

Organizations as penetrated hierarchies

Environmental pressures and control in professional organizations

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Abstract

Organizational control and environmental influences on organizational behavior are central themes in organization studies, yet little effort has been made to bring them together. In this paper we seek to contribute to filling this gap by investigating and conceptualizing environmental influences on organizational control. The paper examines patterns of organizational control and their environmental couplings through three parallel case studies of public universities in three European countries. We provide a systematic characterization of the space of configurations of control in professional knowledge-intensive organizations along the two axes of centralization of power and formalization of social relationships. We show that environmental characteristics do matter for the contestation and selection of control models. Finally, we unpack and conceptualize the synergetic influence of three environmental characteristics (institutional pressures, resource environment, and external social relationships) as providing sources of legitimacy and power for specific control regimes.

Key words. Organizational control, professional organizations, institutional pressure, external relationships, resource dependency

Introduction¹

Since Max Weber (1922), organizational control – i.e. the means through which the leadership steers the behavior of organizational members in order to achieve coordination and alignment with organizational goals (Ouchi 1979) – has been a central issue for organizational studies (Clegg 2012). Historically, the scholarly debate was characterized by a divide between a tradition considering the hierarchical-bureaucratic model as a functional solution to the problem of coordination in modern organizations (Ouchi 1980) and a critical tradition focusing on dynamics of power and control of external resources (Crozier et al. 1980; Pfeffer and Salancik 1978).

The study of professional knowledge-intensive organizations, highlighted features that cast doubt on the functionality of the hierarchical-bureaucratic model, such as goal and task uncertainty, professional autonomy, disconnected structures from tasks, and the related challenge of control under conditions of ambiguity (Pfeffer 1982; Scott 1987). Public universities have become recognized as examples demonstrating the inappropriateness of the hierarchical-bureaucratic model (Cohen et al. 1972; Mintzberg 1979), and as such they have traditionally been considered as loosely coupled organizations (Weick 1976), where organizational units are mutually unresponsive and evade hierarchical control due to weak leadership capacities.

¹ Authors are listed alphabetically. The authors would like to thank Christine Musselin for her contribution to an earlier version of the paper that was presented at the EGOS conference in 2011, and members of the research group Knowledge, Politics and Organization at the Department of Administration and Organization Theory, University of Bergen for their comments to a draft of this paper. The authors would also like to thank the editors of Organization Studies Frank den Hond and John Sillince, as well as two anonymous reviewers, for their comments and suggestions.

More recent work attempted to bridge these traditions by investigating how organizational control can be achieved while leaving room for autonomy of professionals, by proposing models like 'soft bureaucracy' (Courpasson 2000) or 'bureaucracy-lite' (Hales 2002). These studies demonstrated that hierarchy and rule setting are pervasive characteristics of modern organizations (Diefenbach and Sillince 2011), but also highlighted how different combinations of control instruments can be used to address the tension between central control and autonomy.

This literature highlights the possibility of different patterns of control within organizations characterized by similar technology. As for universities, recent empirical evidence indeed points to differences in the extent to which hierarchy and rule setting have been introduced (Sahlin 2012; Paradeise and Thoenig 2013; Seeber et al. 2014).

Despite the fact that organization theory recognized the deep influence of the environment on organizational behavior (Pfeffer and Salancik 1978; DiMaggio and Powell 1983), the literature on organizational control tended to adopt an internalistic perspective focusing on characteristics of the technology and on the dynamics of power within organizations as sources of variation in control.

This paper seeks to contribute to filling this gap by combining a perspective on organizational control with a perspective on environmental influences on organizations in order to understand how variations in control are associated with characteristics of the institutional and resource environment.

We specifically draw on neo-institutional theory and its conceptualization of organizational behavior being driven by compliance with field-level models (DiMaggio and Powell 1983). We integrate more recent research investigating how responses to institutional pressures are moderated by the structure of the resource environment (Zajack and Westphal 2004; Greenwood and Hinings 1996) and by social relationships of organizational members with external audiences (Delmas and Toffel 2009).

We specifically investigate two questions through three parallel case studies of public universities in three European countries. First, we aim to advance our understanding of the possible configurations of control in professional knowledge-intensive organizations and their variations. We focus on two dimensions of control: 1) the balance between central control and the participation of professionals and 2) the importance of formal means of control, like hierarchy and rule systems, vs. informal means like social relationships and normative pressures.

Second, we investigate how the synergetic influence of three environmental characteristics accounts for the observed variations: 1) institutional pressures towards the introduction of hierarchy and rule setting as instruments of control 2) the structure of the resource environment and the extent to which critical resources are controlled by the organizational leadership or by professionals and 3) the presence of social ties between key audiences and the leadership, which might increase leadership power and control over resources.

European universities represent a convenient setting to address these issues. They are public organizations, subject to regulatory interventions and, in the European context, display a high level of resource dependency on the State. Beginning in the 1990s, these universities have been pressured to introduce a hierarchical-bureaucratic coordination (Brunsson and Sahlin-Andersson 2000), yet there are wide differences between national policy environments in both their extent and coerciveness (Ferlie et al. 2008; Bleiklie et al. 2011). Finally, universities are traditionally open organizations, characterized by a dense web of social ties to the policy layer, to stakeholders and to academic disciplines, which justifies the expectation that the leadership's external social relationships influence patterns of intra-organizational control.

Our contribution to the literature is twofold. First, we deepen our understanding of variations in control within professional knowledge-intensive organizations by conceptualizing their space of configurations along two axes, namely the level of the centralization of power and the extent of social relationship formalization. Second, we advance towards a theorization of the coupling between environmental characteristics and intra-organizational control, by showing how characteristics of a specific control regime within this space are accounted for by the interplay between three processes, namely compliance with institutional pressures, control of external resources, and the social relationships of organizational actors. We subsume this coupling of intra-organizational control on the environment under the label of *penetrated hierarchies*.

Theoretical framework

Control in professional organizations

The functionalist and managerial tradition justifies the need for central control by the presence of interdependencies between activities and the risk that employees try to achieve their own personal goals (Ouchi 1980). It assumes that organizations address this issue by introducing formal hierarchy and rule systems tailored to the characteristics of their activities (Diefenbach and Sillince 2011). While this perspective initially applied mostly to private organizations, during the 1980s public policies began promoting the view that public organizations should also adhere to this model (Brunsson and Sahlin-Andersson 2000).

The critical tradition considered that organizations are characterized by the uncertainty of their tasks and environment. Accordingly, power accrues with the actors who are able to control uncertainties (Crozier et al. 1980) and critical external resources (Pfeffer and Salancik 1978). In this perspective, control is achieved through informal and micro-level arrangements, through social relationships and the sharing of information among employees, while hierarchy and formal structure are a means to accrue power and privilege for the organizational elite (Hardy and Clegg 2006). Some scholars even argued that the end of the bureaucratic model had come, and that decentralized models characterized by distributed assignments and flat hierarchies might become the post-modern form of organizations (Powell 1990).

Studies of knowledge-intensive organizations, like financial companies, consultancies, and healthcare organizations provided a more nuanced perspective, pointing to variations in the combination and enactment of control instruments (Clegg 2012). Control is achieved through flexible means, the number of hierarchical layers is reduced ('bureaucracy-lite': Hales 2002), indirect mechanisms are preferred to the overt use of hierarchical power ('soft bureaucracy': Courpasson 2000) and bureaucracy allows for legitimate resistance ('polyarchic bureaucracy'; Courpasson and Clegg 2012). Organizations shape formal control instruments in a softer way: formal hierarchy is combined with informal control through social relationships and social authority (Diefenbach and Sillince 2011), while a balance is sought between vertical structure and horizontal peer coordination (Lundholm et al. 2012). Finally, bureaucracy is interpreted in an enabling approach, where rule systems are co-designed with the workers (Adler and Borys 1996).

This discussion suggests that organizations do not necessarily have to choose between two alternative models of control, i.e. the hierarchical-bureaucratic and the loosely coupled one. Rather, control in knowledge-intensive professional organizations is a delicate act of balancing central coordination and the participation of professionals, which can be realized through different combinations of formal and informal instruments of control. How variations in patterns of control are associated with characteristics of the environment has however, hardly been investigated by this literature.

Control in universities and its variations

Universities are a prime example of organizations, which defied scholarly attempts to identify a clear-cut model of control, associated with their technology and with the academic profession.

Some scholars considered them as loosely coupled (Cohen et al. 1972; Weick 1976) and political organizations (Pfeffer and Salancik 1974), where collegial peer-to-peer decisions prevail over top-down hierarchy, and autonomy of professionals is defended against managerial control (Townley 1997). Others provided a more nuanced account in which professional autonomy and collegiality are not incompatible with central control (Musselin 2007) and bureaucratic management (Blau 1973, Mintzberg 1979), provided control is achieved through softer means than overt use of hierarchical power (Lutz 1982; Padgett 1980).

Empirically, a broad variety of patterns can be identified. American universities introduced central leadership and management as early as the 1960s (Ramirez and Christensen 2013), while European universities were characterized by the coexistence of state bureaucratic control over the administration and professional control over academic tasks (Clark 1983).

Since the 1990s, many European countries introduced a wave of reforms aimed at improving the efficiency of public-sector organizations under the label of New Public Management (NPM), promoting concepts like organizational autonomy, strategic leadership and management, competition, and accountability (Ferlie et al. 2008). NPM policies were designed

to free universities from direct state control and transform them into organizations characterized by hierarchy and rule setting (Brunsson and Sahlin-Andersson 2000). Policies were implemented through regulatory reforms, the introduction of market arrangements in funding (Teixeira et al. 2004), and various kinds of evaluation systems (Whitley and Gläser 2007). Yet, the pace and extent of reforms strongly differed between countries (Paradeise et al. 2009; Bleiklie et al. 2011).

There is some evidence that, under these pressures, European universities are transforming towards managed organizations with a stronger central leadership (Amaral et al. 2003), introducing hierarchy and formal rule systems (de Boer et al. 2007), but this process has been rather gradual. Variations in this respect are associated with the strength of NPM pressures in individual countries (Seeber et al. 2014) and with the characteristics and history of individual universities (Sahlin 2012, Paradeise and Thoenig 2013).

Environmental characteristics and control

Since the 1970s, neo-institutionalist literature endorsed the view that organizational behavior is not driven by interests or technical requirements, but by conformity with legitimate institutional models (Meyer and Rowan 1997; DiMaggio and Powell 1983). This literature suggests a first process of coupling between the environment and organizational control, i.e. compliance with models of control present in the institutional environment. We specifically highlight that organizations are subject to pressures from a global institutional template,

stipulating the hierarchical-bureaucratic organization as the legitimate model of control (Meyer et al. 1997).

Neo-institutionalist research supports the insight that coercive pressures from the State are particularly effective in enforcing compliance (Greenwood et al. 2008). The state influences organizational behavior through direct regulation, which constrains how control within the organization is achieved; further, in the European context, the largest share of university budgets are composed by direct allocation from the State, and therefore, non-compliance is likely to be associated with financial penalties.

However, the introduction of institutional templates within organizations is rarely uncontested. Many organizations, including universities, have a largely political nature, i.e. decisions are the outcome of power struggles between different (groups of) actors. By combining institutional theory and political institutionalism (Greenwood and Hinings 1996), it can be argued that institutional pressure influences the legitimacy of control models, but these will be instrumentally mobilized by actors depending on their beliefs and interests (Fligstein 1987). Specifically, institutional pressure towards central hierarchical-bureaucratic control will be mobilized by the university leadership, but will be opposed by professionals defending their social norms and autonomy (Townley 1997).

Yet, resource dependency theory showed that the power of organizational actors is contingent on their control of critical resources (Pfeffer and Salancik 1974). This identifies a second process through which the environment influences control within organizations, i.e. through

changes in the resource environment influencing the relative power of the leadership vs. professionals (Greenwood and Hinings 1996).

Traditionally, it was considered that decentralized control of resources, based on the ability of subunits to attract students and external funds, as well as on the reputation of individual academics, explained the limited power of the university leadership (Pfeffer and Salancik 1974). Yet, especially in the European context, the situation is more nuanced. For example, concerning finances, in most cases the leadership negotiates the level of the core budget with the State, whereas third-party funds are acquired and managed directly by professionals. The balance between these two modes of allocation displays significant variations between countries depending on national policies. Further, policy reforms inspired by NPM not only foster hierarchical-bureaucratic coordination but also influence the structure of the resource environment and, depending on their instrumentation, might empower or disempower the leadership. For instance, the shift from a negotiated core budget to performance-based funding, calculated from the number of students, publications, and third-party funds, *de facto* reduces leadership discretion and power.

Similar considerations apply to national evaluation systems introduced by NPM reforms that can be described by contrasting two models (Whitley and Gläser 2007). First, “intrusive” systems produce information about the strengths and weaknesses of individual universities, which are translated into normative and coercive pressures from the State for organizational adaptation. Such systems reduce leadership control over the organization – even more so

when influential academics are co-opted into evaluation committees. Second, “competitive” systems provide information generating competition between universities, while leaving discretion to the university leadership regarding which measures to adopt. Accordingly, the university leadership can make use of evaluations to control and steer academics.

Control over resources does not depend solely on the market structure. Economic sociology and social network analysis extensively demonstrated the importance in this respect of social relationships (Granovetter 1973). Through them, individuals within the organization are set in a brokering position (Burt 1992), holding privileged access to critical information and reducing the level of uncertainty regarding resources. They might also get the opportunity to forge strategic alliances (Kogut 2012) and to influence decisions relevant to their own organization.

Social relationships provide a third process conveying environmental pressures upon organizations, which is particularly relevant for our context of study. Universities are characterized by a dense web of social ties where academics are co-opted to serve on decision-making bodies and advisory committees, while political decisions are negotiated between civil servants and the university leadership. Depending on which university actors are involved in these relationships, they might strengthen leadership control over external resources or, on the contrary, provide influential academics with more autonomy and bargaining power within the university.

While there has been extensive research on how these processes represent couplings between the environment and organizational behavior, research in this area displays two distinct gaps:

first, most research tried to demonstrate the impact of single processes, while synergetic influences have been more rarely addressed (see, however, Greenwood and Hinings 1996). Second, to our knowledge, the influence of environmental characteristics on control in professional knowledge-intensive organizations has not been systematically investigated.

Research design, methods and sources

We develop our investigation through three parallel case studies of universities in three countries. They are named South, Central, and Northwest in order to avoid direct identification.

This study is based on *self-ethnography* (Alvesson 2003) or *complete participation* (Adler and Adler 1987). For more than one decade, its authors have been active members of the organizational hierarchy of the universities analyzed.

Following the literature, we consider this method to be a reasonable choice in terms of its ability to provide suitable empirical material for our specific research questions, when compared to the effort needed for wider data collection (Alvesson 2003; Brannick and Coghlan 2007). First, being a member of the considered organization(s) allows the researchers to build on in-depth direct knowledge of how the focal organizations operate in real-life situations and provides access to different types of information, acquired in connection with their positions. While this is also the case for participant observation (ethnography), being members of the

studied organization allows the authors to provide a richer set of observations, including aspects that are likely to remain hidden to external observers.

Secondly, self-ethnography brings advantages in terms of the resources needed for data collection, as well as in terms of timing: the focus of our investigation on variations across cases requires the use of comparative case studies, which are difficult to implement in ethnographic studies for practical reasons, and due to their high costs (Ramirez and Christensen 2013). Further, the authors' membership in the observed organization covers a longer time span than an ethnographic study, which is an obvious advantage when reconstructing organizational processes.

Finally, the somewhat relatively exploratory nature of our research questions would make more structured methods, like surveys, problematic, whereas open interviews would run the risk of compliance and convenience biases in responses – as they mostly provide information on beliefs and perceptions, rather than on actual patterns of control.

Self-ethnography raises methodological concerns related to the need to keep a sufficient distance from the object of study, avoiding blind spots, and the ability to move from knowledge of the specific to knowledge of theoretical interest (Brannick and Coghlan 2007).

To address these concerns, we implemented a number of practices suggested by the literature. These are: a) writing the organizational accounts in constant confrontation with our theoretical understanding and rewriting them repeatedly in order to achieve reflectivity and distance from

the author experience; b) defining a set of points of observation, linking theory and accounts, and focusing the latter on dimensions of theoretical interest; c) contrasting the cases through systematic confrontation between the authors to create distance and promote reflectivity. The presentation of the cases through a combination of comparative tables and accounts of how control is achieved reflects this effort of balancing cross-case comparison with reports on the author's experience.

We triangulated this information with documentary sources, including previous research on the universities under study, official documents and reports, and documents to which we had access thanks to our position. This included official documents, like the university laws and statutes, organograms, annual reports and strategic documents, as well as internal documents like the results of evaluations, minutes of meetings, lists of appointments and information on individuals' careers.

Similarly, information on the policy environment was derived from previous research done on national higher education policy, document analyses, surveys and policy interviews, as well as comparative studies on higher education governance (Paradeise et al. 2009) and funding (CHEPS 2010).

This paper focuses on observing variations across cases, referring to the situation in the most recent years (around the year 2011). We do not aim to systematically reconstruct temporal changes, but we selectively mobilize information on change when this helps to understand the coupling between the policy environment and organizational control.

Points of observation

We investigate *organizational control* according to the two dimensions of central control vs. participation, respectively the use of formal vs. informal control instruments.

Our assessment of *formal hierarchy* is based on (see de Boer et al. 2007): a) the extent to which power is centralized in the hands of a few individuals, excluding (representative) decision-making bodies; b) the extent to which leaders are clearly identified, responsibilities are allocated to them, and organization members are accountable to them and; c) the extent to which leaders enjoy decision-making discretion, have established managerial teams, have created new middle management positions, and separate managerial careers have emerged.

To assess the use of *rule systems*, we look at the extent to which the university has established organizational goals and formulated objectives for organizational subunits with instruments to measure results.

Further, we investigate to what extent central control is exercised through informal means, like putting institutional pressures on academics and stating goals and visions, and to what extent central control has been softened through (formal or informal) participation, including consulting academics before decisions are made, the use of horizontal peer coordination, and the co-construction of rules with academics.

Concerning the *institutional environment*, we focus on the degree of pressures towards the hierarchical-bureaucratic model within national policy systems. We look at: a) the general

characteristics of the national policy regime, b) the strength of NPM rationales in higher education, c) the timing of the reforms, and d) the degree of coerciveness, i.e. to what extent NPM was enforced through direct regulation.

Concerning the *resource environment*, we focus on: a) the extent to which allocation of the university core budget is negotiated or formula-based, b) the importance and characteristics of third-party funds, and c) the characteristics and coerciveness of national evaluation systems.

When analyzing social relationships, we focus on their role in funding and evaluation. More specifically, we analyze: a) the extent to which the leadership and other organizational members enjoy privileged relationships with external audiences, particularly, with the State, b) their ability to influence decisions about core university funding, c) their degree of control over third-party funds, and finally, d) their influence on external evaluation processes and their implementation within the university.

Results

Three universities and their policy environment

As shown in Table 1, all three universities are research-oriented, displaying a publication impact above the world average and a large number of PhD students. Central and South are rather small and young, have experienced rapid growth and pursue a niche strategy specializing in certain fields. Northwest is a larger and older comprehensive university.

Table 1 about here

In all three countries, some degree of autonomy and negotiated settlements among the State and major social interests has shaped the universities' policy environment. Central is located in a country traditionally characterized by a legalistic tradition and by negotiation between political authorities and major interest groups, while the policy system in the country of South is characterized by decentralization, a search for consensus amongst social groups, where self-regulation and the autonomy of stakeholders is more important than top-down steering by the State. The country of Northwest is characterized by a tradition of consultation and negotiation among political authorities and economic interests, as well as strong democratic traditions.

However, the balance between state steering, negotiated settlements and university autonomy, as well as the influence of NPM, is quite varied (Paradeise et al. 2009). While Central's country introduced NPM with a strong focus on rationalization, steering at distance and strengthening hierarchical-bureaucratic control, the country of South has retained a governance model largely based on academic self-regulation and network governance, with limited diffusion of NPM narratives and instruments (Bleiklie et al. 2011). The country of Northwest was traditionally considered a slow-mover in public-sector reforms, but change accelerated after 2003 with the introduction of a national accreditation and evaluation agency and a more competitive funding system.

Differences also characterize the structure of the resource environment. South and Northwest are faced with mixed funding systems, including a substantial component of historical

allocation negotiated between the university leadership and the State. Most funding to Central is based on standardized and indicator-based formulas. Northwest is embedded in a state civil service system where the rules of the game are set nationally through legislation, regulations, and funding mechanisms that are negotiated in meetings between the ministry and universities. Central is similarly embedded in a civil service culture in which national evaluation schemes structure the rule system, but the system is less intrusive and the university is left with larger autonomy on how to run the internal organization and evaluation. South is embedded in an informal setting with a light national evaluation system providing a high degree of organizational autonomy.

Table 2 about here

Control configurations compared

With respect to the balance between central control and participation, and between formal and informal mechanisms, our case studies demonstrate patterns of commonalities and variations (table 3).

Table 3 about here

A) Hierarchy and central control. In all cases, the university leadership is attempting to gain a stronger position within the organization. Yet, there are deep differences regarding the level of centralization and the function of the hierarchy. We compare our three cases along three

dimensions: formalization of decision-making structure, centralization of decision-making, and engagement of actors across organizational levels.

Formalization of central control. Both Central and Northwest have strengthened and formalized the decision-making hierarchy, which is directly mobilized as an instrument of control. By contrast South displays an informal pattern in which the role of the hierarchy is to legitimize the personal power of the university leadership, which is mostly exercised through informal processes.

Centralization of decision-making. At Central and Northwest, decision-making structures have been transformed from representative to managerial: decision processes that once were meant to aggregate preferences from the bottom up now represent leadership authority. At Central this development started earlier and has gone further in developing a clear cut managerial structure, where academic managers and leaders are appointed in a top-down approach, thus disempowering academic bodies. Northwest on the other hand has retained essential elements of the traditional bottom up deliberative model, such as the coexistence of two leadership models where the rector is elected and chairs the board, while deans and department heads are either elected or appointed depending on the faculty. South displays a clear hierarchy where most strategic and budgetary decisions are concentrated in the hands of the leadership, while faculties and institutes are responsible for education and research. However, in all three cases the overt use of command and control is applied only in exceptional cases.

Engagement across organizational levels. At Central and Northwest, bodies at the faculty and department level are increasingly charged with developing and implementing decisions in accordance with organizational strategies. Central has gone further in introducing managerial roles and centralized decision-making processes, while representative elected bodies at the faculty and department levels still play a role in decision-making at Northwest. In comparison, the organizational structure of South is characterized by a sharp contrast between a strong central leadership nominated by the university council, where managerial roles are concentrated and participatory bodies at the faculty level populated by academics.

B) Formal rules are important in all three cases, but we observe sharp differences concerning levels of formalization; i.e. who sets the rules and how they are applied.

Rule Setting. At Central, rule setting is systematically used by the leadership to steer professionals and to justify decisions. Targets, performance indicators, and regular evaluation of units and staff have been introduced. The formalization of these processes and the social construction of standardized information systems are a major avenue for depersonalized control, exercised without explicit decision-making processes and their possible resulting conflicts. In contrast, Northwest is embedded in a national rule system that regulates the main features of the governance structure and decision processes. The intrusiveness of the rule system leaves relatively little room for discretionary implementation to the leadership. South displays the lowest level of formalization, but is similar to Central regarding the high discretion enjoyed by the leadership in setting and implementing the rules.

Rule application. At Central, performance systems are delegated to local implementation within a space of negotiation that aligns decentralized actors in a legitimate order of objectivity. Strategic annual and multi-annual plans are, for example, written on all levels of the organization due to certain standards and numerical indicators. It remains, however, within the realm of managerial discretion to eventually overrule or change such systems. The authority of the leadership to announce internal re-organization forms an important control instrument, as it creates an emergency state in which the rules of the game temporarily change. The national embeddedness of the rule system at Northwest can be illustrated by the national evaluation and accreditation regime under which evaluation exercises are regularly undertaken. Evaluations are intrusive as they may point out research areas or teaching programs that should be changed. Similarly, the internal distribution of the basic university grant follows criteria that reflect the national allocation model. The allocation is subject to lobbying and negotiation, but the national funding rules frame the process in a powerful way. Internal rules mostly define general principles and procedures at South, but are not directly used to control academics. For example, the university has a clear commitment to academic performance, but no formal measurement system has been introduced, and the decision to evaluate units is at the discretion of the leadership, based on strategic considerations and a perception of low performance. Budgeting is similarly a highly centralized and informal process controlled by the central management, without explicit allocation rules.

C) Informal processes and participatory arrangements are present in all three organizations, but play distinctly different roles. Again we find that these arrangements are highly formalized at Central and Northwest, where participation and influence are exercised in regular formal meetings and through “hearing” processes, whereas South is characterized by relative absence of formal participatory arrangements and a high degree of informal top down control.

Involvement. At Central and Northwest, there are regular meetings between deans and department heads, rectors and deans, as well as central administrators with lower level administrators (faculty directors and/or subordinate managers), which serve as potential arrangements for bottom up influence as well as for top down control.

In addition the corporatist tradition of ‘hearings’ are used at both these universities, whereby important policy proposals (e.g. strategic plans) are distributed to academics for comments. Thus at both institutions crucial processes such as strategy development and allocation of financial resources are top down with built in deliberative elements. At Northwest, participation is more extensive and less top-down oriented, as it includes elected representative bodies with some decision-making authority at the faculty and department levels, thus providing more extensive involvement across organizational layers and across employee groups. At South, the co-optation of academics into decision-making processes that are within the discretionary power of the leadership is actively used, but practiced under conditions of power asymmetry. Additionally, informal processes and participation are systematically exploited by South’s leadership to control the organization. The lack of formal

allocation rules and tight control over the budget by the central administration allow the leadership to allocate resources with discretion based on their priorities and to negotiate the budget with faculties in an informal setting. Finally, the leadership intervenes directly in certain matters, such as the definition of professorial profiles, the development of research strategic areas and the nomination of heads of units and faculty deans. This happens mostly through informal negotiations with individual professors and heads of institutes, thus effectively weakening the power of the (participative) faculty boards, which are formally in charge of these decisions.

Functions of participatory arrangements. The formal participatory arrangements at Central and Northwest serve partly as avenues for bottom up influence, but their main function is to strengthen top down control by keeping managers informed about the priorities and expectations of their superiors, and developing support through participation and potential influence.

At Central, the participation of academics as an avenue for bottom up influence has largely a symbolic function, whereas it is potentially somewhat more substantial at Northwest. South's leadership systematically exploits informal processes and participation in order to control the organization. These differences notwithstanding, leadership control is the overarching function of participatory arrangements in all three universities.

Environmental influences and control

Our case studies provide evidence of how variations in control are associated with environmental characteristics and highlight the interplay between various processes (see table 4).

Table 4 about here

Comparing Central (high pressures), Northwest (medium pressures) and South (low pressures) confirms that the strength of NPM policy pressures are associated with the introduction of formal hierarchy and rule systems (Seeber et. al 2014); yet, this does not translate into similar variations in the extent of central control. Moreover, how NPM policies are instrumented very much affects their influence on control.

Formalization of policy environment. Both Central and Northwest are confronted by an increasingly formalized policy environment, where rules for evaluation and performance assessment have been introduced. However, Central is exposed to a national rule system that is less intrusive, and therefore, the leadership can leverage its legitimacy in order to control academics indirectly. Discretion in implementation and the possibility of suspending rules are crucial, as this allows the leadership to clarify that rules embody central power. Northwest also enjoys increased managerial discretion in a number of areas, but within a national rule system that sets clearly defined and mandatory rules. Lack of discretion implies that national regulation circumscribes leadership authority and can hardly be used as internal instruments

of control. At the other extreme, South's leadership enjoys the greatest discretion in setting rules; rules are adopted parsimoniously, but those in place are strong instruments overtly displaying leadership power.

Leadership control over external resources. The reverse side of formalization is that standardized national funding procedures and the role of academics in funding and evaluation limit leadership control over resources. In this respect, Central and Northwest present a sharp contrast to South.

Governmental core funding to Central is based on national formulas that are open to some negotiation between the government and the university association, but the university has little opportunity for influence. Internal budgetary decisions come under rule systems that limit discretion and cannot be overturned without major internal conflict. The de-personalized leadership style and a mode of control emphasizing a formal hierarchy and rule setting do not only reflect the absence of a strong personal leadership, but also the limitation to central control of external resource flows. The situation is more nuanced at Northwest since a part of the core budget is historical, while funding rules permit a limited measure of negotiation, e.g. about the maximum number of funded students that may be admitted and specific grants for new building projects. Academic representatives influence the allocation of the government grant, since the national disciplinary councils on which Northwest is represented determine the criteria for rewarding research performance. Thus, the leadership is faced by internal groups who have considerable negotiating power, which sometimes creates tension and favors

the corporatist structure, where leadership and academics develop shared strategies for resourcing. In contrast, the South's core budget is negotiated between the State and the leadership, while the influence of academics is almost non-existent. Tight control over the budget allows the leadership to forge alliances with academics in domains of strategic importance for the university, based on the mobilization of complementary resources at the policy and academic level.

In all three universities, competitive funding decisions made by government and funding bodies weaken the internal position of the leadership and strengthen the power base of successful professionals. Influencing agenda setting in national research funding cannot be done by the university leadership alone, but calls for mobilizing academic members of the university, who are represented on the funding panels. Academics holding large external grants are also in a favorable negotiating position, where they can circumvent department and faculty leaders, enjoy direct access to university leaders, and request university budgets to match external funds.

External social relationships. While the leadership in all three cases invests in external social relationships in order to acquire resources and control the environment, environmental characteristics create widely different balances in this respect between leadership and academics, and therefore have implications for internal control.

Central is set in a highly formalized environment, while lacking – as a rather young and peripheral university – a historically established national network, its leadership does not

enjoy privileged access to national policy arenas. Social relationships are mostly relevant to important stakeholders, which might support the university, including strong informal ties with the region. University board members (mostly non-academic stakeholders) also link the university in some fields of organizational interests such as national and European politics, business, and R&D. As representatives of one of three major national research universities, Northwest leaders enjoy privileged access to ministry officials and to a more modest extent to members of parliament. The leadership also promotes policy initiatives through the national association of higher education institutions or together with the other major research universities when the association is unable to agree on common policies. The four external representatives on the university board also represent an expression of the corporatist idea of bringing together a representative mix of external stakeholders (academics, politicians, public sector, business) and the resources they might represent. In contrast South is characterized by a deep asymmetry between a tightly knit web of social relationships connecting the leadership with its environment and a faculty largely composed of foreigners who arrived recently in the country and are relatively less networked. Important informal ties are related to the small world character of the system, where leading people move between the organizational and the policy layer. For instance, a former university secretary general was nominated deputy minister for higher education and research, whereas both the current and former university president occupied previously leading positions at the research council. The policy style of the country also translates into a practice of systematic consultation between the public administration and the university central administration. External members of the university

board have also been strategically chosen among influential academics at the national level in order to strengthen the ties of a young university with the rest of the system. These ties also allow the leadership to play a significant role in acquiring external resources and in developing strategic alliances with other universities, a key necessity for a small and peripheral university. For instance, large university cooperation projects are decided by the rector's conference, while regular formal and informal contacts with the research council are meant to make the latter aware of the university's strategic priorities. Therefore, the establishment of research priority domains, which mobilize large amounts of external funds and are largely based on the cooperation between academics and leadership, strengthens the strategic role of the latter and limits the loose coupling effect of third-party funding.

Discussion

Our results confirm previous findings concerning the complex nature of control in knowledge-intensive professional organizations, while pointing at the crucial role of environmental contingencies in shaping intra-organizational control.

Recombining the hierarchical-bureaucratic and the professional model

When looking at patterns of control, our analysis advances beyond previous research in two respects: first, understanding more precisely the role of the professional model for patterns of organizational control, and second, mapping the space of possibilities of control regimes in knowledge-intensive professional organizations.

We found ample evidence for the presence of formal hierarchy and rule systems in organizations, like universities, which were traditionally considered as loosely coupled (Clegg 2012, Diefenbach and Sillince 2011). Rather than speaking of a hierarchical-bureaucratic model of coordination, it is more appropriate to consider formal hierarchy and rule systems as tools that can be enacted in different ways depending on local conditions (Lundholm, Rennstam and Alvesson 2012; Townley 2002).

As expected, the presence of a professional model influences control. However, we found no support for the argument, often implicitly assumed in studies of control in such organizations (Musselin 2007), that the professional model and characteristics of technology determine how control is achieved. Our results suggest that they constrain control patterns, implying that some ways of controlling professionals are illegitimate: Overt use of command and control justified solely by hierarchical position is rare; formal hierarchy does not constitute a social order where organizational leaders are ascribed knowledge superior to their subordinates; rules can, for example, define how performance should be measured, but do not define how specific tasks should be performed.

Finally, even in the most centralized settings, some degree of participation and co-decision are maintained. Leaders might be able to steer professionals and enforce acceptance of their decisions through personal power or impersonal control, but in principle, these decisions should find some acceptance by professionals. We hypothesize that this translates into a

notable fragility of leadership power where professional resistance always represents a serious threat to central control.

Within these bounds, our case studies represent different ways of achieving central control and of leveraging hierarchy and rule systems to this end. Tentatively, we can represent the space of configurations by contrasting two axes, i.e. the level of formalization of social relationships and the centralization of power within the leadership (figure 1).

Figure 1 about here

Central corresponds to the soft bureaucracy, where central control is achieved in an impersonal way through the systematic enforcement of performance measurement (Courpasson 2000). In addition, discretion in designing rule systems, and the possibility of suspending them to restructure the organization allows the leadership to uncover from time to time the power that is behind rule systems (Covaleski 1988). Even if rarely mobilized directly, hierarchy and centralization of power represent an essential prerequisite of control through rule systems.

South took a rather different path, achieving centralization through personalized informal power. The presence of a clear hierarchical structure and the control of resources and information generate asymmetry in social relationships, which therefore, allows the leadership to leverage them as instruments of central control. Formalization is kept to a minimum, while the leadership enjoys wide discretion within a broad regulatory framework.

Northwest can be characterized as a model, where governance is shared between leadership and academics. State regulation circumscribes leadership authority and the role of participatory arrangements, introducing some level of centralization and asymmetry between leaders and professionals. Finally, relatively weak formalization of central control and extensive participatory arrangements represent features of the traditionally loosely coupled system.

In our interpretation, universities are confronted by two models for how they should be managed (Townley 1997; Greenwood and Hinings 1993), namely a hierarchical-bureaucratic model and a professional model. They provide a set of templates and of resources, which can be recombined to establish central control *and* to acquire legitimacy from the State and professionals. Our results demonstrate how these models structure the space of configurations for organizational control along the two axes of centralization of power and formalization of social relationships.

Conceptualizing environmental influence

Our findings show that environmental characteristics influence how control is achieved, highlighting the role of three processes, compliance with institutional pressures (DiMaggio and Powell 1983), control of external resources (Pfeffer and Salancik 1978), as well as the mediating function of external social relationships (Burt 1992; Kogut 2012).

They advance our understanding in three respects: first, they provide evidence that the environment influences characteristics of the control regimes introduced in the previous section; second they allow a fine-grained analysis of how the *interaction* between the three processes influences control. Third, they point at the central role of the State in instrumenting global institutional pressures, particularly for public-sector organizations (Bozeman 2013).

Figure 2 about here

We conceptualize the environment as providing sources of legitimacy as well as sources of power influencing the characteristics of control regimes (figure 2). Control regimes need to achieve a sufficient level of legitimacy from the key audiences involved in university governance, i.e. the State and professionals. They also need to be supported by leadership power, since opposition from professionals is always a serious threat to central control. Power does not necessarily need to be overt, but has to be available, for example in crisis situations. Our analysis demonstrates how variations in control regimes are associated with environmental characteristics and their interplay providing differential sources of legitimacy and power.

At Central, the leadership leverages the legitimacy of the hierarchical-bureaucratic model enforced by coercive pressures from the State to establish hierarchy and rule systems. At the same time, the formalization of resource allocation and of the relationships with the State strongly limits its control of external resources. Therefore, central control could be threatened by influential academics leveraging their external relationships to acquire power within the

organization. Tightening de-personalized central control, where formal rules apply independently of individual power, while rituals of participation are maintained, is a reasonable strategy to manage this risk, since it makes defiance based on personal power illegitimate.

South represents the opposite case. Normative pressures towards the hierarchical-bureaucratic model are weak, and coercive interventions from the State are almost absent. At the same time, the leadership holds strong control over external resources thanks to its social relationships. The main threat to central control could come from the academics considering the hierarchical-bureaucratic model as illegitimate and requesting more participation. Directly leveraging personal power within a formal hierarchical structure rarely mobilized directly for control, is therefore an effective way of organizational control.

Northwest represents a more subtle case of balancing between legitimacy and power. The hierarchical-bureaucratic model is strongly legitimized within the national policy environment, but its implementation is somewhat ambiguous since state regulation is intrusive, and therefore, bears the risk of transforming the leaders into executors of state power. Further, the legitimacy of traditional participatory arrangements are still rather strong. Unlike at Central, the leadership maintains some bargaining power concerning resources and a privileged role in their relationship with the State, but unlike at South, this applies to academics as well. In this setting, legitimacy contestation by professionals is smoothed through their involvement in the decision-making process. At the same time, the leadership

can, while sharing governance, leverage on the legitimacy of the hierarchical-bureaucratic model and on its control of external resources in order to keep central control.

With this analysis, we do not suggest that control regimes are determined by environmental characteristics; to the contrary, the availability of a space of control configurations and the interplay between environmental processes suggests that there is latitude for local solutions, also associated with intra-organizational dynamics and organizational characteristics. We show that environmental characteristics do matter for the selection of control models and we identify the different processes at work.

Our analysis also reveals that the diffusion of an organizational template – the hierarchical-bureaucratic model legitimizing central control and stronger leadership – does not necessarily lead to convergence. Its interpretation and instrumentation in the different politico-administrative systems (Bleiklie et al. 2011, Paradeise et al. 2009) translates into national variations influencing organizational structure and behavior in differential ways.

First, national policies provide instantiations of concepts like hierarchy, rule systems and leadership, which turn out to be filled with different meanings in each of the three countries. Second, they shape control through regulatory interventions, for example deciding how leadership is recruited, attributing power to hierarchical levels, and defining rules for evaluating performance. Third, they shape the structure of the resource environment in different ways that enable or limit control of external resources by the leadership and professionals (Greenwood and Hinings 1996). Interactions between these processes are not

necessarily mutually re-enforcing, but may create a situation in which control is at the same time enabled as well as restricted. Our three case studies exemplify the complexity of these interactions.

Conclusion: Organizational control in penetrated hierarchies

Organizational theory has widely recognized that the institutional and resource environment has a deep influence on organizational behavior, and that organizations in many fields need to cope with institutional complexity. This body of literature has, however, been relatively silent about environmental influences on organizational control. In contrast, the control literature tended to take an internalistic perspective focusing on intra-organizational struggles, the dynamics of power within organizations and related issues of control in professional organizations. As a consequence, institutional theory has rarely been employed to understand variations in intra-organizational control.

This paper contributed to filling this gap by combining these two perspectives. We have shown that environmental contingencies are key to understanding variations in intra-organizational control patterns. We propose the term *penetrated hierarchies* to label this coupling of intra-organizational control with the synergetic influence of different external characteristics.

First, the organizational field is penetrated by a new institutional template for the appropriate form of organizational control stressing the virtues of the hierarchical-bureaucratic model. Institutional pressures are, however, mediated by actors on different levels of the field. In our

cases, public policies lead to institutional pressures of different strengths and related legitimacy for the hierarchical-bureaucratic model, as compared to the traditional professional model. The availability of different institutional templates can further be mobilized by actors within the organization and generates a whole space of configurations for control regimes along the two axes of centralization vs. participation and of formalization vs. informal social relationships.

Second, selection *and* stability of control models are associated with power struggles between the leadership and professionals, which are partly contingent on their control of external resources. We interpreted the selection of a control model as a delicate act of balancing two key resources, namely legitimacy and power, subject to environmental influences through different mechanisms. We highlighted in this respect the deep influence of public policies, which constrain and shape organizational control through regulatory interventions, but also re-shape essential parts of the resource environment for public organizations. Multiple and possibly contradictory signals from the environment lead to contestation and variations in the organizational control model, rather than a convergence towards a single model.

Finally, the structure of the environment influences the value of social capital vested in relationships between members of the organization and key external audiences, which penetrate their own organization by influencing the legitimacy of control models and decisions on resource flows for the organization. Variations in brokering positions and the negotiation-influence of organizational members, affect internal control patterns. The social relationships

of organizational leaders and other organization members thus do not just influence their individual power and career, but have broader structural effects on how organizations are managed.

While our three cases represent supposedly successful solutions to this puzzle, it would be interesting to further investigate the structural stability of control regimes in times of organizational crisis, for example exogenous shocks challenging local orders or leadership teams trying to impose an unsustainable model. This would shed further light on the conditions for stability of control regimes and their coupling with the environment.

Extending the number of cases within the same field and the same countries would allow for the further disentangling of the role of internal dynamics as potential sources of variation in the enactment of environmental conditions and their influence on organizational control. Exploring environments different from our cases, e.g. national settings dominated by private university ownership and funding, would enhance our understanding of the influence of environmental characteristics on organizational control.

Finally, universities belong to a wider and increasingly important category of knowledge-based professional organizations (Hinings and Leblebici 2003) such as hospitals or professional service firms, operating as public or private organizations within highly regulated orders. The theoretical framework we have proposed is assumed to be relevant for public and private organizations (Gault et al. 2013). Considering extensions of the framework beyond public-sector organizations and to other organizational fields would be particularly interesting, as the

mediating role of the State is likely to be different when influencing the balance between global pressures and national instantiations of institutional orders affecting the environment of organizational control.

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Table 1. A characterization of our cases (2011)

	South	Central	Northwest
Founding year	1996	1961	1946
Undergraduate students	2'377	9'300	14'500
PhD students	263	1'050	1'489
Faculties	4	6	6
Disciplinary profile	Mostly social sciences and engineering.	Applied science and technology; behavioral and social sciences	Comprehensive
Average impact of scientific publications*	1.7	1.6	1.6

* World average = 1. Source: Scimago Ranking 2011.

Table 2. Institutional and resource environment

	South	Central	Northwest
National policy regime	Policy decisions are based on consensus and negotiation with the actors; central importance of social relationships.	Policy decisions based on participation and negotiations, tradition of top-down enforcement of rules and norms.	Policy decisions based on participation and negotiations, producing standardized solutions with local adaptations in implementation.
Strength of NPM pressures	Weak pressures. Some NPM elements introduced with a focus on increasing autonomy and reducing bureaucratic control.	Early and strong adoption of NPM, co-existing with the traditional network governance model.	Latecomer, but acceleration of NPM reforms after 2003.
Timing of reforms	Since the mid-1990s.	Since mid-1980s.	Modest reforms since the early 1990s. Major reforms during the last decade.
State intervention in internal governance	State appoints the majority of board members and decides on the Faculties. Organizational structure decided by the university autonomously.	Top down appointment of leaders/managers, within national regulations organizations are free to re-organize and profile.	Some autonomy to re-organize but also strong state capability of intervention. Ministry appoints external board members.
Role of the State in establishing rule systems	Internal rule systems are decided by the university board.	Rule system structured by national regulation including corporate governance, accountability, and funding formula.	Rule systems structured by national legislation, funding system, evaluation schemes, and auditing and reporting systems.
Evaluation	Light formative quality assurance with no financial consequences and limited public visibility.	Mandatory systems for audits, national research evaluation, teaching accreditation and evaluation; no direct financial consequences	Evaluations regularly undertaken under auspices of research council or quality assurance agency. Results important for strategic choices; no direct financial consequences.
Allocation of core funding	Mixed model: a large share of negotiated budget, plus a component based on students and third-party funds.	Formula funding based on standardized indicators.	Mixed form: about 60% of core grant is historical, 25% based on teaching and 15% on research performance.
Share of third-party funding	About one quarter of research funds from third-party funds.	About one fourth of income from external research funding sources.	About 15-25% third party funding external for research universities, mostly generated through peer-review mechanisms.

Table 3. Instruments of control

	South	Central	Northwest
Hierarchy			
Central coordination and control	Concentration of power in the hands of the board, of the rector and central administrator, weak power of faculties. Co-optation of faculties in the top hierarchical layer with a subordinate position.	Top-down hierarchy with checks and balances. Strong role of the rectorate, of deans and research directors, and of management teams; weak power of faculties. Academic bodies abolished or have a consultative role.	Increasingly top-down hierarchy with some remaining features of a collegial organization. Stronger power of rectors, deans, and chairs while representative bodies have retained involvement in decision processes.
Allocating responsibility	Allocation of responsibility mainly concerns research and teaching, strategy and financial resources are highly centralized.	Clearly defined allocation of responsibilities concerning organization, strategic direction, and financial affairs.	Allocation of responsibility concerning strategy and financial resources, research, teaching and human resources is clearly defined.
Constructing management	Managerial positions at the central level. At the faculty and institute level mostly academic positions.	Members of the rectorate and deans are full-time managers, some with external managerial experience.	Members of rectorate and deans are in practice full-time managers. Introduction of management teams at all levels.
Rule systems			
Setting objectives	Soft and informally stated objectives, but pressure to demonstrate performance.	Systematic establishment of rules and standards for managing the organization.	National rules and standards for setting goals and managing the organization.
Measuring results	No formal measurement scheme; peer-based approach. Central administration owns relevant information.	Regular measurement of performance indicators and of the financial and staffing situation.	Measuring and rewarding performance built into national funding system.
Formalizing decision-making procedures	Some formalization, important role of informal contacts and negotiations.	Increasing formalization partly due to national legislation, partly to internally developed regulations.	Increasing formalization of decision-making procedures partly in national legislation, partly in internally developed regulations.
Informal control instruments			
Mobilizing institutional pressure	Vision of becoming a research-oriented university. Direct personnel pressure on academics by the leadership.	Internal information systems / rule setting due to external audit / evaluation. Aligning the organization to external funding priorities.	Clearly stated goal of improving academic quality and visibility of the university. Using soft pressure and incentives to influence academics.
Informal	Practice of informal	Co-optation of leading academics in	Role of informal consultation limited.

consultation and negotiation	consultations to prepare decisions; leadership and board tend to arbitrate.	policy-design and informal decision-making. Staff briefings.	Widespread consulting through formal hearing processes.
Delegation to peer coordination, co-construction of rule systems	Discretionary practice by university leadership to create informal working groups to prepare new rules.	Top-down assignment of temporary working groups for policy development. Delegation of implementation. Local adaptation of central rule systems.	Delegation of policy implementation. Local adaptation of central (often national) rule systems.

Table 4. External leadership relationships and resource control

	South	Central	Northwest
Social relationships of the leadership	Membership in rector's conference. Strong personal ties of the rector to the research council and to the deputy ministry of research. Close informal ties to the regional government.	Rectorate represents university in association of universities, federation of technical universities, and innovation policy body. Strong informal ties within the region, to intermediary policy and funding bodies.	Rector plays an important role in the association of universities, particularly in the sub group of the three major research universities. Strong informal ties to senior ministry officials and research council, efforts to establish stronger regional ties.
Control of core funding	The leadership has a strong discretionary role in negotiating directly with the regional government the core budget.	Limited role in field-wide negotiations of largely standardized core budgets based on funding formula.	Limited role in negotiating the core budget. Lobbying for dedicated grants to major building projects.
Control of third-party funds	Leadership influences decision on national strategic projects of relevance to the university. Close cooperation between academics appointed at the research council and the leadership, which has regular contacts with the research council.	Role in regional funding and development initiatives. Limited role in negotiating state funding and third party funding. Academics with links to funding bodies operate independently of the leadership, but may cooperate on issues of strategic importance.	Leadership has little direct influence third party funding Academics represented on research council boards operate independently of the leadership, but may cooperate on issues of strategic importance.
Control of external evaluation	Formative evaluation by the national accreditation agency managed together with the leadership, which has strong control on it and discretion on how to implement recommendations.	Regular national evaluations of teaching and research partly managed with the leadership. Full leadership discretion on how to implement recommendations.	Evaluation of disciplinary departments undertaken by research council. Quality assurance system evaluated by national accreditation agency.

Figure 1. Space of configurations of control

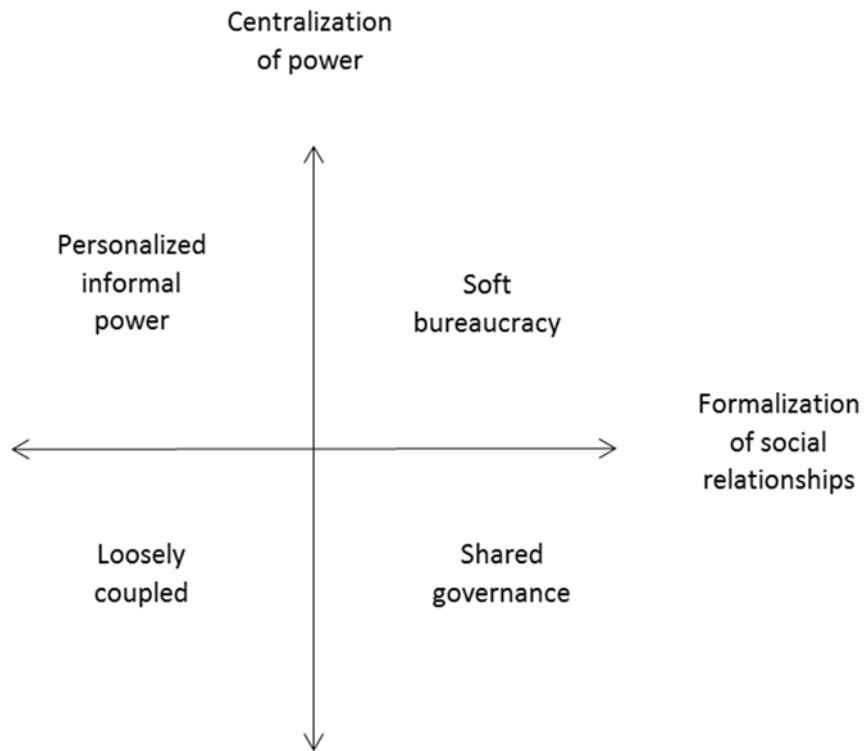


Figure 2. Coupling between environment and control

