
2 VEBA AG
3 Karstadt AG
4 Allianz AG Holding
5 Daimler Benz AG
6 Linde AG
7 Thyssen AG
8 MAN AG
9 Münchener Rück AG

density: 1,28

1 Barclays Bank
2 The BP Company plc
3 ICI plc.
4 Marks & Spencer
5 BAA
6 Smithkline Beecham
7 Bass plc.
8 British Airways
9 Whitbread plc.

density: 0,20

10 Kingfisher
11 Thorn EMI plc.
12 De La Rue plc.
13 Unilever
14 The Telegraph
15 Prudential Corp.

-Note

* Directed and undirected relationships

TABLE V: Officers of BDI/BDA* recruited from the network of 'big linkers' (1992)

	Number of positions in the network				
	0	1	2-3	4-6	7+
N = 82	28	16	21	10	7
Σ 100%	34.1	19.5	25.7	12.2	8.5

Note:

* BDI and BDA are the leading German interest organizations representing business interests.

network are also found more frequently in interest organizations for business, on government consulting bodies, and as sponsors for cultural institutions (e.g., theatre, universities).

As a result of their activities in various large organizations multiple-directors tend to transcend the narrow perspectives of company-specific interests and to represent instead the overall interest of big business. This role is further supported by the myriad social contacts that result from these activities, which also strengthen the cohesion and homogeneity of the group. Useem argues that the network of multiple-directors has the political functions of homogenizing the economic elite, aggregating business interests, and articulating them to the political system. Thus, the *formal* interest organizations and the *informal* network of multiple-directors can be seen as complementing one another.

To determine the degree of overlap between formal and informal systems of interest representation we first listed those persons with some form of leadership position (e.g., president, honorary president, trustee, business manager) in either the BDI or BDA³⁶ and then sought these names among the 'big linkers' who connect the 623 largest German firms. The list included the names of 82 organization officers, almost half (46.4 per cent) of whom had at least two positions in the informal network: 25.7 per cent had two or three positions and 8.5 per cent had seven positions or more (see Table V).

These data thus verify the hypothesis that the two principal interest organizations representing German business recruit their leadership largely from the network of multiple-directors among the nation's largest enterprises. One can assume the proportion of multiple-directors would decline in less centrally located interest groups.

10 CONCLUSION

The present study analysed capital networks, interlocking directorates, and the *relationship* between them. For Germany it was shown that interlocking directorates cannot be understood apart from the capital

network. A high proportion of interlocking directorates reflect the capital network and serves to strengthen and ensure the power of the owner.

This should not be taken to mean, however, that the interlocking directorates are merely an 'epiphenomenon' of the underlying property relations. In countries where the separation between ownership and control has progressed further than in Germany (e.g., in Britain and the USA) and where many large enterprises belong to a fragmented ownership, it is possible for interlocking directorates largely to divorce themselves from effective control by 'property'. In fashioning the personnel network, such company managers can pursue their own interests undisturbed by owners. Such independence is not possible in Germany. As shown in Table I, over half of all capital participations in Germany provide a single owner with a controlling interest in the company. Under these circumstances the dominant role that interlocking directorates can play lies in shoring up the strategic interests of the owner.

In (British) institutional capitalism there are two characteristic features of the capital network: the interlocking between financial and non-financial sectors is intense, and the shares held by the former in the latter are too limited to permit financial institutions to assume a dominant position ('many chiefs, few Indians'). In this context the question of the relative power between owners and managers remains undecided, and neither can therefore instrumentalize the network of interlocking directorates exclusively for their own interests. This may well be the reason why, as we have seen, there is no real pattern to the interlocking directorates among firms in Britain.

In Germany the 'regulated competition' (cartel) which had become a legitimate model of market organization by the end of the nineteenth century was superseded after the Second World War by the combine structure. There a number of factors favoured co-operation among competing companies: the high concentration of ownership; the related network of interlocking directorates; a core component uniting the largest enterprises into a single 'clique' unlike that in any other Western industrial country; the integration of the banking sector in the interlocking directorates and its dominant role in this network; and the personal union between the formal interest organizations for business (BDI, BDA) and the informal network of multiple-directors. This structure of interlocking capital and personnel is an example of 'co-operative capitalism' and this type of market regulation permits structures of corporate networks which would not be accepted in a 'competitive capitalism'.

Interlocking directorates fulfill two – mutually contradictory – functions. The members of the supervisory board are supposed to supervise the company directors and prevent the misuse of their power. At the same time, however, they are part of a general network uniting the business elite, which serves its social integration and cohesion, and to which the individual economic leaders owe their positions. Conflicts of course arise between these two functions, and due to its personal importance for the

individuals involved, the function of social cohesion generally proves the stronger.

In 'institutional capitalism' firms own firms and the owners are usually financial institutions. We have shown that the structure of institutional capitalism differs between the countries compared and that there are at least three dimensions which characterize different types of ownership and control: the network configuration (Figure I); the type of owner (financial/non-financial firm); and the concentration of ownership (high in Germany, low in Britain). In institutional capitalism the balance of power has shifted in favour of the owners, but the owners are firms which are represented by managers. Managerial power and ownership join and reinforce each other in a network of companies which own other companies and are owned by them.

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NOTES

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1. For example, the Clayton Act in 1914 and the Celler-Kefauver Act in 1950. Fligstein (1990) sees the characteristic form of corporate merger in the USA (the conglomerate) as a reaction to the country's anti-trust legislation.

2. Cartels imposed restrictions not only on minimum but also on maximum price levels. The goal of German cartel agreements was thus not profit maximization but rather the legitimation of commonly approved profit margins, and in this they therefore differed from trusts in the USA (Passow 1930). Cartels, as well as business interest organizations and labour unions, were integrated into the 'corporatist' regime in Germany (Schmitter 1974). See also the discussion of 'organized capitalism' in Winkler (1974).

3. The 'Verein für Socialpolitik' had among its founding members Max Weber and was the most prestigious German professional association for the social sciences at the turn of the century.

4. These included, for instance, the reciprocal network of capital between

'Allianz Holding' and 'Dresdner Bank' and 'Allianz Holding' and 'Münchener Rückversicherung'.

5. In the USA there is a statutory limit of 5 per cent set for the participation of banks in non-financial firms (Roe 1991: 18).

6. 'Fragmented' is not meant here as diffuse ownership. The five largest shareholders in the USA own an average of 28.8 per cent of the stock in the 500 largest companies (Shleifer and Vishny 1986: 462). In public corporations which are in 'diffuse' ownership no single shareholder holds more than 1 per cent of the total stock. For Britain see Scott (1986) and Table I.

7. On the *structure d'autocontrôle* in France see Morin (1974: 43; 1989). In Germany public corporations are not allowed to buy/hold their own shares. This legal barrier is circumvented by the 'circle'.

8. See Burt (1982: 56), for example, on the various forms in which three firms can be interlocking with one another (triad census).

9. There are a few comparative

studies on capital networks and interlocking directorates, as for instance, Gerlach (1992) who compares the structure of corporate networks in Japan and the USA, and Scott (1986) who presents a similar analysis for Britain, Japan, and the USA. The research project of Stokman et al. (1985) examined the structure of interlocking directorates in ten countries.

10. This does not necessarily mean control of over 50 per cent of stock in the subsidiary. An effectively *controlling* interest may be secured by less than 50 per cent provided the rest is in diffuse ownership. German firms may buy high proportions of stock of public corporations without being forced by law to make a public offer to the remaining shareholders.

11. Scharpf (1985:339) speaks of a 'bargaining' modus, and Williamson (1985: 21) of 'haggling'. Scott (1986: 114) has shown that institutional investors (insurance companies, pension funds, investment funds) own only a small proportion of shares of the large enterprises in Britain, and that there exists no (demonstrable) co-operation among share owners.

12. The data are from the research project 'Corporate Networks in the European Union' at the University of Trier (Germany), under the direction of the authors; other participants in the project are Maïke Becker, Thorsten Lange, and Viola Peter. A more detailed description of the data base can be obtained upon request from the authors.

13. In Table I *all* owners of the 500 largest German and British firms are considered, regardless of whether they themselves belong to the 500 largest firms. Therefore, families and (small) investment funds are shown as ownership categories in Table I. In Table II (see below) only capital relationships among the *largest* firms are examined (matrix of capital relationships). In addition, two units of analysis are used: shareholdings (proportion of stock) and the firm itself. Table I examines shareholdings (= proportion of stock owned by an individual or a firm); since a firm can be owned by many owners jointly, the number of such

shares is substantially higher than the number of firms. Each table gives the unit of analysis and the number of data points (N).

14. 'Majority interest' refers to ownership of at least 50 per cent of company stock; this includes the two last columns of Table I (50 – 74.9 per cent and 75 per cent +).

15. Data for the year 1984 on Japan cover 734 firms in the non-financial sector (see Prowse 1992: 1124), and data for the year 1980 on the USA cover 511 firms, including those in the financial sector (see Demsetz and Lehn (1985: 157)).

16. This assumption does in fact *approach* the actual distribution. See Demsetz and Lehn (1985: 1157, Table I) and Prowse (1992: 1125, Figure I).

17. Source: Die Aktiengesellschaft 26 (1981), p. R79 and 39 (1994), p. R371–374.

18. This does not mean that the managers 'own' the company, but that they represent the owner (which is the firm they manage).

19. When the so-called parent holds only less than 5 per cent (as is common in Britain), the neutral term 'outdegree' is more appropriate; similar considerations apply in the case of a subsidiary (indegree). 'Outdegree' refers to the sum of relationships in which a firm acts as *sender*, e.g., it holds capital shares in another firm or sends a member of its own management board to the supervisory board of another firm; conversely, 'indegree' refers to the sum of relationships in which a firm acts as *receiver*, e.g., it is owned by a 'sender' or it 'receives' the manager of a 'sender' in its supervisory board.

20. 'Isolated' companies are frequently in foreign hands (e.g., Ford and Opel in Germany) or belong to a family.

21. The corporate law of other countries has not as yet made this distinction. For the USA see Blumberg (1987) on the difference between 'entity law' and 'enterprise law'.

22. The 'qualified *de-facto* combine' is omitted from the consideration here as this is a degenerate (often fraudulent) form of *de facto* combine in which the parent firm does in fact completely dominate the subsidiary but attempts to

evade the legal consequences (liability for debts).

23. Ziegler (1984) and Pappi et al. (1987) omit partially the firms that are 'legally independent but economically dependent'.

24. Germany has a two-board system with the *management board* equivalent to the *internal* directors of the British/American system and the *supervisory board* equivalent to the *external* directors. The supervisory board is the organ of interlocking: members of the management board sit on the supervisory board of other companies. German law does not allow executive managers to sit on the supervisory board of their own company. The more supervisory boards there are within a combine the higher the chances of interlocking with other firms. Within a German combine each member of the enterprise group has its own supervisory board.

25. Please, contact Paul Windolf: 0049-0651-2013933 (fax) or <windolf@pcmail.uni-trier.de>. The matrices and an appendix which gives details on clique analysis will be provided by fax or by e-mail.

26. For example: in the mining sector there are 21 (legally) independent firms, among which there are $21 \times 20 = 420$ possible network connections. Of these 420, 2.38 per cent ($N = 10$) are realized. The coefficients are given in per mill terms due to their small size. As a general rule, the larger the matrix, i.e., the greater the number of firms, the smaller is the density coefficient. Not all possible connections can be realized.

27. Column marginals in the matrix show the outdegree; the higher the outdegree the more frequently firms in a particular sector are *owners* of other firms. Row marginals show the indegree; the higher the indegree the more frequently firms in a particular sector are *owned* by other firms.

28. Due to the limited space available here this matrix is also not presented; it can be obtained upon request from the authors.

29. If a member of the management board of firm A sits on the supervisory board of firm B, this relationship is called

here a primary or directed interlocking directorate. When a person sits on the supervisory board of two firms simultaneously, this relationship is referred to as secondary, or undirected interlocking directorate.

30. Burt et al. (1980: 823) maintain a similar hypothesis in terms of 'constraint on structural autonomy'.

31. The bank-hegemony thesis is a diluted version of the bank-control thesis (Kotz 1979). Pennings' (1980, p. 120) analysis of the structure of interlocking directorates among large firms in the USA led him to reject the bank-hegemony thesis. The thesis of resource dependence, which has been tested in a number of studies on 'broken ties', has also not found confirmation (Palmer 1983).

32. The British data contain 808 cases of capital participation, 715 of which were less than 10 per cent in extent, and a parallel relationship in terms of interlocking directorates was found in only six of these. The percentages reported here do not coincide with those in Table I because the present figures refer only to cases of participation *within* the capital network matrix ($N = 808$) whereas those in Table I include all owners ($N = 1859$).

33. This remark seems to contradict what has been said in section 6 (combine). However, the supervisory board is not allowed to interfere with the business of executive managers. The question of where exactly 'supervision' ends and 'interference' begins has given rise to much legal litigation in Germany. If the supervisory board 'interferes' the owners may lose the privilege of limited liability (qualified *de facto* combine).

34. The matrices for Germany and Britain are available upon request from the authors.

35. In the US *intrasectoral* interlockings are also rare (Pennings 1980: 84).

36. As federations, both the BDI and the BDA have as members not companies but other, more specialized or regionally organized associations of companies, which in turn have companies as members. The list of officers included only those with formal functions in either of the two federations; the personnel at the

level of the member associations of the federations were not examined.

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