

GAMES REAL ACTORS COULD PLAY

POSITIVE AND NEGATIVE COORDINATION IN EMBEDDED NEGOTIATIONS

Fritz W. Scharpf

ABSTRACT

There is more coordination in the modern world than is plausibly explained by the classical mechanisms of community, market, hierarchy and their commonly discussed variants. This paper explores modalities of non-market coordination whose application is not constrained by the narrow motivational and cognitive limitations of pure forms of hierarchical and negotiated coordination. The focus is on two varieties of negotiated self-coordination under conditions where actual negotiations are embedded in a pre-existing structural context – either within hierarchical organizations or within self-organizing networks of cooperative relationships. Extrapolating from empirical findings in a variety of settings, it is argued that embeddedness will, at the same time, increase the scope of welfare maximizing ‘positive coordination’ and create conditions under which externalities are inhibited through ‘negative coordination’. In combination, these mechanisms are able to explain much of the de facto coordination that seems to exist beyond the confines of efficient markets and hierarchies.

KEY WORDS • coordination • embeddedness • hierarchy • negotiations

1. Introduction: The Coordination Problem

This is the third in a series of papers exploring the usefulness of game-theoretic models for the reconstruction and explanation of real-world interactions in complex institutional settings. While the first of these efforts concentrated on the problem of mutual predictability in the face of ubiquitous opportunities for ignorance, misunderstanding, dissimulation and deception (Scharpf, 1990), the second one focused on the need to reduce the unmanageable complexity of a seamless web of interdependent interactions through the construction of higher-order ‘composite actors’ and through the creation of ‘boundaries of irrelevance’ and ‘boundaries of distrust’ among artificially separated games (Scharpf, 1991). The present paper returns to the same issue, asking not how complexity may be reduced, but how it might be accommodated through the purposeful coordination of the choices of interdependent actors.

‘Coordination’ is used here as a welfare-theoretic concept. It is considered desirable whenever the level of aggregate welfare obtained through the unilateral choices of interdependent actors is lower than the level which

could be obtained through choices that are jointly considered. In other words, the term is used here to describe forms of accommodation that are more demanding than the adjustment based on mutual anticipation which will produce Nash equilibrium solutions in non-cooperative games. While I have argued, in my 1990 paper, that even the playing of non-cooperative games depends on social preconditions of mutual predictability that cannot be taken for granted, coordinated action in the sense used here depends on specific and contingent attitudinal or institutional mechanisms of 'coordination', 'concertation' or 'governance', which have long been of interest to institution-oriented social scientists and economists (Lindberg et al., 1991). The literature has conventionally focused on the classical triad of 'community' (or 'solidarity'), 'markets' and 'hierarchy' (within organizations or within the state). In addition, 'relational contracts' (Macneil, 1978; Williamson, 1985), 'clans' (Ouchi, 1984), 'associations' (Streeck and Schmitter, 1985) and 'networks' are among the more recent contenders. Analytically, some of these more recent discoveries may not yet be entirely well defined. 'Clans' appear to be a business variety of 'communities', and they also seem to resemble 'relational contracts' and 'networks'; 'associations' may be a weak variant of hierarchical governance which (like democratic government) depends on the consent of the governed; and 'relational contracts' may be described as a characteristic form of interactions within 'networks'.

To sort out these ambiguities in a rigorously analytical classification scheme would be a worthwhile effort which, however, cannot be undertaken here. Leaving aside tradition-based (ethnic, linguistic, religious, class) 'communities' and treating 'market coordination' as a well-defined concept that does not require further elaboration here, the present paper will try to clarify the preconditions of certain variants of non-market coordination. At the most basic level, they can be reduced to forms of (democratically legitimated, contract-based or authoritarian) *hierarchical coordination* and forms of (voluntary or compulsory) *negotiated coordination*. In order to simplify comparison, I begin by discussing the coordination problem in the two-person case (Figure 1).

Assume two rational, self-interested actors (X) and (Y) with orthogonal utility vectors, and a number of discrete projects (A), (B), (C), (D) and (E) differing in their impacts on the utilities of these actors. If the status quo is represented by the origin of the diagram, and if it is assumed that either actor is able to realize each of these projects by unilateral action, it is clear that only projects located to the right of the y -axis would be minimally acceptable for (X), and only projects above the x -axis would be acceptable for (Y). Thus (X) would disregard projects (D) and (E) and would most prefer project (A), while (Y) would ignore (A) and (E) and would prefer project (D).

In welfare-theoretic terms, the most preferred solutions of both parties

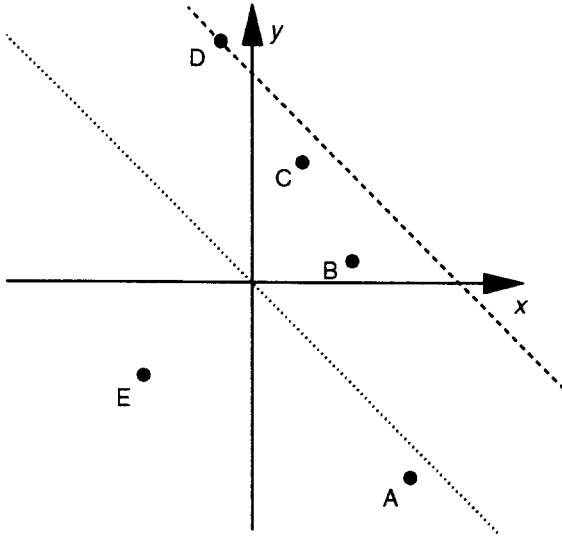


Figure 1. The Coordination Problem

would be rejected under the Pareto criterion, since both would produce improvements for one side at the expense of the other side. However, under the utilitarian Kaldor criterion (Kaldor, 1939), their evaluation would differ.¹ The difference becomes obvious when the situation is considered from the perspective of an ideal hierarchical coordinator – say the sole owner and ‘residual claimant’ (absorbing all profits and losses) of a two-division firm. Given the coordinator’s utility function [$U_C = U_X + U_Y$], it is clear that no project located below the northwest–southeast diagonal would be minimally acceptable, and that projects would be the more attractive the further northeast from the diagonal they are located in the diagram. Thus, a hierarchical coordinator would have reason to intervene against (X)’s choice of project (A), but would approve of (Y)’s most preferred project (D), even though it hurts (X)’s interests.

Now what would change if hierarchical coordination were replaced by negotiated coordination? If we assume compulsory negotiations (so that unilateral action is excluded), and if only discrete projects without side payments are admissible, it is clear that (X) would veto all solutions located to the left of the y -axis, and that (Y) would veto everything located below

1. Utilitarianism (which presupposes interpersonal comparisons of utility) is widely rejected in modern welfare economics. Nevertheless it cannot be avoided in the evaluation of political or organizational choices where decision makers are duty bound to maximize the welfare of a larger constituency or the aggregate profits of a firm (Hardin, 1988; Hausman, 1991).

the x -axis. Hence, only Pareto-superior options within the northeast quadrant of the diagram would be jointly considered by both parties. Of these, however, (X) would prefer project (B) and (Y) would prefer project (C), and there would be no obvious reason for either of them to yield voluntarily to the other's preferences. Thus, attempts at negotiated coordination would run into two characteristic difficulties: aggregate-welfare optima that are not also Pareto-superior to the status quo (i.e. that are located outside of the northeast quadrant) will be systematically disregarded; and if there should be more than one Pareto-optimal solution, there is always a possibility that disagreement over the preferred outcome may end in deadlock. It is clear, therefore, that the aggregate-welfare level that can be achieved through negotiated coordination will usually be lower than the maximum achievable through hierarchical coordination. Moreover, as the number of participants increases, the cumulation of vetoes will rapidly reduce the probability that aggregate welfare can be increased at all through multilateral negotiations among self-interested agents.²

But we have assumed discrete rather than continuously variable outcomes, and we have excluded the possibility of side payments through which winners could compensate losers. If either assumption is dropped, and if it is further assumed that the transaction costs of concluding binding contracts are negligible and that distributive consequences do not matter, the famous Coase Theorem demonstrates that all welfare gains achievable through ideal hierarchical coordination can also be captured through voluntary contracts between autonomous and purely self-interested agents (Coase, 1960). In a voluntary negotiating system, the party who objects to a project would have to buy off those who would profit from it;³ in a compulsory negotiation system, side payments would need to flow in the other direction; but in both cases the outcome would maximize aggregate welfare. Thus, in Figure 1, (Y) has more to lose from project (A) than (X) would gain from it, and hence could pay for its prevention when negotiations are voluntary. Conversely, (Y) has more to gain from project (D) than (X) would lose, and thus could buy off (X)'s veto in a compulsory joint-decision system. Under both conditions, and in the absence of transaction costs, only welfare-increasing projects above and to the right of the diagonal will be realized at all, and

2. In a negotiating system with two agents and orthogonal preference vectors and randomly distributed options, the probability that an option that is attractive to one agent will also be minimally acceptable to the other agent is $p = 1/2$ (cf. Figure 1). With three participants, that probability drops to $1/4$, with four to $1/8$, and with N participants the probability of agreement will be $(p = 1/2^{N-1})$.

3. However, for the N -person case and voluntary negotiations, i.e. when non-inclusive coalitions are possible, and when property rights do not preclude the imposition of uncompensated negative externalities on outsiders, the validity of the Coase Theorem is still in dispute (Aivazian and Callen, 1981; Coase, 1981; Aivazian et al., 1987).

rational self-interested parties will also agree on solutions located on the utility isoquant furthest northeast from the diagonal (which would maximize aggregate welfare).

The propositions of the Coase Theorem depend on the availability of continuously variable solutions or on the feasibility of side payments. These are plausible assumptions under market conditions, or at least in an economic context where money is accepted as the common denominator of all types of values. Thus, monetary side payments or even shadow prices may indeed facilitate negotiated coordination between firms and between semi-independent units within firms, and they may also provide acceptable forms of compensation in some types of negotiations among governments or between governments and private-sector interests. In many political constellations, however, money may not be a meaningful common denominator, or monetary side payments may not be normatively acceptable (Baldwin, 1990). Nevertheless, the welfare effects of the Coase Theorem may still be approximated if discrete projects with complementary cost-benefit balances can be combined into complex 'package deals' that achieve an overall balance of interests (Scharpf, 1992). Thus it has long been recognized in international relations and domestic politics that 'issue linkage' (Stein, 1980; Sebenius, 1983; McGinnis, 1986) or 'log rolling' (Weingast, 1989) may be important stratagems for facilitating agreement in otherwise intractable bargaining situations.

However, even though hierarchical and negotiated coordination may ideally attain exactly the same aggregate-welfare maximum, that does not imply that they are substitutable under real-world conditions. In both cases, optimality depends on idealized assumptions for which workable approximations may be constructed only under highly specific circumstances. It is necessary therefore to consider the preconditions which must be met in practice if either hierarchical or negotiated coordination are to approximate welfare optimality.

2. Limits of Hierarchical Coordination

It was recently noted that transaction cost economists seem to suggest no compelling reasons for not organizing all economic activities under hierarchical direction within one giant firm (Milgrom and Roberts, 1990: 78). This is all the more remarkable since another branch of the new institutional economics, public choice theory, seems to have even greater difficulty in finding any justification at all for the exercise of hierarchical authority in the public sector. Yet while the structural conditions under which hierarchical authority is exercised in firms and in government may differ, the efficiency of hierarchical coordination depends on exactly the

same functional prerequisites in both sectors (Miller, 1990).⁴ At the most abstract level, it requires the solution of both a motivational and of an informational problem. Hierarchical coordination is normatively acceptable only to the extent that authority is exercised to further the common interest of the body politic or of the firm, rather than the private interest of office holders. At the same time, since utility is produced by citizens and organization members, hierarchical coordinators must be able to rely on valid information about local conditions at the lower levels of the hierarchy. In the real world, both conditions are highly problematic.

2.1 *The Motivation Problem*

The first of these concerns has become the primary focus of positive public-choice theory. In its pessimistic varieties, 'opportunism' (i.e. 'self-interest seeking with guile': Williamson and Ouchi, 1981: 351) is assumed among all participants in the political process, and its consequences will be exacerbated by ubiquitous information asymmetries and collective-action problems. As a consequence, predation and oppression will be characteristic of the public sector even in democracies. Electoral majorities will use the powers of government to exploit minorities; pressure groups will extort political rents; political parties and parliamentary factions will distort outcomes through agenda manipulation and strategic voting; bureaucrats will maximize their budgets and the perquisites of office; and governments will maximize revenue. Under these assumptions, democratic procedures will not increase welfare efficiency; at best they will ensure a degree of chaotic instability that reduces opportunities for sustained exploitation (Riker, 1982).

But of course, if opportunism and information asymmetries were universal, the institutional safeguards postulated by public choice theorists in their prescriptive 'Constitutional Political Economy' incarnation (Brennan and Buchanan, 1985) would also be ineffective (Dryzek, 1992). Instead, constitutionalism in political theory, and institutionalist theory in general, seem logically compelled to proceed from the assumption that human behaviour is characteristically, but imperfectly, norm-oriented.

4. That transaction-cost theorists have not taken much interest in this question is probably due to the conventional identification of the interest of private-sector firms with the self-interest of their top managers (who are modelled as residual claimants: Alchian and Demsetz, 1972). When that assumption is less plausible, the argument is usually shifted to the constraints imposed on private-sector managers by the market and by the exit options available not only to customers and suppliers, but also to employees and investors. By that logic, ironically, the efficiency of *hierarchical* coordination becomes doubtful when *market failure* affects the markets from which the firm obtains its inputs of capital, labour and supplies or on which it sells its products. By the same token, of course, if market competition will keep managers honest, political competition should serve the same purposes in the public sector.

Thus, market transactions in the private sector depend not only on the legal enforcement of property rights and contractual claims, but are deeply embedded in social norms that legitimate the pursuit of 'ordinary' – but not 'opportunistic' – self-interest in the market. On the other hand, behaviour in organizations, including business firms, is governed by norms proscribing the direct pursuit of private self-interest in the performance of organizational roles, and requiring members to use their efforts to further organizational objectives within the 'zone of indifference' specified by their employment relationship (Simon, 1951, 1991). Similarly, in the public sector, heads of government, ministers and civil servants are by oath of office bound to pursue the public interest, members of parliament are normatively committed to advancing the welfare of their constituents rather than their own personal interest, and the same may be true of office holders in political parties or interest groups. In the professions, in academia, and in the media, codes of professional ethics play a similar role. The explanatory power, and the prescriptive plausibility, of theories that ignore this normative 'logic of appropriateness' would be very limited indeed (March and Olsen, 1989).

However, to assume that norms matter is not to deny the existence and importance of self-interest, and hence the ever-present danger that hierarchical power may indeed be abused. There is thus every reason to use the tools of organizational design to create incentives that will harmonize duty and self interest as much as possible. This is the logic of institutionalized political competition, of constitutional 'checks and balances', and of the constitutional freedoms of speech, press and association. However, it is one thing to design institutions that will reinforce pre-existing normative orientations of agents whose own commitment to public purposes needs to be shielded against ever-present temptations, and it is quite another matter to construct insurmountable barriers against power holders who are assumed to be exclusively self-interested and determinedly opportunistic. The history of many constitutional democracies has shown the feasibility of workable solutions to the first type of problem. By contrast, the attempt to design constitutional safeguards against the second type of problem is not only likely to be futile on its own terms, but would also cripple the governance capacity on which modern societies in turbulent environments must depend.

2.2 The Information Problem

Nevertheless, hierarchical coordination, even under the best of circumstances, remains a dangerous solution. At the same time, moreover, there is a widespread fear that it will also be inefficient. It must be difficult, so it is argued, or even impossible to transmit information on the local characteristics of problems and potential solutions to central decision-makers; and

if transmission could somehow be improved, the accumulated local knowledge could never be effectively utilized at the centre. Thus, the likely result of centralization would be either information impoverishment or information overload – producing ill-informed and unresponsive decisions or interminable delay (Hayek, 1945).

In the transaction cost literature, these Hayekian fears are countered by pointing to the principle of ‘selective intervention’, according to which superiors should strictly limit their directives to matters that need to be handled at their own organizational level, leaving everything else to lower-level agents with, presumably, better access to local information (Williamson, 1985: 133–5; Milgrom and Roberts, 1990). What is typically not spelled out, however, is a structural precondition of effective hierarchical coordination which Herbert Simon has captured in the concept of ‘near decomposability’ (Simon, 1962, 1973). It implies a certain pattern of relationships in which interactions among agents who are under the authority of a common superior must be significantly more important and more frequent than interactions with outside actors. This is the critical task of organizational design (Scharpf, 1977).

The design of nearly decomposable structures becomes an elusive goal, however, when the frequency, density and volatility of interactions increase beyond a certain level. As the interaction effects among tasks assigned to different organizational units become more frequent and important, hierarchical organizations may either enforce the existing allocation of hierarchical competencies without regard for their deteriorating ‘goodness of fit’, or they may rely on horizontal self-coordination among lower-level units without regard for the implied loss of central control. In the first case, task interdependencies between units at the same level will be ignored by first-line superiors, and inter-unit coordination problems will be shifted upwards to the level of the first common superior. As a consequence, the advantages of decentralization and selective intervention will be lost, the agenda of upper level managers will be overcrowded, and their capacity for information processing overloaded. When that happens, the preconditions for efficient hierarchical coordination will be systematically violated, and the organization will suffer from the well-known evils of overcentralization. In the second case by contrast, when subordinates are left to cope by themselves with increasing inter-unit interactions, the organization loses the advantages of hierarchical coordination, and is left with the complementary problems of horizontal self-coordination which, while qualitatively different, are not necessarily less damaging.

3. Limits of Negotiated Coordination

Within and between organizations, horizontal self-coordination typically depends on negotiations. Compared to hierarchical coordination, their motivational requirements are less demanding. Instead of depending on public-spirited or benevolent coordinators, the Coase Theorem presupposes only that negotiators will pursue their own self-interest. But in trying to reach efficient outcomes, negotiators typically must overcome two obstacles of comparable difficulty: a 'negotiators' dilemma' and a large-numbers problem.

3.1 *The Negotiators' Dilemma*

Successful negotiations imply that the parties are able to define a joint course of action which maximizes their aggregate welfare, and that they also agree on the distribution of benefits and costs. It is clear, however, that the two tasks are quite different in character – corresponding to moves in orthogonal directions in the diagrammatic representation used in Figure 1. On the one hand, in their search for superior solutions, the parties have a common interest (in the southwest–northeast dimension) in moving to a utility isoquant which is as far superior to the status quo as possible. In this respect, they are engaged in a pure coordination game in which optimal outcomes are associated with attitudes that encourage creativity, open communication and trustful cooperation (Pruitt, 1981; Groom, 1991; Häusler et al., 1993). At the same time, however, self-interested negotiators will disagree (in the northwest–southeast dimension) about the preferred location of a coordinated solution on any utility isoquant. When the dispute is about discrete solutions, it may prevent agreement altogether. When side payments are feasible, a discrete solution may be so transformed that the resultant outcome will lie on a segment of the utility isoquant within the northeast quadrant. Yet insofar as the parties will disagree over its location on that line segment, their interactions still have all the characteristics of a zero-sum conflict. There are, it is true, a number of normative solutions for the settlement of distributive conflict in bargaining situations (Nash, 1950; Kalai and Smorodinsky, 1975; Osborne and Rubinstein, 1990). From a behavioural point of view, however, the 'competitive' orientations and bargaining tactics that are conducive to success in the distributive struggle seem to be psychologically incompatible with the attitudes and practices conducive to the 'cooperative' search for, or creative design of, jointly optimal solutions. Worse yet, parties who contribute in good faith to the cooperative solution of the design problem are vulnerable to being exploited in the distributive struggle. This, in a nutshell, is the 'negotiators' dilemma' (Lax and Sebenius, 1986) which will often produce suboptimal outcomes, or

may even prevent agreement in situations where coordinated action could be highly profitable for all parties.

3.2 *The Large-Numbers Problem*

The difficulty of negotiated coordination increases exponentially with the number of independent parties, and hence with the number of transactions that must be simultaneously concluded. While cooperative game theory has developed a considerable variety of analytical solution concepts for multilateral bargaining or coalition problems (Gastel and Paelinck, 1992), most of them are associated with a degree of computational complexity that even analysts are unable to cope within practical applications (Dinar et al., 1992). By comparison, the extension of Nash-type bargaining solutions from the two-person case to the N -person case (which radically simplifies the problem by excluding the formation of partial coalitions) appears analytically more tractable. But when the solution must emerge from the negotiation process itself (rather than being prescribed by an exogenous analyst), it still requires $[N^*(N - 1) \text{ and } 2]$ pairwise agreements, each of which must take into account the current payoffs of all other actors involved (Harsanyi, 1977: 196–203). Beyond very narrow limits, therefore, the information-processing and conflict-resolution requirements of ‘all-channel’ multilateral negotiations will be prohibitive. In other words, the large-numbers problem will severely limit the size of the group within which negotiated coordination is likely to succeed in the face of complex interdependence.⁵

4. Structurally Embedded Self-Coordination

By contrast, hierarchical coordination would merely require that the options of each subordinate be communicated to a common superior who will then work out the optimal overall solution. Thus, if the span of control of each superior is kept within manageable limits, multilevel hierarchies will be

5. The distinction between ‘pooled interdependence’ and ‘reciprocal interdependence’ (Thompson, 1967: 54–5) is important here. In the former case, the appropriate solution is ‘standardization’. While there will often be disagreement about the choice among competing standards, once a proper standard has been adopted, the parties involved can make *independent* choices among their remaining options. The large-numbers problem of explosive complexity arises only under conditions of reciprocal interdependence, when the overall outcome depends upon the combined choices of all participants among their *interdependent* options. Thus, if each of (N) participants has to choose among (S) options, the identification of the overall optimum requires examination of S^N overall solutions or of $[N^*(N - 1)/2 * S^2]$ pairs of options (Scharpf, 1972, 1991).

able to coordinate the actions of even very large numbers of agents. But, to repeat, the crucial precondition of this comparative advantage is the possibility of designing nearly decomposable organizational structures. By reverse implication, the advantages of hierarchical coordination are lost in a world that is characterized by increasingly dense, extended and rapidly changing patterns of reciprocal interdependence, and by increasingly frequent, but ephemeral, interactions across all types of pre-established boundaries, intra- and interorganizational, intra- and intersectoral, intra- and international.

In other words, we seem to be at a theoretical impasse. Both hierarchical coordination and negotiated self-coordination are vulnerable to opportunism – leading to abuse and exploitation in the former and to the negotiators' dilemma in the latter instance. If these motivational problems can, somehow, be taken care of, the potential scope of self-coordination is limited by the informational complexity of multilateral negotiations under large-numbers conditions. Hierarchical coordination, by contrast, seems capable of coordinating very large numbers of agents – but only when tasks can be, and are in fact, organized in nearly decomposable structures. As the frequency and volatility of interdependent relationships increase, however, near-decomposability becomes impossible and hierarchical coordination fails as well. But how should we then explain the fact that a good deal of coordination is nevertheless achieved in highly complex real-world constellations? The answer which I develop in the remainder of this paper draws on the notion of embeddedness. In particular, I argue that many of the limitations of negotiated coordination will be overcome, or at least extended, when negotiations are in fact embedded within hierarchical or network structures.

4.1 Self-Coordination in the Shadow of Hierarchy

In our studies of policy-making in the German ministerial bureaucracy, 20 years ago, Renate Mayntz and I found no evidence that hierarchical coordination in the sense defined above⁶ was practised very often, at least at the higher levels of ministries and of the chancellor's office. What we found instead, in vertical relationships, was a 'dialogue model' in which politicians and politically appointed civil servants would be mainly concerned with the political feasibility and desirability of the solutions discussed, while questions of technical effectiveness and administrative practicability were primarily raised by professional civil servants (Mayntz

6. This is not, of course, meant to suggest that hierarchical decisions in other matters – personnel, organization and substantive decisions in individual cases – would be infrequent as well. What we failed to find were instances where complex, multilateral policy problems were resolved through hierarchical coordination.

and Scharpf, 1975: 100–7). There was no question that civil servants could be overruled by politicians. That, however, was nearly irrelevant since the decision premises which they represented could not be, and were not, ignored in the dialogue. In order to have a chance of being adopted in this multi-criteria choice constellation (Simon, 1964), solutions had to be minimally acceptable on each of these separate accounts – which also meant that the dialogue was, as a rule, resolved by agreement, rather than by hierarchical fiat.

If agreement was the rule in the vertical dimension, it was even more crucial in horizontal interactions among sections and divisions within the same ministry as well as between ministries. Practically all policy initiatives considered in one unit would either be functionally dependent on contributions from other units, or they might have impacts on matters or clientele groups within the jurisdiction of another department, or certain overarching policy goals might only be realized through the joint efforts of several departments. Under such conditions, coordination was obviously desirable, and often indispensable, for the overall success of government policy. But given the ‘selective perception’ of specialized organizational units (Dearborn and Simon, 1958), and their identification with the interests of their respective clientele groups, policy choices were also likely to be contested within the bureaucracy. Yet even though in any single case coordination might be imposed by the next common superior and, ultimately, by the cabinet, trying to do so in all or most cases was inconceivable. Decision overload at the centre would bring government policy making to a standstill. In short, hierarchical coordination, if it was practised at all, had to remain a relatively rare phenomenon. Ministers and the cabinet could only fulfil their functions if decisions on their agenda were, in most cases, based on intra- and inter-ministerial agreement previously achieved through *self-coordination* among the specialized units involved. Therefore, the real surprise was that lower level units were in fact able to reach agreement in the face of ubiquitous conflict and excessive complexity.

Positive and Negative Coordination. The solution which we identified depends on the combination of two distinct forms of self-coordination for which we used the labels ‘positive’ and ‘negative’ coordination (Scharpf, 1972). They differ in their substantive levels of aspiration as well as in their procedural requirements.

Substantively, positive coordination is an attempt to maximize the overall effectiveness and efficiency of government policy by exploring and utilizing the joint strategy options of several ministerial portfolios. Analytically, therefore, the goal of positive coordination is identical with the maximization of aggregate welfare through the idealized versions of either hierarchical or negotiated coordination. Negative coordination, by contrast, is

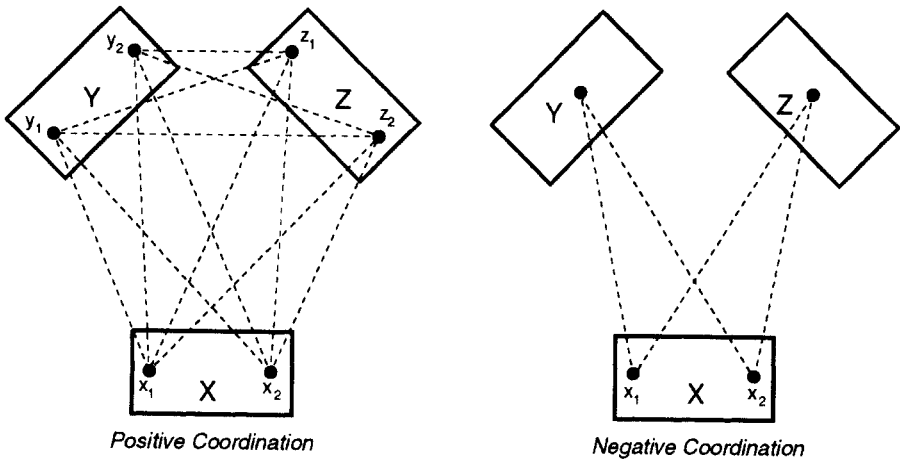


Figure 2. Positive and Negative Coordination

associated with more limited aspirations. Its goal is to ensure that any new policy initiative designed by a specialized subunit within the ministerial organization will not interfere with the established policies and the interests of other ministerial units. In welfare-theoretical terms, successful negative coordination will ensure that new policy initiatives must be Pareto-superior to the status quo, while positive coordination aims at the more ambitious Kaldor optimum.

Procedurally, positive coordination is associated with multilateral negotiations in intra- or interministerial task forces whose mandate includes consideration of all policy options of all participating units. By contrast, negative coordination will typically take the form of bilateral 'clearance' negotiations between the initiating department and other units whose portfolios might be affected – but whose own policy options are not actively considered. Moreover, explicit clearance will often be reduced to a mere formality when the initiating unit is able to anticipate objections and to adjust the design of its proposal accordingly.

It is thus clear that negative coordination will drastically reduce the overall complexity of horizontal self-coordination, and hence the importance of the large-numbers problem (Figure 2).⁷ It is equally clear, however, that the scope for policy innovation is reduced if only options within the jurisdiction

7. With (N) units and (S) policy options available to each of these, positive coordination requires the simultaneous examination of $[N*(N-1)/2*S^2]$ relationships among options; in negative coordination, by contrast, only $[S*(N-1)]$ relationships must be examined sequentially.

of the initiating unit are actively explored, while the status-quo policy set of all other units is taken as given. Negative coordination may thus result in a cumulation of vetoes which, under many circumstances, will reduce the welfare *gains* attainable below the maximum that positive coordination might achieve (see footnote 2). But compared to the welfare *losses* that would follow from uncoordinated action, even negative coordination appears quite attractive, and combinations of both modes may approach welfare optimality. At any rate, this seems to be the solution which, despite high degrees of complex interdependence, is able to assure a workable level of effective policy coordination in the ministerial organization.

The Importance of Hierarchy. At a technical level, both coordination modes can be described as forms of *horizontal self-coordination*, rather than of hierarchical coordination. But that description would ignore the continuing importance of hierarchical *structures* in ministerial policy processes. In attempts at positive coordination, success is greatly facilitated by the fact that negotiations among lower-level units are typically mandated, and that their outcome must be ratified, either by the head of a ministerial department or by the Cabinet and the Chancellor. Thus it is usually clear that the relative success or failure of negotiations will be measured in terms of the more inclusive utility function of hierarchical superiors. Moreover, since outcomes will be scrutinized at higher levels, cheating in negotiations is less likely to pay. As a result, the negotiators' dilemma that plagues negotiated self-coordination is likely to be much attenuated when negotiations are embedded within a single hierarchical structure. Similarly, negative coordination in the ministerial bureaucracy owes much of its effectiveness to authoritative rules of procedure and, ultimately, to the expectation that ministers and the Cabinet will have the last word, and that they are unlikely to ratify unilateral policy initiatives in the face of unresolved intra- or inter-departmental policy conflict.

Thus, hierarchical structures, even though incapable of achieving effective hierarchical coordination, nevertheless define the context within which negotiations must take place. On the one hand, hierarchical organization can, and usually will, create conditions of compulsory negotiations in which unilateral action is excluded from the option set of individual parties; and on the other hand, it is capable of creating conditions which largely eliminate, or at least attenuate, the temptations that otherwise may entrap parties in the negotiators' dilemma. In other words, the effective coordination capacity of negotiations can be enormously increased by virtue of the fact that they are embedded in the hierarchical structure of the ministerial bureaucracy. And since hierarchical organization is ubiquitous in the real world, there is every reason to think that hierarchically embedded

negotiations will be widely available for dealing with problems of complex interdependence arising within formal organizations.

Moreover, the basic logic of the model can be extended from negotiations within hierarchical organizations to hierarchical relationships between the state and actors under its territorial jurisdiction. In most western democracies, it is true, the unilateral exercise of state authority has largely been replaced by formal or informal negotiations, in policy formation as well as in policy implementation, between governmental actors and the affected individuals and organizations. At the same time, important areas of public concern are shaped by negotiations within pluralist or corporatist 'policy communities' or 'policy networks'. While the former pattern seems to correspond to the vertical 'dialogue model' described above, the latter has all the appearances of horizontal self-coordination. But in both dimensions, these are typically negotiations under the shadow of hierarchical authority. In many areas, compromises are subject to review at higher levels of the administration, and policy choices worked out among the organized interests must ultimately be written into binding law by legislative authority, or converted into binding decisions by administrative agencies. Here as in the ministerial bureaucracy, the government's power to approve and to ratify implies the power to disapprove, and hence the ability to insist on bona-fide negotiations, and to frustrate blatantly opportunistic stratagems. Moreover, the state will often have defined (or even created) the groups and corporate actors whose agreement will be required, and the procedures through which it is to be obtained (Lindberg and Campbell, 1991).

4.2 Self-Coordination in Networks

While the reach of self-coordination in the real world is greatly extended when negotiations are embedded in structures of hierarchical authority, it is also true that the need for coordination will often cut across the boundaries of hierarchical jurisdictions. Many of the most critical interdependencies are interorganizational, intersectoral and interstate in character, and if they can be accommodated at all, they depend on the possibility of 'coordination without hierarchy' (Chisholm, 1989). In the remainder of this article I will try to show that self-organizing networks of high-trust relationships may in fact serve some of the functions ascribed to hierarchical structures.

Networks as Emergent Structures. Like the notion of hierarchy, the network concept is generally used to describe certain types of interaction as well as certain types of structural relationships. Since networks are here considered as a functional equivalent of hierarchical organization, it is the structural connotation that is of primary interest. While definitions vary in the

literature, the emphasis generally is on the informal (non-organized) and reciprocal (non-hierarchical)⁸ qualities of relationships among more than two actors that are relatively stable over time. There is less agreement about whether the concept should be reserved for multi-actor constellations in which dyadic relationships are characterized by high levels of mutual trust – or whether the presence or absence of trust should be treated as a variable. In either case, specific interactions within a network relationship may take various forms (excluding hierarchical fiat), but they are likely to be affected by the existence of the overall network structure.

Relatively permanent network-like structures may be based on familial or friendship ties, or they may arise from legislation, administrative decree, or (relational) contract. Of greater theoretical interest is the question of whether such structures may also emerge from the repeated interactions and expectations of future interactions among otherwise unrelated, and self-interested, individual or corporate actors. This possibility is not identical with the ‘evolution of cooperation’ in iterated games (Axelrod, 1984) which presupposes the indefinite repetition of the same (Prisoner’s Dilemma type) interaction. While such conditions are relatively rare in real-world interactions, something of importance is indeed repeated when the same actors meet over and over again in an ongoing relationship. In an earlier article, I suggested that this aspect could be captured in the notion of a two-level game (Scharpf, 1990) in which specific constellations at the first level vary from one interaction to another, while the second level game is identically repeated. On this second level, actors have to choose what ‘type’ of player they will be, and will expect others to be, in the first-level game at hand.

Substantively, these second-level choices of ‘types’ can be understood as being (1) about telling the truth or lying in negotiations; (2) about keeping promises or defaulting on agreements; and (3) about using or avoiding unilateral strategies that will inflict damage on one’s partner.⁹ While the salience of these choices will vary for different encounters, the first two are basic for any type of socially productive interactions. Their importance derives from a basic dilemma of the human condition. On the one hand,

8. That is not true of ‘network-exchange theory’ which, building on the foundation of ‘power-dependency theory’ (Emerson, 1962), focuses precisely on the implications of various network structures on the symmetry or asymmetry of exchange relationships (Cook and Yamagishi, 1992). In the present context, highly asymmetrical dependence would be equated with a hierarchical structure. This is a simplification, but a more systematic exploration of the coexistence of symmetrical and asymmetrical network relationships, and its implications for coordination, cannot be attempted within the limits of the present paper.

9. In the earlier article, I have labelled this second-level game a ‘truth game’, which has given rise to unproductive misunderstandings (Brams, 1991). I might more appropriately have named it a ‘trustworthiness game’.

actors have no direct access to each other's intentions, while their objective capacity for inflicting harm on each other is potentially unlimited. Hence the uncertainty of others' choices, and the vulnerability to others' opportunism, is a fundamental problem of all interactions. On the other hand, however, if actors would respond to this dangerous uncertainty with generalized caution (or maximin strategies), they would forfeit all opportunities for profitable cooperation and exchange (Luhmann, 1988; Scharpf, 1990). There is thus a huge premium on the capacity for trustworthy communications and commitments among interdependent actors.

Game-theoretic 'folk theorems' suggest that the mere existence of ongoing relationships with expectations of future encounters will facilitate cooperative interactions. The expectation that violations of trust will be punished in future encounters is supposed to motivate rational egoists (who are supposed to sum their discounted payoffs over time) to cooperate even when defection might be more profitable in the individual play of the game. What is unclear within a rational-choice frame of reference, however, is the motivation to punish, or the 'subgame-perfectness' of folk-theorem solutions (Güth et al., 1991). Since sanctions are usually costly, why should a rational actor (i.e. one who is not driven by an 'emotional' desire for revenge: Frank, 1988) expend resources or forego potential benefits in the next round in order to get even with the perpetrator of an earlier transgression?

One plausible answer depends on constellations in which punishment is severe while the costs of punishment are low. In competitive markets and under conditions of high visibility, buyers may have low-cost options of avoiding a seller who once cheated them, or who is known to have cheated others (Tullock, 1985), and specialized information services may assure visibility under otherwise less favorable conditions (Milgrom et al., 1990). When that is so, rational actors have reason to invest in a reputation for trustworthiness even when cheating might be profitable in the case at hand.

But in many other constellations, actors cannot avoid each other at low cost. That is not only true among spouses or neighbours and among business firms under conditions of 'asset specificity' (which are a major concern of transaction-cost economics), but it is also true among territorially or functionally specialized and relatively immobile organizations such as unions, interest associations, political parties, or local, state and national governments. In all these constellations, the reputation mechanism by itself could not assure mutual trust in the model world, and we also know that real-world relationships among actors who cannot avoid each other are often characterized by mutual distrust, rather than by high trust.

So how could the network concept be used to explain the coexistence of trust and distrust in ongoing relationships? The answer which I have to offer is admittedly based on a highly speculative extrapolation from limited empirical evidence. In a study of interstate coordination in Germany

(Scharpf and Benz, 1991), we found a pervasive tendency for actors to dichotomize the nature of highly salient relationships in terms which were *either 'cooperative' or 'competitive'*. Going out on a limb, I suggest that this experience corresponds to a more general pattern in which actors tend to sort their relationships with partners whom they cannot easily avoid into three broad classes: competitive, cooperative and indifferent. These categories correspond to the 'social orientations' which seem to occur with the greatest frequency in iterated experimental games (MacCrimmon and Messick, 1976; Kelley and Thibaut, 1978; Schulz and May, 1989). Of these, only the 'indifferent' orientation corresponds to the standard assumptions of economic and game-theoretic models according to which actors will always pursue (and expect others to pursue) their own self-interest without regard to the payoffs received by opponents. In the other two cases, by contrast, actors are very much concerned with each other's payoffs.

The tendency to define salient relationships in either competitive or cooperative terms may be rooted in human nature (Messick, 1985), but it may also be explained as the best response of boundedly rational actors to the fundamental uncertainty of human interactions asserted above. Under most conditions, long-term relationships will include individual encounters that will vary in their game-theoretic characteristics. Some of them may resemble zero-sum games, some pure-coordination games, and many will have the structure of mixed-motive games, the Prisoner's Dilemma, Assurance, Chicken, Battle of the Sexes and the like. If all of these games were simply played as they come, according to the rules of self-interest maximizing rationality and with complete information, parties would help each other some of the time, and hurt each other at other times. Under conditions of incomplete information, however, actors would not be able to distinguish one game constellation from another. With only a modest degree of risk aversion or a tendency to exaggerate the weight of losses as compared to gains (Kahneman and Tversky, 1984), the most plausible reply would, again, be generalized caution.

But since generalized distrust would have such undesirable consequences, it is indeed reasonable to postulate a pervasive human interest in trustful relationships (Sabel, 1992). Given the potential variety of incompletely understood game constellations, this interest can find its expression only through the formation of *generalized* expectations – and it can only be realized if these expectations are likely to be confirmed in subsequent interactions. Such expectations could not be uniform across all relationships, but it is also unlikely that they would be completely individualized. Instead, it seems useful to think of them as empirical generalizations derived from the objective characteristics of highly salient or frequent encounters.

Thus one would expect that relationships governed by *'competitive'* or

even *'hostile'*¹⁰ orientations will have a foundation in constellations in which the parties often find themselves pursuing objectively incompatible goals. When such encounters are frequent, it seems reasonable that all other interactions will also be evaluated by the criterion of whether the outcome will strengthen or weaken the opponent (Powell, 1991). As a consequence, actors will want to protect themselves against being hurt in situations where opponents might inflict damage with impunity, and they will expect opponents to be caught in the same *'security dilemma'* (Jervis, 1978, 1985). Thus, by trying to protect themselves against worst-case scenarios, actors will transform individual encounters, regardless of their *'given'* character, into zero-sum *'effective games'* (Kelley-Thibaut, 1978; Scharpf, 1989). The relationship as such will then be defined by generalized expectations of competition or hostility – which will be generally confirmed by subsequent experience.

While generalized distrust is self-confirming, this is not true of generalized trust. Even if ongoing relations are based on frequent instances in which parties find themselves pursuing objectively common interests, that by itself would suffice for establishing *'cooperative'* orientations when specific interest constellations, and their interpretation, may vary from one encounter to another. Since actors cannot reliably assess each other's perceptions and intentions, cooperation always implies risky moves to strategically vulnerable positions. Worse yet, if the outcome should be disappointing, the aggrieved party could not necessarily distinguish, even after the fact, between *'innocent'* cases, explained by honest mistakes or a contingent conflict of interests, and maliciously inflicted damage, implying a general switch of the opponent to competitive or even hostile orientations (Jervis, 1988).

Given the riskiness of being trustful, it seems reasonable therefore that actors will respond to these monitoring difficulties, not by resorting to generalized distrust, but by raising the standard of what is considered *'trustworthy'* or, what amounts to the same thing, by lowering the threshold at which trust is withdrawn. Instead of searching for elusive explanations, they would have reason to respond directly to instances in which actual damage is done to their interests. The implication is that *'cooperative'* relationships will be defined by the generalized expectation that partners will avoid damaging each other's interest positions.¹¹ Yet given the variability of real-world game constellations, such expectations would be

10. Competitive orientations are defined by the maximization of *'relative gains'*, hostile orientations by the maximization of *'opponent's losses'*.

11. In the social-psychological literature, *'cooperative'* orientations are generally equated with the solidaristic *'maximization of joint gains'*. The present definition is less demanding. It permits the *'maximization of own gains'* under the constraint that the other's status-quo position is not violated.

unrealistic if partners in an ongoing relationship were maximizing their own utility in each encounter. Generalized trust, in other words, presumes a willingness of partners to invest in the maintenance of a long-term cooperative relationship even at a cost to themselves in the individual case. When that presumption comes to define mutual expectations, 'honest mistakes' may still be condoned after a satisfactory explanation, but any other disappointment is likely to be interpreted as a renunciation of the cooperative relationship itself which, in turn, justifies the general withdrawal of trust.

Thus, generalized trust is easily destroyed. But where it exists, it is enormously advantageous. It will enable rational actors to enter into vulnerable positions, and to engage in high-risk (and potentially high-gain) mixed-motive transactions under conditions of incomplete information. Nevertheless, it is unlikely that actors will be able to define most, or even many, of their ongoing relationships in terms of generalized trust. In the face of irreducible uncertainty, trusting remains a deliberate choice that is not lightly taken (Sabel, 1993). Even more important is the fact that making oneself trustworthy is a costly, and easily forfeited, investment whose costs will rise steeply if the actor should be confronted with conflicting expectations from two or several trustors at the same time. Thus the attempt to become 'everybody's darling' is usually defeated by the high opportunity costs of maintaining cooperative expectations.

This leaves room for a third category of long-term relationships in which actors will not treat their partners as either friend or foe. While they will not expect others to go far out of their way in order to help them, small reciprocal favours will not be unusual, and actors may come to expect that others will act 'considerately' by avoiding reckless choices and needless damage to their own interests (Colman, 1982: 38) – and they may switch to competitive orientations if these minimal expectations should be violated. In other words, interpersonal orientations in these '*indifferent*' relationships will roughly correspond to the standard assumptions of self-interested but non-opportunistic rationality employed in economic analyses.

The resulting overall patterns of relationships are likely to be highly structured. Given their high cost, cooperative bonds will be formed selectively, and the same is true of competitive relationships, whose maintenance also requires constant attention and effort. Moreover, cooperative as well as competitive orientations are most likely to occur in relationships of high intrinsic salience, characterized by potentially high gains or high vulnerability, in which it is psychologically most plausible to assume that 'who is not for me must be against me'. Rational indifference, by contrast, is most likely to be maintained in relationships of lower intrinsic salience. Beyond that, psychological theories of 'structural balance' postulate that populations of actors will sort themselves into clusters of positively related

actors that are separated from other clusters through hostile or indifferent relationships.¹² At the level of organized action, however, where relationships are themselves the object of strategic choices, empirically observed patterns appear to be much more variable and disorderly (McDonald and Rosecrance, 1985). Thus, all we can generally assume is that cooperative relationships will form highly selective network structures which, however, will not be isolated. Their members will also interact with other agents to whom they are connected through indifferent or competitive relationships.

Positive and Negative Coordination in Networks. How will the existence of cooperative networks contribute to the overall effectiveness of non-hierarchical coordination in modern societies? There is no question that *positive coordination* will be greatly facilitated if negotiations are conducted among parties whose underlying relationships are characterized by cooperative orientations. Generalized trust and commitments to trustworthiness will rule out the opportunistic bargaining strategies that are at the core of the 'negotiators' dilemma'; and if distributive conflict is not displaced by expectations of 'diffuse reciprocity' (Keohane, 1986), it is at least likely to be attenuated by broad agreement on norms of distributive justice. It is also clear, however, that these beneficial effects will occur only in cases where coordination needs coincide with the given structure of a cooperative network.

Near decomposability, in other words, is not only a problem for hierarchical organizations but also for network structures. While its requirements may be more easily met in self-organizing networks that respond to the perceived intensities of bilateral interdependence, the volatility of interaction effects will generally prevent a perfect fit between current problem constellations and more permanent network structures. Friends would not be friends if one could easily change them when coordination needs change. Hence it is likely, in any specific instance, that at least some of the actors whose agreement will be needed for positive coordination will not be included among the members of an ongoing cooperative network. That is surely not the end of *positive coordination*. But the presence of 'outsiders' will again raise transaction costs and make agreement more difficult and it will, as a consequence of the large-numbers problem, limit the size of the group within which negotiated coordination can be successful.

12. Fritz Heider's theory of 'cognitive balance' assumes that relationships are either positive or negative, and it postulates that the friend of a friend must be my friend, the friend of an enemy must be my enemy, the enemy of a friend must be my enemy, and the enemy of an enemy must be my friend (Heider, 1946; Cartwright and Harary, 1956). By these rules, populations are decomposed into two hostile camps. If indifferent relationships are also allowed, populations will be composed of multiple groups of friends separated from other groups through either hostile or indifferent relationships (Hummell and Soudeur, 1987).

By contrast, *negative coordination* will gain in importance and effectiveness precisely when cooperative networks and patterns of de-facto interdependence are criss-crossing. Outside the confines of hierarchical organization, the legal order provides only limited protection against the external effects of unilateral action. Criminal law and the private law of torts offer recourse against violations of life, physical integrity and liberty and certain well-defined 'property rights'. Beyond that, there is no general legal obligation to look out for the interests of potentially affected third parties. Private organizations are not prevented from raiding each other's customers, clients, members or sponsors; and public agencies are free to pursue their own policies regardless of the externalities imposed on other jurisdictions. That is of course even more true at the international level. And even if individual actors might wish to be considerate, collective egotism is likely to prevail when choices must be determined in the context of multilateral positive coordination. Since agreement among the negotiators immediately involved will be difficult to reach, 'gratuitous' consideration for the interests of outsiders is likely to get short shrift.

It is fortunate, therefore, that negotiation sets will not usually be coextensive with cooperative networks, and that many or most of their members will have cooperative linkages to some third parties who are not immediately involved in the negotiations. Whenever that is true, the collective selfishness associated with positive coordination will be counteracted by the individual self-interest of negotiators, who must protect some high-trust relationships with outside partners. They will have strong motives for maintaining a dual orientation: while they will seek the best outcome in negotiations, they must also consider the impact of potential agreements on the interest positions of actors who are not parties to the immediate negotiation. If these should be violated, this might jeopardize trust-based relationships created through costly investments in the past and expected to generate a continuing stream of benefits in the future.¹³ It is probably not often that the benefits of a particular negotiated settlement will be worth such a high price.

Negative coordination, in other words, is likely to work in network structures much as it does in hierarchical structures. It will help to avoid (some) negative externalities and it will, at the same time, constrain the action space that can be utilized in, and hence the welfare gains that can be attained through, negotiated positive coordination. Nevertheless, the opportunity costs of negative coordination should not be overestimated. They are limited by the fact that cooperative networks are self-organizing, rather

13. Similar constraints on negotiation may result from the existence of competitive or hostile external relationships, and the overriding interest of some parties to avoid outcomes that would give aid and comfort to their enemies.

than hierarchically imposed. Since network linkages are created by the actors immediately involved, they are likely to represent the most salient structural interdependencies perceived by these actors; and since their change does not depend on formal agreement, their 'goodness of fit' is less likely to deteriorate without inducing structural changes. Moreover, the boundaries of the negotiation sets within which positive coordination can be practised are also not immutable. They are likely to conform to perceived interdependencies in the first place, but they can also be changed ad hoc, and they will move over time.

5. Conclusion

The existence of cooperative network structures will facilitate forms of positive and negative self-coordination that are quite similar to those produced within hierarchical organizations. In both cases, the embeddedness of negotiations within larger structures will reduce transaction costs and thus extend the reach and the effectiveness of positive coordination. Even more important, embeddedness will help to protect, through negative coordination, the interests of actors who are not included in a particular negotiation set. In combination, these mechanisms will increase the potential scope of coordinated action beyond what could be expected from either hierarchical or negotiated coordination considered in isolation.

However, structural embeddedness also implies that outcomes will be structure dependent. Negotiated self-coordination in hierarchies depends on the given structure of authority (or asymmetrical power) relationships and on the boundaries of formal organizations. And while network structures will reach across organizational boundaries, their effectiveness will be equally or even more selective, depending on the pre-existing distribution of strong and weak ties among formally independent individual and organizational actors. While the overall level of coordinatedness will increase, there is surely no reason to think that all or most opportunities for optimization will in fact be utilized and that all or most interests will be protected against the negative externalities of decisions taken elsewhere. The concept of embedded negotiations, in other words, provides no promise of welfare optimality under real-world conditions. But it does offer a better explanation than we have had so far for the surprising degree of effective coordination which nevertheless exists beyond the confines of coordination provided by efficient markets and hierarchies.

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Professor FRITZ W. SCHARPF is Director of the Max-Planck Institute, Köln. He studied Law and Political Science at the universities of Tübingen and Freiburg, and holds an LLM from Yale University. Since the mid-1960s he has held senior positions at Yale Law School, the universities of Konstanz and Stanford, California, and the Wissenschaftszentrum Berlin. His research interests include: organization and decision processes in the ministerial bureaucracy; joint federal-state decision-making; implementation research; comparative political economy; federalism and European integration; and game-theoretical application in empirical research. ADDRESS: Max-Planck-Institut für Gesellschaftsforschung, Lothringer Strasse 78, 5000 Köln 1, Germany.

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