Postsocialist Portfolios:

Network Strategies In the Shadow of the State

David Stark, Columbia University

Szabolcs Kemeny, McKensey and Company, Budapest

Ronald Breiger, University of Arizona

Please address all correspondance to David Stark, Department of Sociology, Columbia University, Fayerweather Hall, 1180 Amsterdam Avenue, New York, NY 10027, or by email to dcs36@columbia.edu.

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Abstract

Through quantitative analysis of ownership relations among the "Top 200" firms and the top 25 banks in Hungary at two points in time during the 1990s, we extend the notion of recombinant property from the level of the individual enterprise to that of networks of firms. We couple network analysis of firms' "portfolios of owners" with investigation of the manipulation of diverse economic strategies on the part of entrepreneurs, firms, and business groups, arguing that it is precisely in the interweaving of alliance strategies that the economic transformation is taking place. We find that, on the one hand, far from withering away, state ownership remains a prominent feature on the landscape of postsocialist property relations in Hungary. But, on the other hand, ties to the state are by themselves insufficient to motivate an understanding of the structuring mechanisms of firms within the field of Hungarian economic relations. We examine the patterns of ownership ties among firms exclusive of the state, so to speak within the shadow of the state, uncovering diverse strategies of interlocking alliances. Hungarian business networks manage diversified portfolios that facilitate play with heterogeneous resources.

Introduction

Following the collapse of Communism in Eastern Europe in 1989, policy makers faced an enormous challenge. How should they restructure enterprises in economies devastated by state socialism? Across the region, newly elected governments responded to the challenge with ambitious programs of social engineering. At the level of official policy, the twinned processes of marketization and privatization were exclaimed as both the goals and the means of economic reconstruction. By displacing bureaucratic planning in which the official relations between firms were coordinated by central ministries, marketization, it was held, would reduce transaction costs. By eliminating the ownership ties to the central state that reproduced soft budget constraints, privatization would make firms accountable to cost-conscious private owners and thereby reduce production costs.

But throughout the postsocialist world the timing, pace, and scope of marketization and privatization have been tempered by the problem of transformation costs: Unprecedented declines in GDP were accompanied by threats of enterprise bankruptcy and startling rates of unemployment (Kornai 1993). Because the citizens who bore these transformation costs were now electorally empowered to replace political incumbents, even the most rhetorically neoliberal governments kept visible hands in the business of the economy, continuing to hold sizeable public assets and directly intervening to manage the liabilities of nominally privatized firms.

At the enterprise level, actual practice similarly departed from official policy. While partially exiting from public ownership as part of the state's holdings, enterprise directors were reluctant to let go of their hold on the state's resources. Even firms that had fully severed their ties to state ownership appealed to the state's "commitment to private property" as justification for state subsidies to private firms in difficult straits. That they could be successful in these claims has prompted some observers to question the link between private property and the elimination of soft budget constraints (Kornai 2000; Frydman and Rapaczynski, 1994).

The results have been a distinctively East European capitalism characterized not by the dominance of private property but by "recombinant property" (Stark 1996), a mixing of public and private property forms and a blurring of enterprise boundaries in networks of inter-organizational ownership (Róna-Tas 1997; Kovách and Csite 1999). Noting the relative absence of patterns of ownership and control that we conventionally associate with private property regimes, Szelenyi and his colleagues (Eyal, Szelenyi, and Townsley, 1998) write of a managerial "capitalism without capitalists."

In drawing on this line of investigation, this paper extends the notion of recombinant property from the level of the individual enterprise to the level of networks of firms. As such, it extends the study of business groups (Gerlach, Lincoln, and Ahmadjian 1996; Orrú, Biggart,and Hamilton 1997; Granovetter 1995 for a comprehensive discussion) and interorganizational alliances (Koza and

Lewin 1998; Powell 1996; Stuart 1998; Gulati and Gargiulo 1999, Uzzi 1997) to the postsocialist setting. But whereas the literature on interorganizational networks in advanced economies typically examines ties among firms within an industry (though Powell's work on biotechnology notably includes ties to universities as well as grants from federal agencies), the peculiar circumstances of the postsocialist economies demand that we address not only ties among firms but also ownership ties to the state in the structuring of business groups across industries. That is, because of the specific historical legacies of property regimes in the region, the task of investigating the strategies of interorganizational networks vis-a-vis the state must be analytically prior to detailed industry studies. To engage this task, we analyze a longitudinal dataset on the ownership structure of the largest enterprises and banks in the Hungarian economy.

Anticipating our argument in brief, we contend that it is precisely in the interweaving of a diversity of alliance strategies that the economic transformation is taking place. We shall see that, on the one hand, far from withering away, state ownership remains a prominent feature on the landscape of Hungarian property relations. But, on the other hand, ties to the state are by themselves insufficient to motivate an understanding of the structuring mechanisms of firms within the field of Hungarian economic relations. When we examine the patterns of ownership ties among firms exclusive of the state, so to speak within the shadow of the state, we find diverse strategies of interlocking alliances. Is there a statist bloc in the Hungarian economy? Yes, our data indicate that there is. Is it a homogeneous bloc in which the patterns of ties among firms are shaped by the patterns of their ties to the state? Our data indicate, not homogeneity, but

differentiated practices through which networks maneuver within the shadow of the state. As with the patterns of recombinant property identified by Stark (1996) at the level of the postsocialist firm, so at the level of networks Hungarian business groups manage diversified portfolios that facilitate play with heterogeneous resources.

Portfolios of Owners

The notion of an investment portfolio is familiar to all of us. Investors will differ in the strategies whereby they assemble portfolios that vary according to diversification across markets and differentiation in the types of investment instruments within the same market depending on - for example - their aversion or attraction to risk, their depth of information about certain markets, and breadth of information across a range of markets.

We take the notion of portfolio as the starting point for our analysis of the evolution of ownership relations in the postsocialist economies of Eastern Europe. The core of the concept of portfolio – diversification in the face of risk and uncertainty – provides the foundation for our analysis. But in building from it to understand the strategies of firms in transforming economies, the concept of portfolio will itself undergo transformations that depart from the familiar.

Our first departure is to shift attention from investors' portfolios of holdings to firms' <u>portfolios of owners</u>. As we shall see, in attempts to cope with economic, organizational, and political uncertainties, postsocialist firms differ in the strategies whereby they attract distinctive portfolios

of owners that vary according to diversification across types of owners and their concentration or dispersion across economic sectors.

Although one typically thinks about owners acquiring firms, the peculiar circumstances of the initial phase of economic transformation in Eastern Europe has placed extraordinary political and economic pressure on postsocialist firms to acquire owners. Across the region, enterprise managers are compelled to respond to the mandate from newly elected democratic governments for property transformation.

If postsocialist firms are under pressure to acquire owners, why do we think it plausible that they will respond in terms of constructing a portfolio of owners? To be clear, we do not mean to suggest that postsocialist managers set out to acquire as many owners as possible -- as if, after reading Berle and Means, they immediately seek the greatest dispersion of owners in order to evade control. Such a strategy is only available to a handful of enterprises: in the Hungarian economy at the time of our data collection, only 48 firms traded their shares on the Budapest Stock Exchange, and the low level of participation in stock ownership by the Hungarian population falls far short of the kinds of dispersed ownership with which we are familiar in large publicly-held corporations in the United States. Restated, it is diversification of owners and not simply dispersion of owners that we anticipate among a significant segment of postsocialist firms.

Postsocialist firms (like start-up firms in highly volatile sectors of advanced economies) construct portfolios of owners less to escape control than to gain access to resources and thereby improve their chances for survival in a highly uncertain political and economic environment. First among these resources is access to capital. In acquiring (certain types of) owners, firms can sometimes acquire new funds for investment and for operating costs. Under some circumstances, acquiring a foreign owner can bring fresh infusions of capital; acquiring a bank as an owner holds the promise (not always realized) of privileged lines of credit. But access to capital is only one resource among many. Acquiring an owner with a stake in the firm carries the prospects of access to new markets, new competencies, technologies, and organizational routines. Cross-holdings can reduce transaction costs, facilitate the negotiation of inter-enterprise debt, smooth customer/supplier relations, and provide mechanisms for coordinated lobbying of legislators and regulators. Some owners can be a source of counsel during adversity or guidance during ventures onto unfamiliar terrain. Others, such as state agencies, carry the liabilities of bureaucratic intrusions; but they can also be an organizational vehicle for offloading the firm's liabilities, as well as a source of subsidies, political protection, and inside information about government policies that will effect the business environment of the firm. In short, from the perspective of the postsocialist firm, owners are also assets.

In constructing their portfolios, all firms in the postsocialist economy face a major constraint: each is operating in an organizational environment in which the demand for owners exceeds the supply. On one side, the demand for owners is high: the postsocialist firm (typically from a starting "portfolio" of one owner, the state) is searching for new owners at precisely the same time that thousands of

other firms are doing the same. On the other side, the supply of owners is relatively low: there are only so many interested foreign owners, and the savings of the domestic population equal only a fraction of the value of the assets of the old socialist firms. Under these circumstances, we should not be surprised when we find that the ownership portfolios of many postsocialist firms contain other postsocialist firms. Politically compelled to find owners to adjust to the new political setting, and organizationally propelled to construct portfolios of owner-allies to address the challenges of the new economic environment, the postsocialist firms find each other.

The results of these interacting processes are networks of interlocking ownership ties extending through and across branches and sectors of the economy, especially among the very largest enterprises and banks. The analytic consequence is that an account of the Hungarian property regime cannot remain at the level of the isolated firm: the problem of postsocialist portfolio management is a problem in which the unit of analysis is not the individual firm but networks of firms.[1] In making this analytic turn, we are then able to recognize that the search for the underlying "structure of property" in postsocialism quickly leads to a search for the structural properties of the networks of interorganizational ownership ties. Heard in that context, the phrase *network properties* has a multivocal character: in the parlance of network analysis, it refers to the properties of networks -- varying, for example, according to such characteristics as their density, extensivity, centrality, and the patterns of their strong or weak ties; at the same time, in the parlance of property theory, "network properties" refers to the interdependence of assets across organizational boundaries (Powell, 1996; Stark 1996). Throughout our study, we

exploit this polysemic character of the word "property" as we seek to understand the properties of property -- that is, the structural properties (characteristics) of interconnected properties (holdings).

Thus, having begun with the conventional notion of portfolio -- perhaps the paradigmatic case for a choice analytic framework in which strategy can be captured in the portfolio manager's algorithm of optimizing, or satisficing across a set of variables -- the circumstances of the postsocialist transformation lead us to think about strategies of portfolio management in new ways. Our point of departure is not simply to think about portfolios from the dual perspective of acquiring holdings and acquiring owners (for which, in any case, enterprise managers are not free to choose). Our reconceptualization of portfolio management is yet more fundamental: our task is to analyze portfolios not as the property of an isolated firm but as the property of an interconnected network of firms. That is, instead of focusing on how individual firms construct different portfolios (of varying concentration/diversification, etc.) we analyze how different groups of firms construct different network portfolios (with varying kinds of shapes, contours, configurations, and patterns). As such, the very unit of strategic action changes: strategies of portfolio management are then seen as emergent properties of groups.[2]

Data: The "Top 200"

The population of firms for which we have collected ownership data comprise the "Top 200" of the 1993 and 1995 listings of Figyel, a leading Hungarian business weekly. Like their Fortune 500

counterparts in the United States, the Figyel_ 200 enterprises (ranked by sales) are major players in the Hungarian economy, employing about one-fifth of the labor force and accounting for about one-third of total net sales and 40 percent of export revenues. Ownership data were obtained directly from the Hungarian Courts of Registry where corporate files contain detailed lists of the companies' owners as of the most recent shareholders' meeting. For the 1993 Top 200 list, we examined the ownership data available at the 20 Courts of Registry in the Spring of 1994, repeating that process for the 1995 list in the Spring of 1996. Following the convention adopted in the literature on East Asian business groups (Gerlach, 1992; Hoshi, 1994), we restrict our analysis to the top 20 owners of each enterprise.

In gathering this ownership data, our goal has been to develop a panel study that would allow us to chart changes in interorganizational networks over time. For this reason, our data collection in 1996 included not only new additions to the Figyel_ list but also those that had fallen out of the Top 200 by 1995. Similarly, from the archives of the courts we gathered retrospective data on the 1994 ownership ties of the new entries to the later Top 200 listing.

Thus, our criterion for inclusion in the ranks of the very largest Hungarian enterprises was that a given firm appear on at least one of the two annual listings. 270 enterprises met that criterion, and for each of these firms we attempted to gather the names of their top 20 owners in both 1994 and 1996. Some corporate files were unavailable to us because they were under judicial review in judges' offices. Nonetheless, with persistence on the part of our research team and with patience on the part

of the judges and clerical staff of the various courts, we succeeded in gathering ownership data on all but about 10 percent of our cases -- 252 firms in 1994 and 240 in 1996.[3] Throughout the paper we refer to these large enterprises as the "Top 200." For both time periods, we gathered the same ownership data on the 25 largest Hungarian banks (ranked by assets), with additions and deletions to the lists yielding a total of 29 banks in our population. For simplicity, we use the term "Top 25" to refer to the largest banks and "Top 225" to refer to the full ensemble of enterprises and banks.

From these ownership data we constructed two large matrices, with the rows consisting of the large enterprises and banks in our population and the columns consisting of all the owners identified in the corporate registries as participating (as one of the top twenty owners) in at least one of these banks or enterprises. The 1994 matrix thus has 216,440 cells: 280 rows (for the owned units) and 773 columns (for the owners); similarly, the 1996 matrix has 193,680 cells: 269 (owned) rows and 720 (owning) columns. Cell entries are ones and zeros, indicating the presence or absence of an ownership connection.[4]

The Persistence of State Ownership and the Prevalence of Recombinant Property

Before presenting out structural analyses of these ownership matrices, we start by identifying qualitative "types" of owners and by examining the row and column marginals.

State ownership. The first type of owner is the state. More precisely, we can identify specific owners of this type. These include, for example, various ministries that continued to exercise

ownership functions as legacies of the state socialist period even as late as 1996, pension funds of the Social Security Administration, the National Bank, the State Development Bank, the State Property Agency (ÁVÜ or SPA), and the State Property Trust (ÁV-RT) -- these last two combined after 1994 into a new property agency, the ÁPV-RT.

It is instructive to think about the ownership matrix we might have produced if we had launched our study in 1988 before the extraordinary property changes that are transforming the Hungarian economy. The ownership matrix of a hypothetical 1988 Figyel_ 200 would have been simple in the extreme: a matrix with 200 rows, 1 column, and a "1" in every cell indicating that each and every large firm had but one owner and that each and every large firm had the same owner -- the Hungarian state. By the time we began our data collection in 1994, the actual ownership matrices had become enormously more complex. *From one owner over all, the state's position has shifted to one owner among many*. In 1996, the various agencies of the central government held shares in 44.4 percent of the largest enterprises and banks, a decline from 53.0 percent in 1994.[5] But, while noting decline, we can also observe persistence. Our "Top 200" enterprises bear an extraordinary weight in the Hungarian economy; and among this important segment, the state continues to exercise an inordinate role. Across our population of large firms (powerful by Hungarian standards) the state stands out as the most prominent owner -- with its hand as owner in 37 percent of the top 25 banks and 45 percent of the largest enterprises. Moreover, our data reveal that the state remains, through its property holding agencies, the sole and exclusive owner of 38 (16.4 percent) of the largest

enterprises in 1996, a decline from 58 (23.9 percent) in 1994. Whittled down, the state is not withering away.

Individual private owners and employee shareholdings. Has the state's decline as an owner been matched by an increase in ownership by private individuals? Several recent studies (Eyal, Szelenyi, and Townsley, 1998; Tóth 1994) have documented an increase in individual private ownership among medium-size enterprises and small companies. Our data indicate, however, that private persons have not emerged as major owners of the very largest enterprises and banks. Only five companies (2.0 percent) in our population were owned exclusively by private individuals in 1996, up from four companies (1.5 percent) in 1994. But even by the least restrictive criterion -- the presence of even one individual private investor among a company's major owners -- individual private ownership could not be seen as ascendant in our data set: In 1994, 102 individuals held ownership stakes in 23 (8.5 percent) of the largest enterprises and banks. In 1996, these figures actually declined, with only 61 individuals appearing among the twenty major owners of only 19 (7.3 percent) of the units in our population. In addition to individual shareholdings, private persons can also participate in ownership through Employee Stock Ownership Plans (ESOPs). In 1994, we found ESOPs in 15 firms; by 1996, this had grown by a third, as employees now participate in organized employee ownership programs in 20 of these largest enterprises.

Interorganizational ownership. In our population of the largest enterprises and banks, the percentage of units with at least one corporate owner increased from 66.3 percent in 1994 to 77.6

percent in 1996. Most notably, for 104 (40.2 percent) of the largest firms, all of the top twenty owners were other corporations in 1996. Many of these owners are themselves the largest enterprises and banks -- the very firms for which we have gathered the ownership data. In 1996, 37.2 percent of the Top 225 firms held an ownership stake in at least one other Top 225 firm and 39 percent of the firms had at least one Top 225 firm among their major 20 owners.

Our data also indicate that banks are redirecting their ownership ties from the financial sector in favor of the corporate industrial sector. Banks are less likely to be owned by other banks (67.9 percent in 1994 compared to 48.1 percent in 1996). Meanwhile banks are becoming increasingly more likely to be involved in owning large non-financial enterprises (42.9 percent in 1994 compared to 48.3 percent in 1996).

Firm portfolios. By 1996, almost half of the firms in our population had diversified portfolios with at least two types of owners. Table 1. presents the frequency distribution (in percentages) of firm portfolios according to the number of types of owners differentiated as: state institutions, banks, corporations, ESOPs, local governments, private individuals, and "other" (the last, a very small residual category of foundations, etc.). A slight majority of the firms in our population have a single type of owner (recall, for example, that 16.4 percent of the largest enterprises in 1996 had only central state institutions among their owners). But this percentage declines from 56.3 percent in 1994 to 52.1 percent in 1996. The most frequent variants of diversified portfolios in 1996 were the following hybrids: corporate-state (24 firms), corporate-bank (19), corporate-state-local

governments (10), corporate-state-bank (9), corporate-private individuals (8), and corporate-bank-state-local governments (6).

[Table 1. about here.]

The Topography of the Field of Interorganizational Ties

To this point in our analysis we have remained within the language of distributions, identifying the different types of owners and assessing their prominence or prevalence relative to each other. Now we shift from the problem of relative weights to the problem of relational structures, from the presentation of descriptive statistics to the presentation of a set of structural models. We employ techniques capable of bringing "relational realism" (Breiger 1995) to bear on firm-level data as concrete and as complex as those we have collected. In this section we focus on the structuring of corporate ownership patterns in 1996.[6]

Recall that we have organized our data into a large matrix. The rows represent the units that are owned (the 240 largest enterprises and the 29 largest banks), the columns represent the 720 owners.[7] Each interior cell value indicates that a given firm or bank named in a row is ("1") or is not ("0") owned by one of the 720 owners named along the columns. In the previous section, we have in effect been summing across rows and down columns to discover how many firms are owned by various types of owners. Our matrix can yield much more information than this. However, to uncover that richness we need to shift our thinking from isolated dimensions of the matrix (its marginal totals) to a consideration of relationships among the constituent economic units.

Instead of counting down the "ones" in a column and concluding that a given owner (for example, a particular state agency or a particular bank) has a certain number of holdings (e.g, Bank B holds four enterprises), we could (following Breiger, 1974) think about these ownership ties as establishing a relation among the owned units. That is, on at least this count, the four enterprises have some shared property or characteristic—each shares with the others the specific quality of being owned by Bank B. It is not hard to imagine situations (such as competing to obtain a loan) in which the four firms of this example take account of this qualitative relation of being commonly owned by the same named actor, and so therefore should we. Instead of simply counting the firms as the aggregated property of the owner, we desire to understand the patterning of these relational similarities.

In a dual manner (Breiger, 1974), instead of scrutinizing the row of a given owned company and counting whether it has this or that type of owner, we might think about the "ones" in the cells of that row as indicating a relation among the owners in the columns—each participates in the ownership of the same unit. And for some purposes (here, obviously far from hypothetical) they might take into account (and so should we) that they have this property, this structural feature, in common.

But, of course, our matrix does not have a single row. Nor (unlike our historically hypothetical "1988" matrix) does it have a single column. The various owned units are related to each other (by

virtue of sharing a common owner) not simply down one column; they can be multiply related to each other through the structural property of sharing common owners down a number of columns. From our previous example, imagine that 2 of the 4 enterprises mutually owned by Bank B share the additional structural property of also being mutually owned by Corporation X. What we would really like to do, then, would be to see what's going on among all the firms in the rows by looking at all the columns simultaneously. Similarly, looking across the rows of owned companies, owners can be multiply related as common property holders of the same company/companies. There, too, we would want to see the full set of structural properties among the owners by looking at all the rows simultaneously. Moreover, because the owned units in our population can also be owners, the possibilities for identifying shared properties, common characteristics, and similar structural features are greatly amplified—if only we could look at all the rows of the 269 largest firms and banks as owned units while simultaneously looking at all the columns of these 269 units as owners. By shifting our attention from row and column marginals to examining the dense patterns of relations inside the matrix, we are alerted to the possibilities of identifying and analyzing the properties of the full ensemble of ownership ties.

With that aim in mind, we set out to identify those groups of units among our 269 largest companies and banks that have similar structural characteristics. For our dataset, we define two companies as structurally similar to the extent that their overall sets of relations vis-a-vis all the other members of the dataset (all their owners as well as all the units they own) are the same. For example, enterprises E1 and E2 are structurally equivalent if they are both owned by banks B1 and B2 (and owned by no

other units) and both hold ownership stakes in enterprises E3 and E4 (and in no other enterprises). Our methods search for structural similarity (White et al., 1976) that approximates such equivalence.[8] Notice that in this conceptualization of similarity, companies and banks are not grouped together because they are directly connected to each other.[9] What makes them similar is the overall structuring of their ties to other companies and banks.[10]

In the previous paragraphs we have interlaced a relational theory of ownership ties (as "network properties") with a set of methodological desiderata ("if only we could do such and such with the rows and columns"). In order to map our relational theory of ownership ties (as network properties) onto the observed data, several standard techniques are available (Wasserman and Faust 1994:366-93). In this first analysis of the patterning of ties in systematic ownership data for the Hungarian economy, we applied the CONCOR algorithm (Breiger et al. 1975) to partition the data into structurally equivalent blocks.

Recall that our 269_720 matrix reports ownership ties among the 269 "largest" units and their 720 owners. The latter group includes those among the 269 largest firms which have an ownership stake in at least one member of the Top 225 firms. Side by side comparison of any two of its rows yields the firms that own them both. In addition, however, we desire to compare pairs of our 269 "top" firms with respect to enterprises they both own. We therefore created a 269_(720+269) matrix by adjoining to our original representation a 269_269 matrix reporting these ownership relations.[11] In this way, when running CONCOR on the rows (i.e., on the set of the "top" 269 firms), we

compared their similarity both as owners and as owned units. CONCOR divided the 269 members of the dataset into two sets (termed "blocks") of 111 and 158 members on the basis of their shared similarity. We continued the procedure of subdivision on each of these blocks, as well as on the resulting sub-blocks. In total, we ran CONCOR through four hierarchical levels of division and subdivision resulting in nine distinct blocks.

At this stage, we knew which companies were structurally more similar to each other than to any other members of the dataset. From this procedure alone, however, it was unclear which blocks were closer (more similar) to which other blocks. For example, even if we learned that the 90 members of block 1 were structurally more similar to each other than to the members of block 6, we had little information about the relative closeness or either of these blocks to blocks 9 or 8.

To understand the proximity or distance of the blocks, we constructed a map representing the social space of ownership ties among our firms. First, we constructed a profile for each block, consisting of the mean entries in each of the 989 columns of our 269_(720+269) matrix.[12] We then operated on the rows of the resulting 9 by 986 matrix, constructing a 9_9 correlation matrix among the blocks. For a visual representation of the blocks' relative distances, we ran a multi-dimensional scaling procedure[13] on the correlation matrix. The resulting image (Figure 1.) is a map of the field of interorganizational ownership ties in the large firm segment of the Hungarian economy.

[Figure 1. about here.]

Constrained to impose an analytic reading devoid of proper names, we see that the multi-dimensional scaling procedure represented in Figure 1. has portrayed the nine blocks in four distinct clusters arrayed in concentric zones of increasing distance from the very tight cluster just to the right of the center of the map. With the aid of KrackPlot diagrams[14] (not represented here) indicating the actual ties and plotting the distance among the firms within a block, we observed that the blocks at the "core" show extraordinary connectedness. Blocks 6, 7, and 9, for example, show exceptionally tight-coupling, with every firm in the block connected to every other through at least one ownership tie (the members of Block 6 not only share common owners but also own other firms in common). At the extreme, the firms in Block 1 are so densely packed by sharing the same owners (one dominant among them), that the lines in the KrackPlot diagram literally obscured the numbers denoting the firms that compose the block. Not surprisingly, for these four blocks at the core, the structurally defining relation is state ownership.

Blocks 3 and 5 show a very different pattern. Grouped by their structural similarity in relation to all other firms, the members of these respective blocks are not all uniformly tied to each other. But neither are they entirely disconnected. Instead, they group as discrete dyads, triplets, quadruplets -- dispersed pockets of micro cohesion. Through their overall set of ties to firms outside the block, these blocks remain within the gravitational field of the statist blocks at the core; but because many of the firms in these blocks are owned by or own other firms without ties to the state, the state's pull is counterbalanced by the weight of attraction within the blocks themselves.

The blocks of the outer zones, Blocks 2 and 4, are similar to each other in "escaping" the long arm of the state. (Reflecting the presence of some ties to the statist firms, Block 2, as we see in Figure 1, is more proximate to the central core than Block 4). But in other respects, their structural features could not be more dissimilar. Whereas the members of Block 2 form a complex web, those in Block 4 are not connected to each other at all. Each firm in Block 4 has an owner or owners; but none are shared. Several may have ownership stakes in other enterprises; but these are not held in common with any other member of the block. Block 4 is a distinctive block of isolates.

Located in the outer zones of our map, are blocks 2 and 4 "peripheral"? Not at all. Their size, their configurations, and their composition suggest the contrary. Having noted the complexity of Block 2, we should not be surprised to learn that this block contains a good number of the most dynamic enterprises in the large-firm segment of the Hungarian economy. The simplicity of Block 4, in turn, derives from the simple fact that many of these firms are easily recognizable as the Hungarian subsidiaries of large multinationals. Block 4 has not escaped <u>from</u> the state: many of its members are not the privatized successors of formerly state-owned enterprises but are new greenfield investments operating in another gravitational field entirely -- that of the multinationals. Far from peripheral, Block 2 and Block 4 represent powerful counterpoles at each end of our map of the field of interorganizational ownership.

The multidimensional scaling procedure that we have used provides a representation of the topography of the organizational field, the shape of the playing field. Its major contours reveal a postsocialist economy that has proceeded six years along the course of property transformation: operating at the center is the strong gravitational force of a statist core reflecting the continued legacy of state ownership but with two new gravitational forces pulling away from the state reflecting the emergence of a sector of dynamic domestic capital on one side and the penetration of multinational capital on the other.

The Heterogeneous Strategies of Portfolio Management

Who plays with whom? Informed by the concept of structural similarity, the CONCOR pattern recognition algorithm has allowed us to identify who is playing with similar resources and under similar constraints in the game of portfolio management. From this knowledge of structure we now turn to the problem of strategic play as we ask who plays together and with what kinds of strategies. If we know the shape of the playing field, how do we know who is playing on which teams? Our problem, moreover, is not simply to be able to identify the members of the different teams but to see if the different teams are playing with different kinds of strategies. These problems raise new theoretical issues and pose new methodological challenges.

In the first part of our analysis, we took the individual firm as our unit of analysis and charted the distribution of various kinds of portfolios. In the second part concluded above, it was not the firm but, in a certain sense, the entire set of relations that was our unit of analysis as we charted the

structural properties of the global field. In this third section, we explore what it would mean to take relatively discrete networks of firms as our unit of analysis.

How, then, should we go about identifying the teams, the groups? Haven't we already done so in the nine blocks in Figure 1? Recall, however, that CONCOR grouped the firms -- on the basis of their structural similarity. Here our problem is somewhat different. Because we want to identify firms that tend to play together, we need to adopt a more restrictive definition of "group." In the following models, therefore, instead of starting with structural similarity, we begin with cliques based on actual ties.

In The Shadow of the State. In our search for network strategies we do not, however, abandon our knowledge of the topography of the organizational field. In particular, our map captures a distinctively postsocialist characteristic: its most prominent feature is the core of four statist blocks composing some 121 firms. Like a mountain casting its shadow across the landscape, the state dominates a sizable part of the terrain. Our analytic task is to illuminate the strategies that are taking place within the shadow of the state. That is, in the process of seeking answers to the question "who plays together and with what kinds of strategies?" we also seek to answer a particular question: Do firms that play with the resources and under the constraints of the state play with the same strategies?

Answers to this question have important implications for our understanding of the dynamics of the postsocialist economy. From a purely structuralist perspective, we might expect that firms that are commonly owned by state agencies, sharing interests in the redistributive measures of the state (i.e., constrained by and benefiting from the subsidies, credits, and protections of the postsocialist state), will tend to play together.[15] But from the perspective of strategic action, we would have good reasons to expect that this same set of firms, scrambling for access to a limited, and indeed dwindling, pool of resources will play with a more differentiated set of strategies in the games of portfolio management.

As we embarked on our search for strategies, we began, appropriately, with an assumption that state agencies are also strategic players. But as soon as we began to run our cliquing programs, we immediately confronted the problem that the state is such a dominant player that its strategies overshadowed almost all others. In terms of our research instruments, this shadow was cast in more than simply metaphorical terms. When we included the state in our cliquing models, the resulting diagrams were literally indecipherable. Including the state as a strategic player, we concluded, imposes homogeneity where there might otherwise be heterogeneity. To illuminate the possibilities of diverse strategies within the shadow of the state, therefore, in the findings presented below we ran our cliquing models without the ownership ties that run through the institutions of central and local governments.

We should stress that by "taking out the state" we are not engaging in some futurology: We are emphatically not asking, "What will be the shape of play when the state inevitably withers away?" On the contrary, it is precisely because the state is so overwhelmingly present and shows such clear signs of persisting in the near future that we had to find a way to peer around it.

Alone among all the other units in our matrix, state agencies and local governments exhibit a distinctive asymmetry: they can be owners but they cannot be owned. Excluding this particular asymmetry from our cliquing models, thus allows us to ask whether, for some part of our population, the patterns of ownership ties running directly among firms replicate those that connect them via the state. In terms of our models, to what extent (and for which subsets of our population) are cliques isomorphic with the blocks that we identified earlier when state ownership was included? In substantive terms, are there networks of firms, including even those within the statist core, that are developing strategies of maneuver within and around the state?

Clique Affiliation. To identify groups of companies that tend to participate in the same cliques, we undertook the following procedure. We started from two square and symmetric (269*269) matrices. Cells (i,j) in the first matrix were equal to 1 if companies (i,j) were connected to each other through direct ownership ties: either i had an ownership stake in j, or vice versa; if not, the cells' value was 0. Cells (m,n) in the second matrix were equal to 1 if companies m and n were connected to each other either through at least one common owner or at least one commonly owned unit; the cells' value was 0 otherwise.[16] This matrix was computed from a (269*907) matrix, thus taking into account links

made through all units that can be owned, as well as all possible owners -- excluding the institutions of the central and local governments.

As a next step, we searched for cliques in both matrices. Cliques, in network analysis, are maximally complete subgraphs (Wasserman and Faust 1994:254-7); applying the concept to our dataset, a company is a member of clique C if and only if it is connected to all other members of clique C. This is a very restrictive definition of subgroups, requiring maximum cohesiveness. Our specific operationalization broadens the range of subgroups in two ways. First, by considering all cliques, even if the number of their members was as low as two, we ensured that even disconnected dyads were included in our analysis.[17] Second, by searching for cliques in both matrices (of indirect ties as well as direct ties), we included groups of companies linked through co-participation in an ownership relation. In so doing, we applied a "one-handshake rule," obvious in cases of direct ownership but also applicable where co-participation in another firm's portfolio (being mutually owned by a third or mutually owning a third) creates a site where representatives of the two firms can meet with a handshake.

Altogether, we found 343 cliques; 169 linked through direct ties, 174 by common owners or commonly owned units. In the rest of this analysis, we focused on those 161 members of our TOP 225 set which belonged to at least one of the 343 cliques. The remaining 108 companies did not have an ownership stake in any other TOP 225 firm <u>and</u> they did not share a common owner with any other member of the TOP 225 set. We constructed a (161*343) clique affiliation matrix; the

rows representing the 161 companies, the columns the 343 cliques. We ran the previously mentioned CONCOR procedure on the rows of this matrix. After 5 hierarchical levels of division and subdivision, CONCOR resulted in 8 different clique-blocks. By this term we refer to a confluence of action and structure: members of a "clique-block" are companies and banks that tend to participate in the same cliques; they are connected either through direct ownership ties or through common owners or commonly owned units.

Differentiated Strategies. Having identified the patterns of clique affiliation, we turn to the strategies of portfolio management for the different groupings. "Strategy" in our analysis is empirically impoverished, but analytically rich. That is, we have not included a broad range of variables that might conventionally come to mind when thinking about the strategy of a business group: technological innovation, market penetration, product introduction, intra-group trade and credit, coordinated lobbying, and so on. Instead, we restrict our analysis to the data at hand and, within that single dimension of portfolio management, further restrict the notion of strategies to a limited set of "moves." For our purposes below, they are: 1) the density of direct and indirect ties, 2) directionality of ties, 3) homogeneity or heterogeneity of sectoral composition, and 4) the extent to which ties run through financial institutions.

Table 2.1 presents summary data for the eight clique-blocks along the relevant variables. The sectoral composition of each clique-block is presented in an Appendix. To aid in the interpretation of these data, Table 2.2 presents KrackPlot diagrams representing the distance between nodes and

the ties between them for each clique-block. These visual snapshots are a rich source of information, and with each successive clique-block the reader should become more familiar with the techniques of reading the diagrams.[18] The left-hand diagrams represent the portfolio spaces formed through direct ties among members of the clique-block. The right-hand diagrams represent the portfolio spaces formed through bridging sites -- banks or enterprises where two or more clique members are mutually owned or co-participate as mutual owners. These bridging sites can be firms that are members of the clique-block,[19] but they can also be firms whose patterns of clique participation place them outside the block. Moreover, bridging sites can be as owners or as owned units. It is this difference that we refer to in the variable "directionality."

[Tables 2.1 and 2.2 about here.]

C1 ("Metallurgy") is the least complex clique-block and consists of two cohesive, mutually disconnected subcliques. The left hand diagram shows the pattern of direct ties: each of the firms in the clique is connected to at least one other through a direct ownership tie. The right hand diagram shows the ties that connect firms through common ownership (owned or as owners). These are industrially specific mega-holdings with no sectoral diversification outside metallurgy. There are no banks in this clique; nor are the firms in the clique tied through ownership connections to any financial institutions. Indeed, no two firms are connected through any tie to a third firm outside the clique in this maximally endogamous pattern. Yet we do not reduce the strategy of C1 to the single

component of endogamy; the absence of financial institutions, for example, and likewise its sectoral homogeneity, are also constitutive of its strategy of portfolio management.

C2 ("Electric Energy") is similarly strongly concentrated in a single sector, (with 16 electric utilities and power stations), but its portfolio is more diversified than that of C1 (with 2 banks, a vehicle manufacturer, and a metal wholesaler among its firms). Also like "Metallurgy," each of the 20 members of C2 is connected to at least one other through a direct ownership tie. But with two or more units commonly owned by a bridging site that is outside the clique-block, we might say that "Electric Energy" relaxes the strict "rule" on endogamy.

Whereas C1 appears to operate with maximal endogamy, C3 ("Trains, Planes, Trucks, Buses") is maximally exogamous. Reflecting the complete absence of direct ownership ties among the firms in this clique-block, the left-hand KrackPlot diagram for C3 is empty. Moreover, not only are all the bridging sites located outside the clique-block, but in every case the directionality of the intersecting tie is as common owners -- a purity of strategy reinforced when we see that four of these five are banks (the fifth is a foreign trade company). This clique-block exists insofar as its members commonly own (financial) units outside the clique-block. We should not, however, conclude from the left-hand diagram that C3 is some hollow shell, nor should we assume that such a pure strategy is necessarily brittle. Its sectoral composition suggests an almost studied coherence: among the members of C3 we find all four of the top transportation companies in Hungary (the railway, the

airline, the major bus company, and the major trucking firm) together with six large foreign trade companies, three banks, and a major agricultural producer.

Whereas the firms in "Trains, Planes" were linked by virtue of commonly owning outside financial institutions, the clique members of C4 ("The Public Offerings") are linked by virtue of being commonly owned, whether through the two insiders or the fifteen outsiders (13 of these financial institutions) Observe that whereas the former pattern (owning financial institutions in common) corresponds with tighter sectoral concentration, the latter (being owned by financial institutions) corresponds to a broader sectoral dispersion. In significant measure, members of C4 are commonly held through instruments of public share offerings. Six of these companies are publicly traded on the Budapest Stock Exchange and at least three issued public share offerings outside the institution of the exchange. Among the outside owners who hold equity in this clique, we find numerous foreign brokerage houses and financial institutions (frequently Austrian). Thus, whereas the exogamy of C3 was directed toward Hungarian banks, the exogamy of C4 is doubly opened outward -- not only to investors outside the clique-block, but also to financial investors outside the country.

The KrackPlot diagrams for clique-block 5 ("The Disconnected Dyads") represent another pattern entirely. The members of C5 are oriented toward each other <u>and</u> toward outside investors; but this orientation is never toward more than one or two others at a time. Whereas the dense (but perhaps tenuous) connections among the members of C4 ("Public Offerings") are the result of their share offerings to <u>financial</u> investors, the dispersed ties in C5 are the disconnected dyads and triads of

professional investors. As such, they are likely to be enduring. The micro subcliques of C5 tend toward sectoral specificity: two pairs of tobacco firms, two triads of agricultural producers, a pair of telecommunications firms, a consumer electronics firm linked to a retail appliance chain, livestock producers linked to packing houses, grain storage firms linked to flour mills, and so on. Not surprisingly, given this pattern of professional investment, there are no banks in this clique-block and the only financial intersection point is not invested in the clique but is commonly owned by several of its members.

C6 is composed of several sectorally-specific subcliques (e.g., food, beverages, confectionary), a pattern amplified in C7 which reads like a commodity chain (Gereffi 1996) -- petroleum, petrochemicals, chemicals, pharmaceuticals. But unlike C6, here sectoral differentiation only loosely maps to subcliques. That is, a given subclique is likely to have firms in several different sectors. This tighter integration is seen as well in the left-hand diagram reflecting the greater density of direct ties in this strategically balanced clique-block.

Of our eight clique-blocks, C8 ("The Elite") exhibits the greatest density coupled with the greatest complexity. Like C4 ("the Public Offerings"), other firms outside the clique-block are targeting C8 to acquire ownership stakes in its firms. But the members of "The Elite" are also themselves densely interconnected by direct ties of reciprocal ownership. Not surprisingly, C8 contains eight banks -- among these, four of the top six banks in the Hungarian economy.

Bringing the State Back In

In the previous analysis of the diverse moves of our eight clique-blocks, we have shown that distinctive strategies of portfolio management are at play in this important segment of the Hungarian economy. In this final section, we "bring the state back in." That is, if we find differentiated strategies in the overall field of play, do we also find diverse strategies within the shadow of the state? Specifically, do firms that are structurally similar on the basis of their strong ties to the state tend to participate in the same cliques independently of their ties to the state? Restated, is the field of portfolio strategies (identified using cliquing models when the state was excluded from the analysis) isomorphic with the field of structural similarity (identified when the state was included in the analysis)?

To answer this question, we constructed a table showing the proportion of block members belonging to each clique-block (as well as those which do not belong to any cliques at all). The first four rows of Table 3 refer to the "statist blocks," i.e., the blocks in the center of Figure 1. The next three rows describe the distribution of the members of the blocks in "close orbits" to the statist blocks (i.e., blocks 3, 5, and 8 in Figure 1). The eighth and ninth rows refer to the two blocks in the "distant zones" in that figure.

[Table 3. about here.]

Examining the statist blocks, we see that many of these firms do not participate in any cliques (45.6 percent of the firms in Block 1, 69.3 percent of Block 7, and 33.3 percent of Block 9). But we also see that about half of the firms in the statist blocks do participate in cliques. If they tend to "play together," we should find that firms in a given statist block would be concentrated in one or two cliques. With one exception, we do not find this to be the case. Firms in B9 are distributed across five clique-blocks, those in B7 are distributed across three, and firms in Block 1 at the very core are distributed across all eight clique-blocks. For these groupings of firms, the structure of ties running through the state is not replicated in the interorganizational ownership ties of network portfolios. Our "mobility table" thus demonstrates strategic movement -- diverse strategies of maneuver within the shadow of the state.

The one exception to this pattern is Block 6: 83.3 percent of its members are concentrated in one clique-block, C8 ("The Elite"). This finding indicates that "the Elite" are not distant from the state. That finding is further supported when we turn to Table 4 where we see the percentage of clique-block members belonging to the various structural blocks. Reading down the column, we see that firms from the four statist blocks comprise almost three-quarters of clique-block 8. This finding suggests that the notion of "maneuver within the shadow of the state" should not simply imply that networks only attempt to gain room for maneuver <u>out of the shadow</u>. Moving within that shadow also gives room for maneuver. "The Elite," this cohesive clique of banks and dynamic companies, is not overshadowed by the state. Instead, shaded by the state, it is able to do its shady dealings that include benefiting from debt forgiveness and bank bailouts.[20] Although the state bears the

distinctive property that it cannot be owned, our findings suggest that some groups of firms have a decisive stake in the state. Included in the state's holdings, they have a hold on the state.

[Table 4. about here.]

Table 4 is also interesting for the overall patterns that it reveals. Although three of the clique-blocks disproportionately draw their members from a single block (C1 from B5, C2 from B1, and C4 from B2), none operates within a single zone on our map of the field of play. Looking down each column of Table 3, we see that every clique-block recombines resources from zones proximate to <u>and</u> distant from the state. Without exception, each of our eight teams is playing with recombinant strategies of portfolio management.

Thus, despite the distinctive shapes of their network properties, all of these major business groupings share an important feature: common to each is a strategy of combining heterogeneous resources. Each business network attempts a strategy of portfolio management that diversifies across the resources (and constraints) that derive from ownership by state agencies as well as from the new resources of domestic or foreign investment. None is exclusively public nor predominantly private. Each regroups assets that allow it to operate across the organizational field. All are poised to take advantage of continuing subsidies, exemptions from tariff restrictions, and state largesse in forgiving inherited debt, while benefiting from new sources of capital, access

to markets, and technology transfers. In the postsocialist context, networked property is recombinant property.

Postsocialism as an ecology of games

We conclude with an intriguing thought experiment. The task is to conduct a network analysis of a soccer match. The available data are a precise and comprehensive listing of the sequences of who touched the ball after whom.[21] From these long strings one could construct a complex matrix in which a given cell indicated, for example, that player B touched the ball after player A. How should we model these "ties"? One method of network modeling might group the players across teams, revealing an important feature of soccer that the defensive players of one team and the strikers of the other (like the midfielders for both) tend to battle for the ball. Another method would group players within teams indicating that, despite interceptions, patterns of passing do indeed link players on the same team (as passing triads form distinct subcliques connected up to other subcliques on the same team). With more refined analysis, distinctive strategies of play could be identified across teams, or matches could be differentiated according to the patterns of "ties" across teams in similar zones. Neither of these methods would be a more accurate representation of soccer; each would reveal (perhaps unnoticed) aspects of the game.

Our analysis of network ties in the field of ownership relations in the Hungarian economy shares some features with this thought experiment. Using the method of structural equivalence, we have portrayed the overall shape of the playing field and identified the blocks of firms that operate with

similar network resources and constraints. Using cliquing methods, we have portrayed relatively discrete business groupings and identified their distinctive strategies of alliances. Because neither of these methods is a more accurate representation of the Hungarian economy, we deliberately chose to exploit both – in this way demonstrating both the salience of the state in the overall topology as well as the strategies of maneuver across the field of play.

But our actual problem differs dramatically from our soccer example: there is no program listing the rosters of the teams. In this sense our analysis also differs dramatically from investigations of business groupings in East Asian economies where researchers can refer to well-publicized listings of the membership of Japanese *keiretsu*, Korean *chaebol*, and Taiwanese "related enterprises." Our Hungarian business groupings are far from consolidated and they certainly lack the flags and emblems with which East Asian firms frequently signal their collective identities. Postsocialist economies are turbulent and we should expect considerable fluidity in the patterns of interorganizational alliances.

This turbulence suggests a final beat on our sports metaphor drum. Such is the uncertainty of the problem we are studying that neither observers nor players are sure whether the game is soccer or football or both simultaneously. When the rules of the game are unsettled and themselves still an outcome to be determined by the play, you are wise to adopt hedging strategies that allow you to make moves in both. Postsocialism is an organizational field where profitability on the bottom line and eligibility on a governmental budget line are equally operative metrics in cross-cutting regimes of

valuation. Reflecting this fundamental uncertainty, Hungarian networks manage diversified portfolios with assets that can be mobilized in the complex ecology of games that is postsocialism.

[1] As such, we turn from the problem of ownership and control that pervades the literature on corporate governance. From questions about the role of property in the corporate governance of the postsocialist firm, (e.g, essays in Frydman et al 1996) our study raises implications about the structural properties of network ties for the governance of the postsocialist economy and subsectors within it.

[2] In the turbulent postsocialist economies, we conceptualize interorganizational ownership networks as "complex adaptive systems" (Anderson et al. 1988; Arthur et al. 1997; Clippinger 1999). They are the emergent products of heterogeneous factors. Strategy, in this view, is a system-level property, which cannot be reduced to the activities of any of the system's

constituent units. Because such systems cannot be controlled from a single central unit, strategy here loses some of its teleological characteristics, and its properties become apparent not before, but during a sequence of actions.

[3] This success rate represents quite comprehensive coverage, especially when one considers that, unlike for some East Asian economies, these data were not already compiled in existing business directories (e.g, Gerlach 1992).

[4]Whether an owning hand exercises control is not the analytic focus of our study. We share the doubts of organizational sociology regarding the link between ownership and control. These doubts emphasize the principal-agent problem that exists between owners and managers, and underscore that enterprise guidance is exercised through a variety of channels, of which shareholding is but one. (See e.g. Pratt and Zeckhauser [1985], March and Olsen [1976], Pfeffer and Salancik [1978].) According to this perspective, the management of a firm does not imply control, but the formation of coalitions among different actors (Morrill 1995; White 1992). In addition, from the ownership records in the courts of registry we cannot consistently identify owners with majority shareholdings or isolate those holding "golden shares" that give special voting rights. The respective influence of the different shareholders over a firm is especially difficult to determine in cases where the firm has issued several different types of shares through closed share offerings. Different voting rights might pertain to the different types of shares, and documents at the courts of registry usually do not provide accurate information on these voting rights.

[5] In addition to the institutions of the central government, local governments show up among the

top 20 owners of 48 companies (17.8%) in 1994 and 43 companies (16.6%) in 1996.

[6] In a subsequent paper we will analyze the evolutionary dynamics of portfolio management in the Hungarian economy. Here we establish a relational baseline for such an analysis.

[7] Note that, in the following model, each of the various institutions of the central government that exercise ownership rights is included as a separate column. That is, our model does not reify the state by aggregating these as a single "state owner." Rather than assuming that they act in a unified manner, it recognizes the possibilities of distinctive institutional dynamics (see Mihályi, 1997 for an account of organizational conflicts among various state property holding agencies).

[8] See DiMaggio (1986) and Nelson (1986) for lucid explications of these concepts with reference to the identification and analysis of organizational fields.

[9] To take a homely example, if most of your friends are the same as my friends, we are structurally similar even if we do not know each other.

[10] Applying this method of grouping to our dataset makes it possible to take into account that, among the set of owners in our model, we find many companies that are not on our list of Top 225 firms.

[11] Technically, the 269_269 matrix that we adjoin is just the "transpose" of the relevant portion of our original 269_720 array, with the difference that firms which belonged to the set of Top 225 firms, but did not own shares in any of them are represented in the adjoined matrix by rows that consist of 0s. (These firms were not among the 720 columns of our original matrix) All data analysis was conducted using the UCINET IV. 1.40/X network analytic package (Borgatti, Everett and

Freeman 1994) unless otherwise indicated.

[12] If i indexes those rows of our large matrix that belong to some particular block b and j indexes all 989 columns, and if there are n_b companies (rows) in block b, then the mean vector for block b, (D_b), consists of the 989 numbers $D_b = [SUM_i (m_{i,j}) / n_b]$, where $m_{i,j}$ shows the presence or absence of an ownership relation between company $_i$ and unit $_j$.

[13] On the use of multidimensional scaling in network analysis see e.g. Scott (1991: 160-166) and Carroll et al. (1997).

[14] KrackPlot (Krackhardt, Lundberg and O'Rourke 1993) is a software program for drawing and printing networks. We used its routine for multidimensional scaling. The resulting diagrams portray the structural similarity of nodes by their relative distance, with line indicating ties between respective nodes.

[15] Thus, our emphasis on strategic action as well as on structure leads us to depart from the new institutionalists in that we think of "coercive isomorphism" as manifesting possibly a whole set of behavioral strategies that form a more or less differentiated array, rather than appearing as single behaviors (such as adopting new pollution control technologies in comformance to environmental regulations; DiMaggio and Powell, 1991: 67). When it comes to structure, DiMaggio and Powell (p. 65) write that "the structure of an organizational field cannot be determined a priori but must be defined on the basis of empirical investigation." We would extend the need for empirical observation to the extent to which organizations' strategizing leads to relatively coherent or differentiated sets of strategies within a field.

[16] Note that for purposes of identifying cliques, both matrices in our model are indifferent to directionality of tie. Directionality (whether a firm is owned by another or owns it as well as whether two firms are linked by virtue of commonly owning or being commonly owned) is later taken into account when considering differences in the strategies of network portfolio management.

[17] Network analysts usually require cliques to have at least 3 members. See e.g. Wasserman and Faust 1994: 253-6.

[18] Our exposition builds from relatively more simple to relatively more complex strategies. As such, variables are introduced and amplified where appropriate.

[19] For clarity, clique members that are connected directly can also be connected through intersection points. Conversely, firms connected through intersection points might not be directly connected. It is the differences in the patterns of connections that accounts for the different shapes of the left- and right-hand diagrams -- and, as we shall see as we progress through more complex strategies, these differences can be dramatic.

[20] See Stark 1996 and Bruszt (1998) for an elaborated treatment of these issues.

[21] For a fascinating network analysis of sequences in conversation, see Gibson (1999).

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