

THE ROLE OF TECHNICAL STANDARDS IN THE SOCIAL REGULATION
OF SUPPLIER RELATIONS IN BRITAIN AND GERMANY

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Abstract

The paper is concerned to show that different national systems of social institutions result in divergent levels of trust and cooperation in supplier relations. An analysis of institutionalised rule systems, particularly of technical standards, traces their impact on various aspects of supplier relations in Britain and Germany and attempts some evaluation of performance outcomes. Drawing on a theoretical framework which combines the insights of New Institutionalism in economics and sociology, it is shown that a higher degree of stability and consistency in systems of social regulation in Germany than in Britain leads to more consensual and predictable relations between firms in which the development of mutual trust encourages more long-term and closer technical collaboration. The paper presents data from a recent comparative study of supplier relations conducted within the Centre for Business Research and supplements them with information from more comprehensive studies of legal and technical regulation in the two countries.

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1. Introduction

It is widely held by social scientists of various disciplines that trust and cooperation in inter-firm relations improve business performance (Lorenz 1988; Best 1990; Sako 1992; Sabel 1992; Lane and Bachmann 1996). There is no agreement in the literature on how trust is generated. Whereas some authors put strong emphasis on the importance of personal trust, developed in long-standing inter-personal relations (e.g. Sako 1992, Sabel 1992), others also point to the importance of system trust (Luhmann 1979) or institutionally based trust (Zucker 1986), particularly in advanced societies where durable face-to-face relations have been disrupted. This paper will concentrate mainly on institutionally-based trust. It will explore how trust and cooperation are influenced by systems of rules, regulating social behaviour and thereby enhancing stability, predictability and reducing uncertainty.

Systems of rules, broadly conceived, may be seen as embodied in social institutions which operate at multiple levels of jurisdiction. Institutions affect the level of transaction costs within organizations and hence influence business performance (North 1990). Institutional ensembles differ between societies and therefore generate different types of organizations and inter-organizational relations within different socio-geographic units (North 1990: 5; Whitley 1992). The effects depend not only on the content of rules but also on the stability and mutual reinforcement of rule systems. It is suggested that cooperation is more easily achieved in social contexts where systems of rules are mutually supportive and enjoy high levels of legitimacy (Scott 1995).

Informed by the above theoretical claims, this paper attempts to show that different national systems of institutions result in different levels of trust and cooperation in supplier relations which, in turn, shape aspects of business performance. This will be done by presenting data from a comparative study of supplier relations in two industries in Britain and Germany¹, interpreted in relation to a set of national institutions or rule systems. An attempt is also made to link British and German styles of regulating supplier relations with

performance outcomes. In addition to national institutional rules, industry rules and conventions, as well as their technical requirements, will be given some consideration.

2. Theoretical Framework

Institutions, institutional rules and their impact on behaviour within and between organizations are conceptualized very differently in economics/economic history, on the one side, and sociology and political science, on the other. We do, however, also find variation within disciplines, as well as some overlap between the social sciences. The latter is particularly notable between those economists who recognise the social nature of economic action and those sociologists who study aspects of business organization. The various theoretical approaches to the study of institutional effects and their underlying ontological assumptions have been lucidly analysed and contrasted by Scott (1995).

Among economists who take seriously the social nature of economic actors, such as, for example, North (1990), the prime influence of institutions is regulative, rules are explicit and enforced by sanctions, and individuals comply because it is expedient to do so. North does not completely neglect normative and cognitive aspects of institutions, but they remain secondary in his assessment of institutional effects on a society's economic development. Institutions are seen to create incentive structures towards which procedurally rational actors (actors who make decisions in the light of available knowledge and means of computation) orient their behaviour. Institutional rules are seen to determine the level of transaction costs in business relations and therefore are explicitly connected with business performance.

Sociological institutionalists have a more socially embedded conception of the logic of social action. They are prone to emphasise either the normative aspects of institutional rules and obligation as the basis for compliance, or, more frequently in recent decades, the cognitive aspects of rules and their being taken for granted as the basis for compliance. It is this latter approach, associated with New Institutionalism in organizational sociology (Powell and DiMaggio 1991; Scott 1995) which merits further attention. As rule-following in this approach is seen to be more habitual and based on imitation

it is not assumed that individuals necessarily act in a calculative way to maximise their self-interest. Instead there is a strong emphasis on the reciprocal social construction of actors and institutions, and both actors' interests and the means to pursue them are viewed as socially constructed. Rules, in this context, are cultural meaning systems which provide social scripts, allowing actors to make sense of their social environment. Individual behaviour is thus seen to reflect external definitions, rather than internal intentions (Scott 1995: 42).

The term 'transaction costs' is not used, as it implies calculation and the making of conscious choices. But highly coordinated behaviour, resulting from common frames of meaning which align expectations and enhance predictability, may nevertheless be seen to have the same (unintended) effect of reducing transaction costs as envisaged in the economic approach. New Institutionalists in sociology examine institutional effects in a wider range of mostly non-profit-making organizations and have therefore been less explicit about impact on performance. But the more general observation by Scharpf (1987), quoted by Müller-Jentsch (1996), that, by reducing the large variety of possible behavioural responses in an exchange relationship, more complex strategies and more demanding goals become possible than would otherwise have been the case, has clear implications for performance.

Although the analytical approaches outlined above are based on different ontological assumptions, most sociological studies of national business systems or industrial orders (e.g. Whitley 1992; Whitley and Kristensen 1995) have combined elements of all three approaches to the study of institutional effects in their work. Thus, while concurring with New Institutionalists that actors and institutions are socially constructed and that much social action is habitual rather than rationally calculated, most economic sociologists would concede that, in some situations, procedurally rational behaviour comes to the fore. According to Scott (1995: 145), in certain circumstances the three aspects of institutions - regulative, normative, and cognitive - may operate in mutually supportive and reinforcing ways. Economic sociologists who study national business systems also share economists' focus on explicit rules and their regulative effects, without, however, losing sight of normative and, more so, cognitive effects. Lastly, they concur with economists like North (1990) that different national institutional ensembles are associated with different

performance characteristics. But their inclusion of cultural meaning systems enables them to make finer distinctions **within** the group of advanced or developing economies, rather than the broad distinction **between** these types of economies, undertaken by North.

Such an 'eclectic' sociological approach, linking national institutional ensembles with regulative, normative and cognitive effects, will be adopted in this paper. The analysis thus goes beyond the conventional view of regulation as state imposition of explicit rules and includes also voluntarily agreed institutional rules at intermediary level, as well as examining informally generated norms, definitions of social reality and social scripts or routines.

In agreement with North (1990: 69), it is held that institutional rules do not necessarily increase efficiency but that they may also exert negative effects. Thus a high density of rules cannot automatically be credited with performance-enhancing effects, and it is necessary to identify empirically in what circumstances institutional rules foster effective performance. Too much order may create rigidity, too little results in allocative inefficiency and even anomie (Voelzkow 1993: 133).

The following rule systems or institutions will be examined: 1. regulation by sectoral trade associations (TAs) which disseminate both social and technical rules regulating market behaviour, as well as generating more informal norms and social conventions. 2. state regulation through the use of law and the informal norms, values and meaning systems, surrounding the use of law. 3. the rule systems and conventions of institutions establishing technical standards which also incorporate more or less transparent social and economic objectives. Social regulation by trade associations and the law have received detailed treatment in earlier work (Lane and Bachmann 1995, 1996) and legal regulation is also covered in detail by Arrighetti et al, 1996. Consequently, the main focus in this paper will be on systems of technical norm-setting or standard-making and their degree of congruence with other systems. The following aspects of these rule systems will be examined: the density of rules and the scope of regulation; the content of norms and rules; and the degree of legitimacy they enjoy. Although there are a few studies which examine the impact of standards on British industry (e.g. Swann et al 1995; Collins 1996) these are conducted from a purely economic perspective, and a comparative sociological study, to my knowledge, does not exist.

Examination of each system of social regulation will pay attention to how much it meshes with other systems and particularly to what extent legal and statutory regulation endorses and legitimises lower-level systems of regulation. Although endorsement of institutions by the state is considered important for legitimacy the latter can also be derived from connection with wider cognitive frames, norms and rules (Berger and Luckmann 1967: 92).

3. Institutions and Social Regulation

3.1 Trade associations

Trade associations may be viewed as a potentially highly important form of institutionalised mutual control between firms, and this control results from both formal regulation and more informal behavioural norms and understandings. To exert control over their members trade associations (TAs) have to have sufficient material and organisational resources to render them independent from individual member firms and to enable them to bind members to the association by the provision of selective and, particularly, monopoly goods/services (Schmitter and Streeck 1981; Weber 1987). The legitimacy of TA rules is enhanced if they enjoy government recognition as an effective representative organ and a respected interlocutor. Both these features determine the level of membership and the degree of conformity to rules which, in turn, shapes the degree to which rule systems become established as meaning systems with a taken-for-granted character. The level of active involvement by members in decentralized fora for meeting and the ensuing opportunity for face-to-face meeting and direct social pressure on members is also bound to increase compliance with rules. In an earlier paper (Lane and Bachmann 1995) it was shown that German TAs are very effective organisations and have developed all three rule systems whereas their British counterparts generally must be considered relatively weak in these respects.

Consequently, German TAs have been able to introduce a number of important rules, regulating the market behaviour of member firms. Among these are rules on the standardization of business terms in contractual relations, rules of market conduct and technical norms and standards. These rules have no legal force. TAs nevertheless succeed, through the use of positive incentives, such as the provision of monopoly goods, in making their rules binding. But

membership of TAs and adherence to their rules also have a taken-for-granted character which is simply expected from all but the smallest of German firms. TAs also protect individual firms against the imposition of unfair contract terms by initiating an injunction against offending firms (*Verbandsklage*) (Zweigert and Kötz 1990: 370), but fair treatment by a large buyer firm of a smaller supplier was also presented to us as a social obligation, which had to be fulfilled to safeguard reputation (Interview Notes 1993). Also timely payment of trade debts was not only uniformly observed to avoid compulsory interest payment but was seen as an industry custom, observance of which was considered obligatory to preserve the good reputation of one's firm. The adoption of this common stock of rules, norms and social scripts renders inter-firm relations more transparent and predictable and hence eases cooperation between buyer and supplier firms. British TAs, in contrast, are unable to enforce binding rules of market behaviour, and, in the absence of formal rules, departure from fair market behaviour, such as late payment of trade debts, is not sanctioned by loss of reputation.

German TAs are not only cooperating very closely with norm-setting institutions by recruiting firms into the standard-making process but have also assumed quasi-legal functions. The standardised General Business Conditions (AGBs) constitute a preformulated set of contractual rules, and most TAs also act as arbiters in business disputes. The Standard Contracts Terms Act of 1977, in turn, proscribing the inclusion of non-legal conditions into the AGBs, endows them with added legitimacy. The delegation of such functions by the state and the recognition this entails is very significant for the enhancement of TA legitimacy. Such interpenetration of the various formal systems of social regulation of business relations exists only in attenuated form in Britain. The relation with the state, being less formalised and highly discretionary, does not contribute substantially to legitimacy among potential or actual members. The differing role played by trade associations in the regulation of inter-firm relations was reflected in the evaluations of membership made by our sample of firms. German firms were more inclined than British firms to view their membership as highly positive or, at the very least, as *de facto* obligatory. It was simply expected from all but the smallest German firms in our industries that they belong to one or more trade associations, and no such normative constraint was felt by British firms.

3.2 Legal regulation

While trade associations are important organs of social regulation, functioning on the principle of self-organization, legal regulation of business relations involves state control. It constitutes both the most highly formalised form of control and has the strongest sanctioning power. The extent of legal regulation of business relations, the degree of legitimacy of the law, its content and the extent of its interpenetration with other systems of social regulation all differ very significantly between Britain and Germany.

In Germany, the law has a very wide scope, regulating most areas of social, political and economic life in a detailed manner. Business relations between firms are not exempt from this general pattern of juridification. The development of reflexive or procedural law, discussed by Teubner (1993) in terms of autopoiesis, has served to counteract the rigidifying effect of dense legal regulation to some extent, by creating 'regulated autonomy'. Reflexive law involves the use of indeterminate legal clauses which are given more concrete content by those applying them. Instead of submitting social behaviour directly to [its] norms the law confines itself to the regulation of organisations, procedures and the redistribution of steering rights (*Steuerungsrechte*).

Due to the historical origins of the modern German legal system (see Lane and Bachmann 1995), law enjoys a high degree of authority and acceptance, and knowledge of business law is wide-spread among purchasing and sales managers (Interview Notes 1993; Stewart et al 1994). A function of law is 'to tell society what is most important among its customs and practices' (Ellickson 1991). The social values and norms enshrined in German commercial law have changed over time, and since WW II those of the Social Market Economy have acquired prominence, resulting in a strong emphasis on mutuality and social responsibility. This adaptation has become possible through changing interpretations of a central legal concept, the notion of good faith (Lane and Bachmann 1995) and the prevalence of what is called 'judge-made law', as well as through the introduction of new laws, such as the 1977 Standard Contract Terms Act (*ibid*).

In Britain, there is a perception that the English common law is a product of organic development, having evolved through judicial precedents over several centuries, rather than as a process of conscious design or codification. There is a tradition of regarding legislation, by contrast, as an oppressive exercise of state power, and judges and commentators have on occasion gone so far as to regard statutory intervention as alien to “legal science” (Pollock 1908: 5). While this doctrine has been most clearly expressed in labour relations, it has also affected business relations more generally. It has helped to give rise to a doctrine of legal abstentionism which has restricted the scope for legal regulation (*ibid*). This is expressed in a more marginal role for legal expertise in British firms (Stewart et al 1994) and a lower degree of familiarity with and acceptance of the law among managers.

The moral content of English commercial law has remained relatively unchanged over time, and the values of bourgeois liberalism, emphasising individual freedom of decision-making and individual rather than mutual responsibility, have retained centrality. Although notions of fairness and equity are not absent in British contract law there are fewer and weaker mechanisms than in German law to protect the weaker party (Zweigert and Kötz 1992). This is evident both in contract law (see Lane and Bachmann 1996) and in the legal regulation, surrounding technical norms. This general comparison of the two legal systems illustrates that formal rules, backed by enforcement mechanisms, give rise to more informal norms and meaning systems which then have a bearing on the degree of legitimacy the law enjoys and the consistency with which it is referred to.

The results of our empirical research on contractual relations in the two countries, covered in detail by Arrighetti et al (1996) shows that legal regulation is more uniformly accepted in German than in British enterprises. Furthermore, it bears out the claim that universal acceptance of legal rules, supported by other meaning systems, has definite positive consequences for inter-firm relations which are bound to affect business performance.

Rather than making a business relationship more conflictual, as inferred by Macauley (1963) and Sako (1992), contract law can serve to enhance cooperation. By creating common understandings and reducing the risk of trust between business partners (Luhmann 1979: 34) it encourages long-term

relations. The trust-enhancing effect of contract was, significantly, acknowledged more frequently by German than British firms. Longer-term relations, in turn, provide incentives to develop a closer relationship, with more mutual investment of material and knowledge resources into the relationship. The closer technical cooperation between German buyer and supplier firms, found by our study, bears witness to this. This also supports Scharpf's (1987) claim that extensive social regulation of an exchange relationship permits the adoption of more demanding strategies and ambitious goals.

The greater degree of formalisation of regulation present in German firms has not had a destructive impact on more informal social regulation of business relations. On the contrary, informal inter-personal ways of solving problems were valued as highly by German as by British managers. There is some evidence (Lane and Bachmann 1996) that these can thrive better within the stable framework created by legal and other types of regulation.

Last, it has been indicated that, in German inter-firm relations, there is more interpenetration and mutual reinforcement between systems of regulation than in Britain. The above has indicated the meshing between informal customary, trade association and legal rules. The following section will demonstrate an even closer relationship between legal and technical regulation in Germany and an absence of such interpenetration in the British context.

4. Regulation Through Technical Standards

Technical norms or standards are mainly connected with regulative effects, but their normative and cognitive aspects also merit some consideration. Such standards play a very important regulative role in inter-firm relations due to their capacity to achieve a significant reduction in transaction costs. Their normative effects are expressed in the fact that they privilege certain cooperative strategies over adversarial ones, and the impact of standards on cognitive processes is evident in the way certain technical problem solutions assume a taken-for-granted character within an industry.

Standards fulfill three main functions, connected with market regulation: 1. they bring about homogeneity of goods and thus create market transparency

and reduce transaction costs between buyers and sellers; 2. technical standards establish compatibility between different parts markets, concerning technical tolerances, composition of materials, quality categories and production procedures; 3. norms and rules keep negative external effects (externalities) of products and processes within tolerable limits and reduce risk, particularly in the areas of employee, consumer and environmental protection. Standards thus provide considerable material benefits for those market participants who have consented to their establishment although the introduction of protective standards can also be connected with substantial costs.

Market-opening effects occur when standards have been introduced collectively on an industry basis and are widely disseminated within it, whereas market closure is the result of standard imposition by large firms acting in an individualistic manner. (Because of this discriminatory potential, they come under the scrutiny of the German Monopolies' Commission (*Kartellamt*)). But, conversely, collective standard-making can also counter the market power of large corporations which, as market leaders, have tried to impose their technical solutions. Thus, technical standards can also serve to limit market power and safeguard competition (Voelzkow 1993: 45). Both the market constituting capacity of technical standards and their ability to effect market closure have made international bodies, such as the EC and the World Trade Organisation (formerly the GATT), mindful to achieve a harmonisation of different national standards, and a large part of standard-creating activity now occurs at the supra-national level.

Standards are not purely technical devices but, as pointed out above, they also have important normative and cognitive effects. Collective standard-making, by definition, furthers cooperative strategies and may enhance common technical learning and technological collaboration. Thus technical norms serve to preserve and transmit technical know-how (Mai 1988: 116), and certain cognitive frames, embodied in standards, become taken for granted throughout an industry. 'They are just a way of life' observed one of our British mining machinery respondents. Mandatory norms, by reducing or containing social risks, embody social norms and values, such as care for employees' safety at work or concern for the environment, and even the definition of safety and bearable risk is socially variable. Variability between countries in the definition of socially adequate behaviour and standards will

find expression in technical standards, and the adoption of one country's technical standards by another thus entails a lot more than the mere acceptance of technical content.

Most of the above applies only to specification standards/norms, i.e. technical standards which specify the technical and material attributes of components, whole products and processes. Until recently, these were the main kind of standard. In the last two decades, however, quality assurance (QA) or quality management (QM) standards have assumed increasing importance. They are not concerned with specifying product properties but are procedural standards, laying down 'sound technical and administrative procedures for ensuring quality' (Dept. of Trade 1982: 11). 'An ISO 9000 certificatedoes **not** state that every single product is in order but merely that the conditions are present which make it **probable** that the firm manufactures products of high quality' (Reihlen 1994: 7, my emphasis). Such standards, which require no joining in collective action on the part of firms, characteristically were first introduced in Britain (BS 5750). They have since become adopted also by European and international standard-setting bodies (ISO 9000). It must be noted that their procedural emphasis and voluntarist slant in the definition of levels of quality do not **necessarily** raise absolute levels of product quality, nor do they aid comparability. They may, however, have an important indirect impact on quality within an industry in that, according to one of our British respondents, they make it more difficult for 'cowboys' to remain in the market.

It is thus evident that standards can be connected with a variety of regulative, normative and cognitive effects, depending on the manner in which they have been institutionally produced and reproduced. Section 4. 1 examines the different ways in which standard-making or norm-setting has become institutionalised in Britain and Germany.

4.1 The British and German Systems of Norm-Setting

4.1.1 History and organisation

Both British and German norm-setting institutions have a long history (BSO 1991), but they have differed fundamentally in the degree of organisational unity, their capacity and scope of action and their importance for national

industrial activity. Whereas in Germany the production of technical norms achieved considerable importance already at the close of the 19th century in Britain it remained uninfluential until WW II (Weber 1987; Kindleberger 1983; Best and Humphries 1987). Even in the post WW II period, the British system has remained patchy and fragmented in many respects. A 1982 Government White Paper on Standards (Dept. of Trade 1982) addressed itself to the perceived weaknesses, and some, though by no means all of them, appear to have been remedied since then (National Audit Office (NAO) 1990). This has resulted in a situation where the almost universal use of technical standards in German industry has made them a 'taken-for-granted' part of business activity, whereas in Britain their only patchy use has served to limit their normative and cognitive effects.

Among the several German national organizations concerned with the setting and dissemination of norms the DIN (Deutsches Institut für Normung) and the VDI, the professional association of engineers, are the most important. These organizations enjoy state recognition but remain private, non-profit making bodies. In Britain, standards have been devised both by individual large firms (particularly, but not solely, in the nationalised industries) and by national standard-setting institutions (ACARD 1982: 24, 47; Dept. of Trade 1982: 2-3). At the national level, the British Standards Institute (BSI), founded in its present form in 1931, has long been the most important institution for the preparation and promulgation of standards. Like the DIN, it is an independent non-governmental organization, but it receives a significant portion of its income from the state - the government matches the income derived from membership fees. The government is represented on its board and appears to carry out a supervision function.

The scope of activity of the DIN is much wider than that of the BSI, with the number of German standards being almost twice as high as that of its British counterpart (NAO 1990: 33). It is an independent, non profit-making institution and is self-supporting to a much higher degree than the BSI (NAO 1990: 33). 67 per cent of its financial resources are raised from the sale of norms and from publishing and teaching activities, 18 per cent come from industrial subscription and only 15 per cent from the state (DIN 1993: 7). In the late 1980s it had over 5,000 corporate members (Voelzkow 1994: 81). Its budget of 160 million DM (£72 million at 1996 exchange rates) and a full-

time staff of 1061 in 1993 (DIN 1994) make it comparable to a very large firm.

The VDI, a giant professional association of engineers with more than 100,000 members, functions simultaneously as a technical-scientific association which issues technical rules. The VDI regards it as one of its tasks to document the state of technology achieved (*Stand der Technik*) and to provide an independent evaluation of the chances and risks of technology. Since its foundation, its main contribution has been the elaboration of Technical Guidelines used for regulatory purposes, e. g. for the maintenance of clean air (Voelzkow 1993: 34). The normative character of these rules is thus particularly pronounced. The VDI is part of a complex pyramid of rule-making organisations which has the DIN at its apex and the sectoral TAs at its base (Mai 1988: 36). In Britain, the engineering profession is organised in several competing professional associations, and a British professional association does not usually see it as its function to take on state-delegated tasks on behalf of the common good. Moreover, the complex interlocking of technical organisations and the consequent mutual reinforcement and enhancement of legitimacy, found in Germany, does not exist in Britain.

Although the two systems of technical standard-setting share many similarities in organizational form, goals and political status there also exist some vital differences between them. Both emphasise their non-governmental status and autonomy from the state but do, in fact, stand in a complex relation of interdependence with the state. In the British case, the relatively undistinguished performance and more precarious financial situation of the BSI (ACARD 1982; NAO 1990) render it fairly dependent on government support and vulnerable to government supervision. But the government, up to now, has placed low reliance on its technical standards for regulatory purposes. The main objective of the BSI has been the creation of purely technical standards with low or no application in the field of consumer, worker and environmental protection. The German DIN and the VDI, in contrast, have had a much stronger **social** mission. The government has strongly relied on them in its regulatory activity, bringing about a close integration of technical and legal norms (Voelzkow 1993, 1994). Despite this greater functional interdependence, the DIN appears to be more self-sufficient than the BSI. Norm-making activity in Germany is strongly motivated by the

effort to keep the state at bay by concluding agreements of self-limitation by industry (Voelzkow 1993: 54). While British industry has perhaps an even stronger wish to avoid government intervention its lesser ability to conclude such collectively binding agreements may leave standard-setting bodies more exposed to state interference.

4.1.2 The standard-making process

In both countries, standard-making is a voluntary activity, accomplished in a consensual manner through a process of negotiation. It occurs in Technical Committees (BSI) or Working Groups (DIN) which work on drafts prepared by external interested bodies from industry, research institutes or pressure groups. Standard-making committees/groups are composed of representatives of all those groups which have a substantial interest in a given project. New standards need the agreement of all parties affected by their adoption, and draft standards are made public to facilitate the voicing of opposition by parties whose interests are offended by them.

Although the standard-making process thus occurs in a broadly similar manner in the two countries there are some significant divergencies between them. Interested parties do not come solely from business but also represent consumers' or environmentalists' concerns. If standard-making is to occur in a consensual manner it is important that all parties involved command comparable levels of material and organisational resources and that the disproportionate weight of industrial interests is reduced. In Britain this has not been officially recognised as a problem, and no provisions have been made to provide the weaker parties with extra resources. In Germany, it has been accepted that public and industrial interests are often opposed and that public interest associations cannot command the same participation from members nor the same level of resources. The state has therefore intervened to reduce the power asymmetries in the norm-making process (Voelzkow 1993: 68). Thus the DIN contains a state-supported Consumers' Council, a unit to represent and strengthen environmental interests, various committees concerned with the protection of employees' health, and since 1994, a publicly financed unit presenting the trade unions. The recognition of conflicts of interest is also institutionalised in the existence of a conciliation and arbitration body within the DIN. This body can be used once opposition to a draft norm

by an interested party has been rejected by the norm-making committee. The BSI, in contrast, appears to have no comparable body.

Adoption of standards is not mandatory in either country. Application of a standard becomes binding once a party has been contracted to work to it and after a claim of compliance with it has been made. In Britain, it then forms part of a product's trade description, and the person making the claim is responsible for its accuracy under the Trades Description Act, 1968 (BSO 1991: 3.11). But it is suggested that false claims about compliance with technical standards are often not properly policed by local Trading Standards Officers (ACARD 1982: 44; NAO 1990: 17).

Once a firm has adopted a standard it may seek certification. The number of British individual product categories certified has remained relatively small (ACARD 1982: 22; Dept. of Trade 1982: 13), and until recently even government departments have not usually insisted on such certification. It is, however, notable that the standards of Quality Management Schemes, such as BS 5750 and ISO 9000, have gained a relatively wide acceptance during the last decade. Since 1984 the BSI has organised a nationally unified accreditation council.

In Germany, firms have declared conformity with standards by displaying the DIN mark since 1920, and since 1972 certification by an independent third party has been expressed by the mark 'DIN geprüft'. The two main government-approved certification bodies are the DQS, the German Association for the Certification of Quality Management Systems, and the DGWK, the German Product Marking Company which issues the mark 'DIN geprüft'. DIN standards have a reputation for embodying relatively stringent technical requirements, but there is a tendency among German manufacturers to regard them only as a minimum (ACARD 1982: 37). Quality Management standards have been introduced later in Germany, but, since 1988, implementation of ISO 9000 has nevertheless experienced a steep rise (DIN 1994: 18). The main criticism of German standards by industry is exactly the opposite of those voiced in Britain: standards are seen to be too stringent and, by putting up the costs of goods produced, may decrease their competitiveness (Weber 1992).

4.1.3 The binding nature of technical standards and their relation to the law

Although the adoption of technical standards/norms is formally voluntary in both countries standards may assume a *de facto* or *de jure* binding character. To understand the striking discrepancy between Britain and Germany in the degree to which technical standards have been adopted by industry it is necessary to consider not only the regulative aspect of standard-making institutions and the legal enforcement mechanisms available to them but also the more informal normative and cognitive aspects accompanying them. As is made clear by Voelzkow (1993: 49f.), the obligatory character of standards may have three sources. It may derive from: a) (membership in) the **association** which issues the standards and depends on the authority of the rule-making bodies and the degree of acceptance of the standards secured; b) the **market**, as well known standards create market preference for products which conform to them and thus create a *de facto* constraint towards compliance; c) the **state** which, through its own activity, may endow standards with legal relevance, as well as lending them added legitimacy. One might add to these three sources of compliance also d) the influence of wider cultural meaning systems which raise or depress the level of legitimacy of standard-setting. Here the status accorded within a culture to technical knowledge and ingenuity is of relevance.

a) Association

In Britain, '**wherever possible**, interested constituencies are represented through representative organisations', such as TAs or equivalent organisations (BSO 1991: 5, my emphasis). This statement, together with an amendment to the BSI guidelines on committee work, stating that 'it is important that representatives do not operate in isolation from their members' (ibid), indicates that British trade associations have problems in this respect (see also Dept. of Trade 1982: 5). The comparatively low level of TA membership and its often rather passive nature makes it problematic to have them speak for a whole sector. The collective action problem already noted in the section on TAs has a knock-on effect in the field of standard-making.

In Germany, interest associations of various kinds, particularly trade associations, play such a powerful role in the norm-setting process that Voelzkow (1994: 93) calls them 'the supporting columns in the organisational basis of technical norm-setting'. They supply the first draft forming the working basis for norm preparation, participate in working groups which negotiate the second draft and figure strongly among members and promoters of the DIN. German TAs, it has been argued above, have a reputation of successful mobilization of members, of involving them in collective decision-making and getting them to accept such decisions as binding (Weber 1987). Compliance is also furthered by the fact that the preparation of standards provides an important forum for the exchange of technical information within industries. Participating firms receive both more and earlier technical information than is provided by published standards (Ergas 1987: 209). Participating firms receive a glimpse of what competitors are up to and can make comparisons with the 'state of technology' reached by themselves (Voelzkow et al 1987: 109).

These differences between the British and the German associational framework explain both the normative and cognitive deficit in relation to technical standards in many British industries and the contrasting situation in German industry where technical norms are so much taken for granted that firms cannot conceive of production and exchange without them. Such consensual industry-wide construction of standards may, however, carry the danger of cognitive lock-in and direct technological change along existing trajectories, thus discouraging radical and quick innovation (Ergas 1987: 213). Historically, however, the positive effects have far outweighed any negative outcomes.

b) The Market

Market constraints to adopt technical standards have a slightly different weight in Britain and Germany. In home markets, the constraint to adopt technical standards is far greater in Germany where adoption is a *sine qua non* and thus no longer confers market advantage. For QM standards, however, market constraint is currently stronger in Britain. In international markets, the pressure to adopt technical standards must be more variable, depending on the nationality of the buyer firm. It has been suggested that deficiencies of British

firms in the adoption of technical standards have negatively affected product quality and safety and that the export chances of British goods have been curtailed by this (NAO 1990: 16). The introduction of quality management standards in recent years and their vigorous promotion by the Board of Trade have tried to stem this development. As ISO 9000 has acquired wide-spread international recognition and British firms have a headstart in its introduction this move is likely to favour British firms in the short run. At least one British firm volunteered that 'they have helped to develop international markets'. But (export) market constraint to adopt ISO 9000 was also perceived by German firms.

c) *The State*

The most important form of state involvement occurs via the legal system. At present, the relation between technical standards and British law can be handled in several ways: standards can be made mandatory by a regulating body; standards may be referred to on a 'deemed to satisfy' basis 'where compliance with a specified standard would be *one way* of achieving compliance with ...the requirements of legislation' (Dept. of Trade 1982: 6), but where it is left open to achieve compliance in some other way; or standards may be referred to in a more informal way, as, for example, in their use by regulatory bodies for guidance. Compliance with a standard may constitute a *prima facie* defence in court (ibid). The undemanding 'deemed to satisfy clause' and the related notion of 'approved' standards is used even in such crucial legislation as the The Health and Safety at Work Act 1974.

At the time of the 1982 White Paper, both British government use of standards in public purchasing and **formal** use for regulatory purposes were underdeveloped (Dept. of Trade 1982; ACARD 1982: 25), with only 300 out of 8,500 standards having received some official backing (ibid: 25). This observation was repeated in the 1990 report of the NAO (ibid: 34). The Consumer Safety Act 1978 at present imposes no general duty on manufacturers not to market unsafe goods, nor does it give semi-legal guidance to manufacturers as to what constitutes 'sound and modern practice' in consumer goods. Lastly, there is at present no use of technical standards with legal force to mandate the design of industrial equipment to be safe, and only a very small proportion of equipment produced by British industry is

legally required to meet standards (ACARD 1982: 26). English law thus does nothing to ensure compliance in a preventative manner, and the courts only step in after a transgression or product failure (ibid: 45). These examples illustrate the abstentionism of British law and the preference for voluntarist solutions over legal regulation. They demonstrate a profound contrast in this respect with German practice where regulatory and legislative functions are much better coordinated (ACARD 1982: 39).

In Germany, the adoption of technical norms is formally voluntary, but an obligatory use can result from legal and administrative regulations, contracts or similar legal bases. The following connections between technical rules and legal regulation pertain: 1. 'incorporation', where the technical norm is literally incorporated in the legal regulation; 2. 'reference', where the legal norm refers to the technical norm, citing its number and title; 3. the most dynamic method is the 'general clause' where the use of an indeterminate legal term, such as the term 'recognised rules of technology', speaks in a generalising manner about a concretely indeterminate state of affairs. DIN norms are then used by relevant ministries to concretise indeterminate legal clauses (Reihlen, no date; Voelzkow 1993: 50). Of these three ways of linking technical and legal rules, the use of the first is rare, whereas the second and third connection is made frequently.

DIN norms do not only achieve enhanced legitimacy from their use in legal and administrative regulation but also from state purchasing practices. The German federal government requires DIN standards in its public purchasing activities (NAO 1990: 34). DIN norms also become legally binding when used in contracts, and it is common to use them in order to fix as precisely as possible what goods or services are being supplied. Depending on the type of contract (especially *Kauf- und Werkverträge*), deviations from the norm justify claims for compensation. DIN norms are, however, not legal rules in the sense of the product liability law (Reihlen, no date). In practice, however, the courts recognise DIN standards as embodying the rules of technology, and certification of DIN standards is the best defence against litigation on safety or product liability (ACARD 1982: 36).

d) Cultural Support Systems

Technical standards are more likely to acquire a high degree of legitimacy and a *de facto* binding character (normative effects) in a culture where they are connected with wider normative and cognitive frames which put strong emphasis on technical skill. Whereas in Germany respect for technical skill is institutionalised in systems of certification and technically qualified people are accorded high status, the British lag in these respects has become equally proverbial. Low technical knowledge on the part of British purchasing managers is explicitly connected with a less pervasive adoption of standards by ACARD (1982: 47), and the low involvement of engineering bodies in British standard-making, as contrasted with their centrality to German standard-making, further illustrates this pronounced difference in industrial culture in the two societies.

Greater concern for environmental issues and employee welfare in German than British political culture and public opinion also provides differential cultural support for standards.

4.1.4 Technical standards and supplier relations

Standards are one important means to regulate inter-firm relations, and national standard-setting systems can make a more or less important contribution to cooperation between buyer and supplier firms. The study of the impact of standards, it has been argued, has to go beyond the merely regulative effect and also consider normative and cognitive aspects. In Germany, the early introduction of technical standards encouraged specialization and, by ensuring compatibility between product components, must have given an impetus to subcontracting. The strength of trade associations meant that standard setting became a collective endeavour which served to curtail the market power of large firms (Weber 1987). This, in turn, removed a highly conflictual matter from supplier relations. In addition, widespread associational coordination of firms ensured that adoption of technical norms became a taken-for-granted aspect of production and exchange. A comprehensive and highly respected set of standards, by creating market transparency, greatly reduced transaction and monitoring costs in supplier relations. The unambiguous message about product composition, contained

in technical standards, and their wide recognition by the courts in case of disputes, have greatly eased the drawing up and interpretation of contracts. Taken together, all these aspects of German norm-setting processes may be seen to have contributed in significant ways to the reduction of opportunism and risk and the establishment of cooperative supplier relations.

These positive influences on supplier relations of technical standards are less prevalent in Britain. Their late and less comprehensive establishment, together with their lower legitimacy and status, has curtailed some of the beneficial influences on supplier relations identified in the German context. Furthermore, the weakness of collective organisation provides more scope for large firms to impose standards unilaterally on weaker supplier firms and thus foster conflict rather than cooperation in supplier relations.

Both the British and the German firms in our survey reported to be using standards and several respondents referred spontaneously to their effect of reducing transaction costs. In the British firms, due to recent publicity campaigns by the DTI, the reference was most often to Quality Management (QM) standards. In Germany, in contrast, technical or specification standards were foremost in managers' minds. In Britain, there was a strong difference in the degree of acceptance of standards between the two industries. The mining machinery firms all reported to be using standards, whereas use among kitchen furniture firms was only patchy. Comparative figures for the whole engineering industry, however, show a much larger number of standards in use in the German industry (Swann et al 1995: 6), and the British kitchen furniture industry has no collective standard-making body.

More British than German managers saw standards as being helpful to their business. This probably reflects the fact that, in Britain, QM standards are still in the process of being introduced (AT Kearney 1994: 5), and hence adoption confers advantage in the home market. In Germany, in contrast, technical standards are universally used by German firms and thus no longer create an advantage on home markets. This has set in train a spiralling development where individual German firms try to exceed DIN standards, in order to recapture market advantage: this was the case in the kitchen furniture industry.

The new QM standards attracted some critical comments from both British and German managers which expressed doubt about their quality-enhancing capacity. 'BS 5750 has helped us in moving away from the in-house certification system, but we have lost something. The vetting is not now as thorough' (British mining machinery firm). Another British mining machinery firm respondent wondered whether BS 5750 was worth the expense but felt it was needed for marketing purposes, and a kitchen furniture respondent thought BS 5750 irrelevant to quality. On the other hand, however, one British manager of a KF firm pointed out that 'standards are useful for weeding out poor companies'. The introduction of international QM standards seemed to be resented by several German managers as *merely* a market constraint: 'ISO 9000 can be interpreted in many different ways and does not necessarily improve efficiency'. Technical standards, in contrast, were seen 'to exclude personal interpretations' by the manager of another German mining machinery firm.

Whereas British respondents spoke about technical standards only when explicitly asked about them German managers referred to them spontaneously also in response to other questions on quality and on contracts. This may be seen to be indicative of the more marked salience of technical standards in the two German industries. This greater salience of standards in the ordering of inter-firm relation is also supported by our finding that German managers rated 'ensuring that relevant standards are complied with' significantly more highly than their British counterparts as a trust-enhancing factor (Wilkinson, 1996). The claim that standards are not always fully complied with by British firms, made in more general terms by the NAO (1990), was confirmed by a minority of British firms. Significantly, these were in the kitchen furniture industry where, according to one respondent, technically ignorant 'cowboys' find it easy to establish a business. This reflects the weaker normative basis for compliance in the absence of collective pressures.

Although we asked no direct questions about the impact of standards on performance, other sections of the survey and our industry studies shed some light on one important aspect of this issue (for a systematic investigation of their impact on performance in British industry, see Swann et al 1995). According to our industry studies, both German industries were more oriented towards the production of high quality goods than their British counterparts.

This was particularly marked in the kitchen furniture industry where British firms are more oriented towards the mass market for self-assembly furniture and German firms concentrate on the top and middle market segments.

Our survey evidence further augmented the picture. Although managers in both countries expressed a commitment to high product quality only in the German firms was this accompanied by consistent formal procedures to check supplier performance on quality. Thus, only in Germany were formal quality audits common, with 71 per cent of firms using or being affected by them, as against only 35 per cent in the British sample. Supplier rating systems, where quality is one of the most important criteria of rating, were only used or experienced in the majority of German firms. Whereas 78 per cent of the latter used or were affected by them, the corresponding proportion for British firms was only 33 per cent. The more relaxed stance of British managers towards quality was also underlined by responses to a question on perceptions of trust. Here it was found that a significantly larger proportion of British than German managers connected trust with 'a willingness to overlook occasional faults' (see Wilkinson, 1996).

These findings make one wonder whether the widely reported adoption of QA standards by British firms in our survey had led to enhanced effectiveness in the areas where it really matters. Such doubt is further fuelled by another study of the use of standards in several industries (Collins 1996), as well as by the findings of a recent comparative study of product quality of British and German firms by Jarvis and Prais (1995). This study established that, in a wide range of products tested for quality in a number of ways, German firms consistently achieved a significantly higher standard than comparable British firms (*ibid*).

To conclude this section, a brief summary of the main arguments is in order. Standards may be of a technical nature (specification standards) or have a quality management function. The first are more pervasive than the second, as well as being more central to market regulation. Whereas the more recently developed quality assurance standards are more widely used in Britain than in Germany the opposite is true for technical standards. German technical standards to regulate market behaviour of firms are also deemed to be more stringent by foreign firms (NAO 1990: 16). The stronger endorsement of

technical standards by German than British industrialists has been explained by reference to the greater participation of firms in associative action, and once a certain level of compliance has been achieved they become an unquestioningly accepted part of production and exchange relations. The emphasis in the wider culture on quality, safety and technical ingenuity of products further reinforces the taken-for-granted character of technical norms. In addition, the greater saliency of technical norms in Germany is crucially linked to the more marked and more consistent legitimation of standards by the state's legal and administrative practices. More state backing for and use of norms in Germany also means that technical norms have a much stronger link with consumer, employee and environmental protection than in Britain. The higher status of German, as compared with British technical norms, is reflected in and reinforced by the material and organisational capacities of the two main national norm-setting institutions.

The problems of low official endorsement, together with the only patchy reputation of British specification standards (ACARD 1982: 44), have become reflected in the fact that British industry has a comparatively lower use and lesser understanding of technical standards. The relative success of quality assurance standards in Britain from the 1980s, in contrast, has been due to their voluntarist nature - each firm determines its own **absolute** standards, and to the fact that their introduction has not depended on associative action. State support for quality standards in the form of subsidies to smaller firms has also been crucial.

5. Conclusions

Supplier relations, it has been argued, are socially regulated by institutional rules and these can be of a regulative, normative and cognitive nature (Scott 1995). A high and consistent degree of regulation, involving the mutual integration of systems of rules, it has been further suggested, is conducive to the development of stability and predictability and hence to mutual trust and cooperation in supplier relations. A high degree of regulation, however, may, in some circumstances, also be connected with organisational and cognitive rigidities, as well as with extra costs. The analysis of patterns of social regulation of supplier relations in Britain and Germany in the main part of the paper has identified two diametrically opposed systems of governance.

In Germany, systems of regulation are highly formalised, but these formal systems have not superceded informal control. On the contrary, the strong German penchant for collective organisation and associative forms of meeting provides managers with valuable forums for more informal information exchange, monitoring of business reputations and establishment of inter-firm contacts. Formal rules have given rise to more informal rules, norms and cultural understandings.

German systems of formal social rules - embodied in TAs, norm-setting institutions and the law - are not only individually more highly developed than in Britain but there also pertains a larger measure of interpenetration and mutual reinforcement between the three systems discussed in this paper. This is evident in the interlocking of associations, in shared structural characteristics, in the mutual reinforcement of given norms and even in shared meaning systems. Thus, technical norms derive their high degree of legitimacy and acceptance from the cooperation between trade associations, norm-setting institutions and the legal system. An example, illustrating common values and norms is the protection of smaller firms and of consumers from the market power of large firms and the endorsement of mutual responsibility of firms in a contractual relationship. This is an objective of legal regulation, of technical standard-making and of the norms for market behaviour of trade associations.

It is particularly noteworthy that the German state makes extensive use of the law to regulate the business community. Legal regulation, however, does not translate into state domination but, on the contrary, provides a framework for extensive and effective self-regulation. The use of procedural or reflexive law enables the state to delegate many important regulatory tasks to self-administering associations which are, however, prestructured in both organisational and procedural terms by the law. The density and consistency of the social regulation of inter-firm relations curtails opportunism and reduces risk and hence serves to foster trust between business partners.

Greater conformity to rules among German managers leaves less room for autonomous decision-making and may stifle managerial initiative. This is underlined in a study of intra-firm organisation by Stewart et al (1994), inferring greater structural rigidity in German than British firms. The negative

impact of too much regulation was most clearly expressed in our study by a few German managers' comments on technical norms. Their *de facto* obligatory nature was connected with constraint on innovative behaviour, and Ergas (1987) has speculated that German weakness in industries requiring radical innovation is connected with industry-level standards. But our industry studies do not reveal a lesser degree of incremental innovation in the two German industries. On the contrary, the long-term and close relations between customers and suppliers encouraged more technological collaboration than in the British firms, and the German mining machinery industry is considered the world leader in terms of innovativeness (Korfmann 1992: 348). Finally, there was highly suggestive evidence that the German high-regulation context has a very positive impact on quality assurance - a *sine qua non* of the model of diversified quality production, believed to be crucial to market performance.

British systems of formal social regulation of supplier relations are both individually more weakly developed and show a relatively low degree of mutual integration. Hence moral and cognitive aspects of the institutions investigated were also weak. The growing tendency of large firms to pursue their interests on an individual basis (Willis and Grant 1987) has not only weakened collective action within trade associations but has, of necessity, also hampered associative action in the area of industrial standards. The only patchy support for collectively agreed social regulation of inter-firm relations has been reinforced by the abstentionist position of the state regarding legal regulation. This is true both in the area of contractual relations and, more so, in the field of technical standard-making. Recent action by the Department of Trade and Industry both on trade associations and in the field of technical standard-making (Heseltine 1993; ACARD 1982; NAO 1990) can be characterised as 'too little, too late', constituting isolated policy measures against the grain of long-established positions of voluntarism. The more successful government intervention in the introduction of QA standards, in contrast, has not required formal social regulation but has relied only on market constraint. But it is by no means clear whether their introduction has wholly alleviated traditional problems of British firms in the area of product quality.

In the absence of both effective self-regulation on the part of British firms and only weak state support and legitimation for it, formal regulation of

supplier relations remains underdeveloped. As it is not compensated for by extensive informal regulation, there exist few social supports for the construction of cooperation and trust in British supplier relations. As a consequence, the establishment and maintenance of effective supplier relations entails higher transaction costs for the firms involved at every stage of the relationship. The absence of reliable mechanisms of risk reduction makes British managers view long-term commitments with greater wariness than their German counterparts. Close relations of technical collaboration, based on mutual trust, seem to be regarded as less feasible in the British social context.

Orthodox economic theory suggests that strongly developed systems of rules hamper flexibility and undermine competitiveness and that, conversely, their absence has a liberating effect on managerial initiative and innovativeness. Our research findings do not support these assumptions. On the contrary, we found some evidence that the establishment of a loosely regulated arms' length relation facilitates easier exit from it, rather than its innovatory transformation, and the more highly and consistent regulated supplier relations in Germany were connected with characteristics, usually associated with effective economic performance. More research will be needed, however, about the precise circumstances in which a high density of mutually reinforcing rules have favourable performance outcomes and those in which rule systems which may lead to suboptimal effects on performance.

Notes

1. This paper draws on data for firms in the mining machinery and kitchen furniture industries collected by the research team referred to in the acknowledgements. For further details, see Arrighetti et al, 1996.

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