

THE 'IRON CAGE' STRENGTHENED? DISCRETION AND DIGITAL DISCIPLINE

FRANS JORNA AND PIETER WAGENAAR

Research on changes in public administration associated with the adoption and use of information and communication technologies ('informatization'), almost univocally supports the conclusion that shop floor discretion disappears under their influence. We, however, are ill at ease with this direction in thought about discretion. Our unease is based on the scholarly work about practices, organizational learning and responsiveness. In this article, we test the thesis on the relation between informatization and operational discretion in an empirical research of operational discretion and informatization in two Dutch public agencies, both large and both automated. Our findings show that informatization does not destroy operational discretion, but rather obscures discretion. Based on the work of Argyris, we show that the phenomenon at work is 'participatory boundary practices', the direct personal ties that keep an organization together. ICTs destroy such links and thereby affect organizational learning.

INTRODUCTION

'Reinvented' bureaucracy is widely argued to have thrown off the shackles so characteristic of its 'Weberian' prototype. The strict discipline of hierarchies has, according to this argument, given way to new forms of organization based on flexibility, responsiveness and marketization (Osborne and Gaebler 1993). However, the above argument fails to account for the fact that technological progress has also increased the possibility for introducing greater hierarchical discipline into public organizations. The growing use of information and communication technologies (ICTs) within government – from the national implementation of systems for social security payments to the local databases available to advisers in employment exchanges – have the potential of substantially reducing, if not totally eliminating, the exercise of discretion by officials.

Street-level bureaucrats were generally regarded, not too long ago, as exercising a great amount of discretion in their dealings with the public (Lipsky 1980). But nowadays, scholarly orthodoxy has it, street-level bureaucrats in diverse locations can be constrained and guided by a single software programme that has prescribed procedures to ensure programmed outcomes (Franken 1993; Zuurmond 1994; Zeef 1994; Van de Donk 1997; Zouridis 2000). The use of discretion is now generally limited to the designers of these

Frans Jorna is Senior Consultant, Lysias Consulting Group, Amersfoort. Pieter Wagenaar is Assistant Professor in the Department of Public Administration and Organization Sciences, Vrije University, Amsterdam.

systems, known as 'system-level experts', leaving the users, known as 'screen-level workers', with little to no administrative freedom (Bovens and Zouridis 2002).

A new control system has emerged to replace Weber's 'iron cage': Zuurmond's 'virtual fortress'. The old bureaucratic mechanisms to keep operators in check have been replaced by electronic surveillance and constraints. Information systems not only ensure control over the actions of employees, they also put limits on their thoughts. Through this electronic control, the 'masters' of an organization can determine what is seen as fact (as data) and what is not seen at all (Zuurmond 1994, pp. 304, 328). Thus, even though the screen-level bureaucracy still retains human operators, they have been turned into near robots. Such organizations are similar to Zouridis' 'information refinery' where information is processed on a continuous basis and operators have disappeared altogether. They are replaced by complex machines and a handful of expert operators who guarantee that the machines function smoothly (Zouridis 2000, pp. 307–8).

The mainstream of research on ICTs confirms the hypothesis that ICTs reinforce the *status quo* (Danziger and Andersen 2002). They are powerful tools in the hands of top management. Through electronic management information systems (MIS), managers monitor the way operators handle information. By automatically assigning workloads, by using automatic forms to complete before closing a case, by funnelling information through expert systems, managers gain increasing control over work processes. One more step and the human factor is eliminated altogether. The information fed into the machinery is standardized to such an extent that it can be handled automatically. Operators disappear from the shop floor. A new class takes the stage: system designers and supervisors that watch over the production processes. Administrative agencies then become decision factories where decisions are produced, not crafted (Zouridis 2000).

Although the previous arguments are appealing and deemed as common sense, they have not been extensively subjected to empirical analysis. Just as we cannot assume that organizations behave exactly according to their formal rules, we cannot simply assume that a software programme defines the essential elements of an operation in a public service delivery organization. A central tenet of organizational sociology is that rules do not operate in isolation from the norms and cultures of those working in an organization. Gouldner (1955), for example, in his study of a gypsum plant, shows how punitive rules become bargaining tools for both superiors and subordinates. Crozier (1964) argues that the 'resistance of the human means' to hierarchical rules is a universal feature of any bureaucratic organization, and the form of this resistance shapes its distinctive bureaucratic culture. Paper rules have not eliminated discretion from bureaucracies. This leads us to our main question: are rules that are reinforced by ICT systems any different?

To answer this question, we looked at the operation of two government programmes in The Netherlands that require individualized public service

delivery on a mass basis – the handling of applications for housing subsidies and the administration of farming subsidy regulations, the Mac Sharry regulations. We then proceed as outlined below. First, we find out how operators that are ‘only data processors’ wield discretion. Second, we look into the way such operators are controlled. Third, we investigate how ICTs influence such control. Fourth, we design a framework for studying the use of discretion in public administration, narrowing our focus to administration on a mass basis. Finally, we develop two hypotheses presented in a heuristic model and make that model operational for a comparative case study. This case study presented in the two sections that follow the hypotheses, is the thrust of our article. We present our conclusions in the final section.

MASS ADMINISTRATION

Discretion

The welfare state is built upon decision factories. Taxation, welfare, unemployment benefits and grants are targeted at hundreds of thousands of citizens. To cope with the administrative complexity both of high ambitions and the great number of entitlements, government develops intricate arrays of decision rules that form the basis for both legislation and administration (Schokker 1996). These organizational schemes are result-oriented rather than process-oriented: they are intended to process forms. Nevertheless, the programmes are still operated by people. They process information-sheets into digital data, correct mistakes, fill in blanks, retrieve data to compare new information with and work pieces of information into decisions (Lenk 1998).

Most authors assume that such process-oriented schemes limit discretion. That assumption is due to a bias in the literature on implementation and administration that focuses on processes of adjudication, where formal expertise is involved (Weber’s *Fachwissen*). Another element of knowledge that is just as important as formal expertise is practical knowledge (Weber’s *Dienstwissen*): knowing how to best sort and route information.

Practices

Operators need discretion in their work. The application of public law involves balancing public ends with private interests: equality before the law while at the same time taking individual circumstances into consideration (Denhardt 1984, pp. 153–4). Administrative reasoning, finding out what is reasonable in a given situation, is the process of individualizing public law. For this, civil servants use discretion (Kagan 1978, pp. 85–99).

Administrative reasoning does not occur in a vacuum. ‘Screen-level’ bureaucrats are members of groups that sustain particular ‘ways of operating’. The literature has various names for this phenomenon: ‘implementation-style’ (Goggin *et al.* 1990), ‘standard operating procedures’ (Allison 1971) or ‘modes of reasoning’ (Kagan 1978). It is precisely this ‘way of operating’ that fills the gap between rules and application, between law and administrative practice.

Operators engage in administrative reasoning by processing data. Knowing how to put meaning on these data requires socialization in the shared standards which guide the operators in their work. Such standards are only learned 'in practice' from colleagues (Wenger 1998; Seely Brown and Duguid 2000). Mac Intyre refers to such group processes as 'practices':

any coherent and complex form of socially established co-operative human activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity. (MacIntyre 1985, p. 187)

Practicing the 'Rechtsstaat'

Applying rules to cases involves multiple practices. The operator practice does not exist in a vacuum. The cases operators process, the complaints they deal with, the new routines they are commissioned to carry out, all of their work, originates from somewhere outside their operational practice: from neighbouring practices and/or from the daily practice of public law. We refer to that system as 'the Rechtsstaat'. In the Rechtsstaat, every administrative action follows from a law and is monitored by parliament and the court system (Zamboni 2001). The Rechtsstaat consists of multiple practices: legislating, implementation, regulating through policies, the application of rules, administrative review and appeal. Each of these practices represents a world on its own. We map these practices (see table 1) by distinguishing between two forms of specialization: horizontal and vertical (Dunsire 1978). In the horizontal dimension there are three 'domains': the design of rules ('design'), the application of rules ('administration') and the adaptation of rules ('review'). The vertical dimension is similarly structured in four levels: the constitutional level of laws and by-laws; the level of policy and organizational routines; and the level of individualization, in which rules are fitted to cases. Each of the cells in the table constitutes a practice.

TABLE 1 *Practising the 'Rechtstaat'*

Domain level	Design	Administration	Review
Law	Legislator	Parliamentary scrutiny Appeal procedures	Court system/ appeal procedures
Policy	Policy design/ policy staff	Political-administrative apex	Legal department/ legislative staff
Organizational routines	Policy design/ procedures	Middle management	Legislative department/ legal consulting
Decisions	Internal procedural control	Operators: information processing Administrative content	Legal consulting/ administrative redress

Boundary practices and control

The operational practice of crafting decisions in individual cases is only one practice of many. It has boundaries with five other practices. In order to perform, operators have to cooperate with members of each of these five practices. Their work has to be: monitored by legal advisors; circumscribed by policy designers; steered by middle and senior managers; subjected to appeal procedures in administrative courts; and checked through internal administrative review procedures. The question is: how do these practices work together?

On the boundaries between practices, arrangements arise: sets of translations, codices of meaning such as shared documents, or tacit understandings. A communal language or, rather, a *lingua franca*, comes into being that allows managers and operators, operators and controllers, legal advisors and operators to interact and communicate meaningfully. Argyris distinguishes between two devices that can connect practices: 'artefacts' and 'participatory boundary practices'. Artefacts are non-human information carriers such as work instructions or automated MIS's; participatory boundary practices consist of human beings (Argyris 1994, pp. 161–72).

Our focus is on the exercise of discretion by operators, the way that exercise is influenced by other practices, and the changes informatization induces in these relations. The general feeling is that informatization leads to the integration and harmonization between the various practices making direct control and monitoring obsolete. The classic problem with discretion is control: verifying exactly what operators do in terms of 'added value' is difficult. One can verify the outcome (the routing), but not the input. Individualization, that central tenet of the Rechtsstaat, implies that inductive processes occur that interpret the law in view of individual circumstances, and vice versa. Most bureaucracies rely on strict procedural instructions and control. Procedural control, however, has a tendency to actually increase discretion when complexity increases. The causes may vary: because of the workload, administrative ambitions, accumulation of administrative rules, and so on (Wilson 1989, pp. 36–44).

Generally, the solution is to isolate processors from both the outside world and substantive processing, to enforce strict operational procedures, and to monitor. ICTs are a tremendous asset in this striving for control (Zuurmond 1994). The quality of the work fed into the operational process – letters, claims, applications, and phone calls – is controlled eliminating any room for interpretation. Processors are restricted to using internal, formal sources for labelling. This is seen in many aspects of the organisation. A front desk is installed to answer phone calls so that actual operators are not confronted by anything that might challenge the validity of standard procedures and internal information. Forms and fact sheets are used to reduce qualitative information into quantitative data – uniform codes that leave no room for interpretation. Double checks ensure that each entry of a form and each process of labelling is performed twice. The ultimate goal of this rigorous

standardisation is to squeeze interpretation out of the administrative process and render it 'automatable' (Zouridis 2000, pp. 305–6).

We label the above strategy as 'departicipation': the organizational life and communication within operational practice is restricted to an absolute minimum. Animate instruments that enable operators to form practices, such as case discussions, are replaced by inanimate artefacts, such as the review of an online expert system. Thus, the focus of operators is shifted away from actual practice to formal norms, while the flow of information from outside the practice is intensified. Information systems produce arguments and data so intricate that operators can no longer evaluate them. At the same time, automated MIS's monitor the ways operators handle information. The combination of automated databases with automated systems that handle data and electronic MIS's are the primary tools of management control over operators – or so it seems (Zuurmond 1998).

But is this really the case? In a seminal article, Argyris describes how MIS's spanning the entire organization can actually lead to organizational disintegration (Argyris 1994, pp. 115–30). An MIS delivers highly detailed insights into the organizational lives of operators that we can benefit from. The art of management, in Argyris' opinion, is to know both under what conditions and how management information is produced. Higher management, Argyris found, is often not aware of these circumstances because it does not participate in the operators' world. Participation is necessary to evaluate information and ascertain its meaning. As discussed above, management practice is connected with operator practice through two devices: 'artefacts' and 'participatory boundary practices'. Replacing participatory instruments with artefacts, which is what relying on a MIS exclusively boils down to, is therefore a high-risk operation. It can instigate organizational disintegration because management is no longer able to evaluate the meaning of management information. Wenger has elegantly demonstrated how this thesis applies even to routine processing organizations such as the claims processing sections of large insurance corporations (Wenger 1998, pp. 18–34).

ICTs and discretion: a hypothesis

As this article makes clear, we have reservations about the thesis that the use of ICTs drives out discretion. We believe that the use of ICTs actually reinforces the material linkages between practices. The use of ICTs, we think, boosts effective management control over the material aspect of processing information. This process, however, is accompanied by a decrease in managerial participation in operational practices, the actual communication between managers and the operators they manage. ICTs lead, with standardization, to an increase in management information and to the enforcement of formal procedures. This increase in management control, however, is virtual. By increasing the number of artefacts used to control operational discretion, managers become further detached from what really happens. Hence, to finally present our hypothesis, ICTs do not drive out discretion.

They limit management control to the formal aspects of organizational life and obscure the informal aspects such as the use of discretion.

We base this thesis first and foremost on the work of Argyris who points to the significance of participation and gives evidence of what happens when the use of MIS's crowds out human interaction. According to Argyris, controlling discretion implies relying on participation, for what one does not know through personal experience, one can never know fully, and therefore cannot control. The use of MIS's focuses management control on specific points at the expense of less visible, tangible elements of administration such as labelling and routing. They also obscure discretion (Argyris 1994, pp. 115–30).

ICTs are strong tools. They standardize informal elements into a coherently organized logical set of formal requirements, both procedural and substantive. The material element in the relation between managers and operators is reinforced by ICTs. Yet, for an organization to function effectively, participation and artefacts must be in balance. To frame the argument in terms of operational discretion and management control: the adoption and further integration of ICTs must be accompanied by an increase in participation, the communication between managers and operators.

To our knowledge, this line of reasoning has not been pursued sufficiently. In their survey of the informatization literature, Danziger and Andersen (2002) report mixed effects of ICTs on management control. Out of the 24 articles between 1987 and 2000 dealing with ICT impact on organizational control, 67 per cent report positive effects and 17 per cent negative effects. We believe these variations are largely explained by distinguishing between the effects of ICTs on the material aspects of organizational life (artefacts) and the participatory elements. As no study has hitherto mapped the ways in which the use of ICTs affects this relation, the effects of ICTs have in all probability, we suggest, been misunderstood.

Comparative case study

Tracing how ICTs affect the use of discretion requires detailed empirical analysis of work processes (Zouridis 2000, p. 81). To this end, we have selected two programmes that employ ICTs to deliver tailored administration on claims, grants and subsidies on a mass basis. We made our selection on the assumption that mass scale programmes minimize operational discretion and are easier to 'informatize' than programmes that produce individualized adjudication of claims, such as state subsidies for innovative projects. Mass scale, fully standardized programmes are comparable to Wenger's claims processing unit. If any type of programme is prone to automating control and rooting out discretion, it is here. If administration can do without management participation in the operators' domain, it is here. If ICTs can be relied upon to effectively control the operational core, it is with mass scale, fully standardized administration of public claims.

In his empirical appendix to an essay about the effects of IT on the implementation of legal programmes, Snellen lists and briefly characterizes all the programmes in Dutch central government that, at least partially, employ computer systems for the administrative process (Snellen 1993). Only four of these involve a discretionary element: taxation (various types), the Housing Subsidies Act, the Mac Sharry subventions to farmers, and the military draft. Taxation has been subject to intensive research and the military draft no longer exists.

To test our assumption, therefore, we have chosen the Mac Sharry subventions and housing subsidies. The agencies that carry out these programmes, LASER and HIS respectively, follow different strategies in dealing with operational discretion. HIS, the ministry of housing's division for granting housing benefits, employs few participatory boundary practices. Management relies on an extensive set of tools to monitor and steer operators. LASER's middle management forms part of the operational teams and maintains close day-to-day contact with the operators. In terms of technology, the differences are small. In terms of organization, they are big. Various explanations have been offered for this difference: the age and stage of development of the programmes, the administrative history and roots of the two agencies (agriculture and housing), and the influence of system designers on the legal programme. Yet, these organizations are comparable with respect to the way discretion was controlled prior to the introduction of these ICTs. They therefore constitute a valid comparison for a case study into how the ICTs influence 'white collar' discretion. The two sections that follow are devoted to the empirical analysis of LASER and HIS respectively. Each analysis follows the same route:

- A brief sketch of the programme;
- Identifying where and how operators have discretion;
- The ICTs involved;
- An analysis of how ICTs interact with discretion;
- Ascertaining the effects of the adoption of ICTs on boundary practices.

LASER: MAC SHARRY REGULATIONS

The programme

The Mac Sharry Programme is administered by the Department of Agriculture's implementation and enforcement agency, LASER, which is geographically organized into five regional branches: North, East, South, South-West and North-West. The regional units are responsible for administering all LASER programmes in their region. Each unit develops and monitors a number of programmes. Region East, where our focus lies, specializes in livestock subventions: premiums for keeping cows, bulls and sheep. LASER handles most of the Ministry of Agriculture's administrative financial programmes, including the Mac Sharry subsidies. The Mac Sharry subsidies

are a European programme, implemented and enforced by each member state's dedicated agency. LASER is one of the few agencies in The Netherlands that holds an EU-license to transfer payments to farmers (EU Transaction Organ).

The Mac Sharry Programme on livestock requires a tailored mass administrative scheme. Each year, 76,000 applications are processed by 40 operators. This amounts to 1900 applications per operator per year, or eight applications per operator per day. Each application not only involves administrative processing, but also a three-step judgement process in which databases and other material sources are consulted to form a decision. Although the main elements of the administrative scheme appear straightforward, discretion is surprisingly big. An enforceable definition of what constitutes a 'premiere' cow seems simple. Practice proves otherwise. Cows are administratively defined as a female species of the bovine races prevalent in the EU; but non-EU races that are imported into the EU also produce female species. Moreover, to become eligible for a premium, cows must have delivered their first calf. However, not all calves are live born; in addition, dates of birth can vary, so that it is administratively unpredictable when a cow actually becomes a cow. If dates count, and they do, and if the agency wants to know such dates in advance, and it does, the enforcement is cumbersome. Adding a strict notification-duty on the receiving party does not really help. The line between fraud or abuse and legitimate neglect of administrative conditions to premiums is thin. To know the difference, one has to understand agriculture and the specific natural conditions that confront farmers.

In table 2, we show the domains of the Rechtsstaat operational for LASER. In our research, we concentrated on the administration of the subventions to producers of livestock by the Region East division of LASER. The region consists of three teams with one manager each. Team One, referred to as 'Development and Control' (D&C), devises the entire processing and routing of claims: the operational guidelines, internal procedures and alterations to the rules. Most of the team members have a polytechnic background, usually with an agricultural focus. The regulations they implement are a mirror

TABLE 2 *Practising the 'Rechtsstaat': LASER*

Domain level	Design	Administration	Adaptation
Law Policy	EU LASER, HQ	EU, LASER HQ Head LASER East	Court of appeal Ministry of Agriculture, Legal Department
Organizational routines	Team 1 – procedures	Manager Teams 2 and 3	Team 3, legal unit
Decisions	Team 1 – control	Operators: information processing – Team 2 (administrative) – Team 3 (content)	Team 3, legal unit

image of the way the programme is administered. The regulations are guided by European legislation which provides the legal norms and ground rules for the administrative process.

Teams Two and Three are the operational teams, each with about six members. Team Two handles the more complicated schemes and Team Three performs the more routine jobs. All input – completed forms, formal complaints, letters, formal acts notifying LASER of the liquidation and take over of existing farms – is distributed evenly among the operators and then processed. There is no administrative distinction between labelling and processing. Managers interact with their staff on a frequent basis about the interpretation of certain rules, the appropriateness of procedures and even the effectiveness of eligibility and administrative control criteria. Operators also frequently interact with colleagues from the D&C and the regional legal unit embedded in Team Three. The legal unit handles formal complaints, requests for administrative review, grievances, and the adaptation of routines in view of new case law or (inter) national regulation.

The operators in Team Three have a strong alliance with the legal team: they interact on a day-to-day basis, and senior operators share in the workload of the legal team and assist the legal advisors in review procedures. D&C, on the other hand, is relatively isolated. The natural working environment of D&C professionals consists of a national network of designers, not the regional unit. Their identity is linked to the entire organization, LASER, and the Ministry of Agriculture. The same is true for the members of the legal team: their identity lies in a national network of legal policy advisors and operators, not with the regional unit. Nonetheless, because their work is so closely linked and even intertwined with the operational processes, and because operations constitute their domain, they do associate on a daily basis with the operators.

Discretion

The biological reality of food-stock production does not lend itself to watertight procedural guidelines. As an agency administering European programmes, however, LASER is obliged to abide by strict financial requirements in terms of enforcement, tolerance and reporting. In the world of European subsidies, political and administrative attention is focused on financial irregularities, far less on programme effectiveness.

The natural focus of LASER's management is, therefore, on procedural internal and external control and reporting. This contrasts with the members' outlook on life. D&C, management and the operators are perfectly aware that their rules and criteria do not neatly mirror physical reality and they live in a virtual European reporting reality. To bridge this gulf between the practice of administration and the virtual world of reporting, operators are granted substantive discretion in the way they reach decisions. Simultaneously, management beds down firmly on the formal aspects of programme administration.

The result is that LASER operates in two different worlds at the same time. One is obsessed with procedural control, procedural scrutiny, management reports and tri-monthly analyses. Regional managers and the director squabble over the division of responsibilities. Special teams investigate the extent to which operators follow procedural guidelines. In the other world, operators handle substance in ways that procedural controls could never effectively check. To bridge the gap between physical and administrative reality, operators are given substantial freedom as to what information sources they use and how they organize the process of judging claims, the requirement being that the final result conforms to formal norms and the data stored is stored on the basis of these norms.

Information and Communication(s) Technology (ICTs)

LASER employs a number of automated databases and applications that guide operators through the various primary processes. Three databases are crucial:

1. A business registration system which holds all economic data on subsidized farms;
2. A registration system that holds all data on the registered animals including their genealogy, date of birth, and owner;
3. A land registration system.

Applications are processed by operators assisted by an automated handling application (ABS/AAS) consisting of three components:

1. One ascertains the number of hectares of crop producing land filed by an applicant;
2. The second component checks the animal registration data for each applicant;
3. The third component checks whether the applicant has also filed for other grant schemes.

Databases are useful tools, but they are only as strong as the suppositions they are built upon. With LASER, administrative reality and real life are very different. Operators need to take care to counter-check data before they use it. Written instructions warn operators to use all the data available to them, not just the data contained in the databases. Let us consider one example. If tracts of land are located near a river or stream, their size is sometimes altered by erosion. Hence, a database that uses a recorded size of such land from years ago, may not accurately reflect the current size of the land. Not corroborating this information could lead the operator to believe the tract of land is much larger or smaller than it actually is. Let us consider a further example. A heifer becomes a cow once it has produced its firstborn calf. The birth of a calf cannot be predicted, rendering the data on that heifer unreliable. Knowledge of stock-production is therefore necessary to be able to match information that farmers give with registration systems.

Differences between registered data and new information result in an 'inconsistency'. To give a further example, the cadastral plot 20786, measuring 4.5 hectares, turns out to measure 6.3 hectares. In the case of such an inconsistency, the system will send a signal to the operator, and refuse the new entry of data into the computer until the inconsistency has been solved. This leaves the operator with two options: conforming to registered data and ignoring new information; or counter-checking the new piece of information, to see if it is valid. Operators use practical knowledge to ascertain the situation and decide what should be done, to change either the former registration or the new one. The operators are familiar with the conditions that give rise to new information. From the management perspective, it is impossible to gauge what is true and not true. It is not only impossible, but undesirable. Top management needs MIS's to have aggregate information on organizational efficiency.

To study the effects of the adoption and use of ICTs on operational discretion, we studied the way in which the LASER's Region East operational teams were managed between the period January 1996 to December 1998. Within that period, LASER went through three informatization developments:

1. The introduction of the 'Operation Recovery Inconsistencies Databases';
2. The creation of an all-encompassing Land Registry;
3. The establishment of OMNIBUS, a catch-all application that forms the centre of all administrative and substantive operational processes.

The 'Operation Recovery Inconsistencies Databases' investigates whether any discrepancies exist between the information farmers supply to LASER's Business Registration System and a host of other official authorities such as the Chamber of Commerce, the Tax Service and other central government agencies. Before LASER was created, every government agency collected, managed and used its own data with its own administrative definitions. At the end of 1995, when LASER began as a decentralized government agency, the data sets had to be integrated.

The development of nationwide Land Registry was a second major project. Some components of LASER used a mailcode based system. Others followed the Tax Service and used Chamber of Commerce registrations. As an incentive to small farms and to limit administrative complexity, farmers who came under Mac Sharry regulations with fewer than 13 cows or bulls are allowed to follow a less stringent enforcement and reporting scheme, and are awarded small bonuses for keeping up a small farm. In agriculture, a husband and wife team often hold separate legal companies in order to spread (as well as limit) financial risk. Under the Mac Sharry regulations, administrative attention focused on farms located at the same address. It is forbidden to start a farm with the sole intention of claiming a higher premium, but it is normal to have more than one farm at one address. Claiming lands twice,

or splitting one's herd does produce higher premiums, but is that done with the purpose of gaining extra income?

Such double entries of farms became visible as a consequence of the development of the national Land Registry. Cross-references between data sets led to the conclusion that identical tracts of land had been presented for financial support twice. By encoding the topographical maps and using these as counter-checks, multiple applications and misstatements about the size of land tracts could be easily traced. Previously, the number of hectares filed for by applicants could only be compared with topographical data manually, this being the only way to discover inconsistencies.

Following the 'address code' method, all land owned by couples was listed for the first farm. Land that was then considered to be registered wrongly, with the purpose of gaining extra income, was isolated and sanctions imposed. Thus, as a result of Chamber of Commerce registration, this task became a simple and straightforward one.

The application OMNIBUS was then developed in order to replace expert administrative decision making and administrative controls with automated processing. This was done by integrating the data management (databases) and data handling (applications) into one system. The ultimate aim was to slim down Teams Two and Three and assign the remainder a new task: to process and label raw data so that LASER's applications could process the information and produce decisions. LASER was to become an information refinery of the kind Zouridis describes (Zouridis 2000).

ICTs and discretion

Here we have examples of three instances of the adoption or changes of use in applications and databases, with three different goals that were introduced into an existing administrative practice. What were the effects on discretion? The recovery of inconsistencies was a relatively limited operation. A special team was created to compare and correct registrations. The operators were limited in the information sources they could use, having access only to the original applications and to the ways these had been entered into the data sets. European regulations and LASER's management thinking, were clear: filing an application with the aim of receiving maximum financial support was forbidden. Consequently, management imposed a tough 'bottom line': only the data that resulted in the lowest financial support was selected and entered into the automatic calculus. Applicants protested and filed formal objections claiming, for instance, that their companies really consisted of two separate economic households with separate administrations. Legal advisors, reviewing these objections, accepted many of them and ruled that each case warranted individual attention. As it turned out, the managers' bottom line constituted a breach of both Dutch administrative law, such as due process, and a breach of the intentions behind the European regulations, which stipulated a principle only but left the actual implementation of that principle to the member

states. Legal advisors, in turn, produced new guidelines for LASER's operators but warned that these were only guidelines. In this case, then, discretion was not eliminated but replaced by new discretion. The Dutch and European legal systems simply did not permit an elimination of substantial discretion.

The introduction of the Land Registry also resulted in a large number of applications filed by clients that deviated in some way. Many applicants either misstated the number of hectares on which they were growing crops or claimed to have tracts of land that were not actually theirs. Consequently, LASER was left with the question of what to do next. In principle, filing a correct application is the applicant's responsibility. Any error must result in a partial withholding of financial support. Moreover, misstating information with the goal of maximizing support constitutes grounds for an administrative penalty. But is misstating the number of hectares or filing a grant for a tract of land that is not one's own sufficient grounds for such a penalty? Again management abided by the accuracy of the data used. In this case, it decided that misstatements were to result in withholding grants and imposing penalties. Naturally, objections were once again filed. And, again, the legal system ruled that a misstatement on its own did not constitute enough grounds to impose a penalty.

Filing a correct application is clearly a complicated business. Sometimes, because of seasonal influences, an applicant can only make rough estimates about the number of hectares he or she tills. Moreover, as mentioned above, natural phenomena such as erosion can result in a growth or decline of the tilled area. In addition, measurement is costly and must be done by registered professionals. Administrative causes also can produce differences between official registrations and the size of the crop area that applicants register. LASER uses topographical maps in its estimates and these are not always accurate. Tracts of land are divided and merged through official deeds. In some cases, *pro bona* informal contracts are made where the exclusive use of an area is given to a farmer in return for non-financial gains, such as herding cattle in natural reserves. Although the applicant is neither the owner nor the tenant in these cases, he does hold the exclusive right to the use of the land and can thus file for financial support. So, before imposing a penalty and/or withholding financial support, operators were instructed to investigate any discrepancies between the official register and the application. In essence, this implied a return to the original problem management was striving to solve: the use of discretion to check official data. Hence, the introduction of the Land Registry led to a decrease of substantial discretion in one part of the process but created new discretion elsewhere.

OMNIBUS was designed to be an all-encompassing system that could integrate all operational procedures. Development started in early 1996. At the end of 1997, the system was ready for testing. A first pilot was conducted with the so-called ewe-grants for sheep-keepers, these having the least complicated application procedure for stock production grants. If that

worked, the design of the system would be modified to cover all livestock procedures. However, in September 1998, after the entire application procedure had been completed within OMNIBUS, the system proved to be too rigid and was not able to account for the intricate biological aspects of farming, as outlined above. These problems jeopardized LASER's intended transformation into an information refinery. Management needed OMNIBUS as the centrepiece of organizational renewal. If OMNIBUS, despite all the investments and despite promising results of the first tests, was not robust enough to deal with the details of stock production, the transition to the new organization was off the agenda. In the end, the whole programme was abandoned. Paradoxically, management even started to promote an increased interaction between the developers of D&C, the operators and the members of the legal team. Developers and legal advisors became formally involved in the more tricky cases.

Boundary practices

The introduction of new applications, such as OMNIBUS, had put LASER on a track of departicipation: withdrawal from the factual world of its applicants, solely relying on its automated databases and applications. As mentioned above, ABS/AAS is a tool that assists operators. The core of the handling of applications consists of a series of human judgements. The goal of OMNIBUS was to replace human judgement (and ABS/AAS) with the mere translation of raw data into codes the application could recognize and form decisions upon. OMNIBUS was also thought to allow LASER to downscale the number of its administrative personnel and enhance the capacity of D&C to design work processes.

The opposite happened. The physical complexity of stock production proved too complex for an information refinery to process. As has been said, to meet the high demands of the European Commission and to handle the gaps between the official data and those provided by applicants, LASER operators have considerable discretion. Hence, the organization would have faltered had it attempted to increase standardization through OMNIBUS. This was recognized by both operators and legal experts. In unison, they opposed the impending introduction of OMNIBUS claiming OMNIBUS would amount to a loss of meaning. Because they spoke each other's language and took part in each other's workflows, they succeeded in putting up a strong argument against the introduction of OMNIBUS, thus thwarting D&C's plans to introduce the application.

Legal review played an important part in the above success. Judgements from the administrative courts quickly reached LASER's legal team through the legislative department at the Ministry of Agriculture. In fact, the Ministry of Agriculture is little involved in policy design. Generally, LASER's headquarters staff are responsible for translating EU amendments to the Mac Sharry regulations into new procedural rules. Material norms are directly

transferred from the EU-codes into the Dutch regulations. The design of lower regulations is largely seen as a matter of organizational control and therefore left to LASER's HQ and D&C. In the case discussed, the Ministry of Agriculture's legal department had no stake in the design of the regulations therefore and harboured no reservations about allying with Team Three's legal advisors. Yet, remarkably enough, D&C's leeway did not increase the use of substantial discretion by LASER's operators. In situations that according to both the legal advisors and the operators necessitated individualized decision making, operators still continued to apply standardized clauses. Faced with more responsibility than they had sought, operators shirked the use of discretion.

HIS: HOUSING SUBSIDIES

The programme and the organization

We now turn to the use of discretion in housing subsidies. The Housing Subsidies Act is carried out by the Dutch Section for Individual Housing Subsidies (HIS), a unit within the Department of Housing, Spatial Planning and Environmental Protection. Housing subsidies are part of what is generally considered to be the social protection function of the national government. Rooted in the 1960s and 1970s ideology of equal treatment for house owners and renters, housing subsidies have developed into a major national scheme. Nearly one million citizens apply for them every year.

Tenants must apply for housing grants in order to be considered. For renters, the amount of the entitlement is calculated by subtracting income and 'norm cost' – the amount that an average family of that specific size is expected to cover by itself – from the actual rent. The programme allows for variations in regional housing markets. For instance, if low-cost housing is scarce in a particular area, a higher allowance may be granted. Furthermore, housing subsidies are used to promote goals such as non-paid family volunteer aid. Applicants may house relatives in need of care and use their income to provide such care without losing their entitlement. The scope of social goals associated with housing subsidies makes the act a complicated programme that necessitates individualized administration on a mass basis. In other words, each one of the nearly 700,000 applications requires individual review.

Housing subsidies are issued in advance of the actual decision; this is done on the basis of a provisional calculation using historical data. After a year, using a calculation on the basis of the actual data, HIS issues subsidies to individual municipalities, which in turn recalculate the rent and advances on the basis of that decision. This procedure leads to a relatively large number of reclaims. Until five years after grants have been issued, new information on family income and the number of residents can lead to revisions and subsequent reclaims. Reclaiming weighs heavily on the operational staff and

the image of HIS. Each year, HIS is confronted with approximately 70,000 formal complaints because of it.

Handling housing subsidy applications is a complex issue. Deciding on the size of an entitlement requires insight into an applicant's individual living conditions, local housing conditions, and knowledge of a complex piece of legislation. HIS makes about 1.2 million decisions per year. With about 250 operators, this amounts to 4800 decisions per operator per year. The only way to handle such volume is to automate the practice of the *Rechtsstaat*.

Table 3 shows how we have made the domains of the *Rechtsstaat* operational for HIS. The operational unit HIS/C&A, with over 200 operators, is by far the largest. It is governed by a management team consisting of a director and five middle managers. The latter each head a regional branch that handles all applications and mail from that specific region. The regional branches in turn have four teams of approximately 12 operators: administrative team 'A' handles all administrative processing, while teams 'B, C and D' handle all applications and mail. Moreover, each regional branch consists of 15 'all-round' operators.

The sole job of C&A operators is to process information and render it manageable for automated decision making. Operators classify and encode qualitative information into processable numbers. Onscreen commands guide them through the necessary steps. The information they produce is then put into batches. One by one, these are compared automatically with the applicant's existing information. Unexpected outcomes are returned as error codes. Operators are required to 'solve' all error codes for a batch before turning to the next one.

C&A spans all three domains of the *Rechtsstaat* and represents a world on its own. Special *ad hoc* taskforces, consisting of the branches' senior-operators, review operating procedures in view of recent case laws and of administrative efficiency. The only links between C&A and the outside world are automated data systems. The only unit in HIS to exhibit a boundary practice with C&A is Policy Affairs (PA). PA prepares the annual redrafting of the Housing Subsidies Act, monitors jurisprudence, and counsels C&A teams on their internal work instructions. PA staff, in contrast to C&A staff, are highly specialized, well-trained and well-paid.

TABLE 3 *Practising the 'Rechtsstaat': HIS*

Domain level	Design	Administration	Adaptation
Law	HIS/PA	HIS/PA	Administrative courts
Policy	HIS/PA	HIS/PA	HIS/PA
Organizational routines	HIS/C&A	HIS/C&A regional managers – System Management	HIS/C&A
Decisions	HIS/C&A – <i>Ad hoc</i> taskforces	HIS/C&A regional teams	HIS/C&A regional teams

Discretion

C&A is generally considered to be a 'decision factory': machines and systems are the prime substance of the organization and personnel only serve to operate them. Discretion is limited. According to Schokker (1996), in such organizations, not the law, but the design, is leading. Regulations are designed as a function of the computer's algorithms. Each chapter of the law describes an algorithm. Details that need operationalization, such as definitions of the norm income and household composition, are embedded in lower level regulations that do not need parliamentary approval; these rules can consequently be changed at will, as is fitting for operating automated applications.

Processing claims for housing subsidies involves two instances of substantial discretion:

1. Advising on 'fitting housing conditions';
2. Household income in terms of the 'harshness' clause.

'Fitting housing conditions', referred to above, refers to the actual conditions on the local housing market in the regions applicants live in. As mentioned above, 'norm rent' is used to calculate entitlements, but not all housing markets are the same. In some areas, the amount of affordable housing is so limited that applicants are forced to rent or buy well above their income level. HIS then covers the difference between norm rent and actual rent, resulting in higher allowances. HIS tries to check excessive use of housing subsidies by applying a 'fitting condition clause'. The number of 'expensive applications' is limited (no municipality can compensate more than a limited number of such applicants); in other words, there really has to be no other option for these tenants.

For their calculations, HIS generally uses the post-tax income of household members. Nevertheless, strict application of this rule would result in unintended 'harshness'. Article 25 of the Housing Subsidies Act consequently states that 'if the law results in undue harshness due to personal circumstances, individual adjudication should be applied'. Selling a privately owned firm, for instance, and using the sum earned to cover debts incurred does constitute a fiscal income, but only in terms of tax law. Since the returns have been used to repay debts, they do not actually constitute a part of the applicant's disposable income. Counting them as income is considered harshness. Another case might be someone providing temporary care for ill parents. Although, in principle, the parents increase the household's formal income, there is no real income: costs exceed income. Hence, here too, harshness is invoked, and HIS does not add the extra income to the household to the total income used to calculate the subsidy.

C&A management regulates substantial discretion through a combination of automated handling and direct supervision. Operators are guided by onscreen manuals that leave little room for coping with the unexpected. An operator can only invoke 'undue harshness' with the explicit approval of a

senior. A huge gap exists between the complexity of the real world and the rigidity of the screen. Switching between applications, for instance, because a case is complicated and additional real-life data are needed, is impossible (as well as deemed undesirable). To help operators cope, C&A has devised a 'work instruction', a manual to guide them through the screens. Because the applications are updated only once a year, the work instruction is updated frequently. Each week, new problems and unforeseen conditions appear that need remedying.

The work of team A is discretionary on two points:

1. Classifying correspondence;
2. Encoding.

All incoming letters are classified into the following four categories: requests for information; notifications of changes in an applicant's personal data; reactions to reclaiming procedures; objections. The legal difference between the last two categories and the first two is large. Reclaim requests and objections are handled as formal requests for review: to be handled within ten weeks. This is done on the basis of an integral review of the decision taken and of new information the applicant has provided. The amount of administrative work associated with such a review is substantial. The law assumes that files for all review cases already exist. Yet, often such files are absent and, therefore, have to be constructed by the administrative team. All letters are filed as correspondence with a relation only to the applicant in question. Other codes are not registered. It is therefore impossible to compile a file related to one objection since it is only possible to compile a file of all correspondence related to one client. Because an external criterion differentiating requests for review from correspondence is lacking, gauging the quality of the way HIS operators classify correspondence is also impossible. In a survey of reviews of 150 files, only 33 were actually retrievable, and only 9 complete. Classification is thus an inherently discretionary process.

Encoding involves the translation of qualitative information into quantitative, numerical codes. Many items necessitate encoding: the municipal advice mentioned earlier, feeding new addresses into databases and deciding whether these data are relocations. A double entry system ('quality encoding') is designed to ensure proper encoding. High work pressure, however, often undermines the quality of data entry. Consequently, data entry functions as a 'sewage system': it processes all the dirt and garbage that originates in other work processes, resulting in many inconsistencies. If teams B, C and D are under high pressure, due, for instance, to an unexpectedly high number of new applications, they are allowed to shift their regular work to team A. Under such circumstances, quality data entry operators perform the most routine substantive jobs. Consequently, control of data entry is reduced in order to allow them to finish the job properly. A cycle of high workloads and garbage processing results.

Information and Communication(s) Technology (ICTs)

A number of computer applications are at the heart of the organization:

1. Individualized Decision-making on Applications (IDA) for making application decisions, including reclaims;
2. MegaDoc, a microfiche system that stores all correspondence;
3. Location Registration, which registers all incoming and outgoing correspondence and assigns locations;
4. LinkWorks which is used for irregular decision-making procedures that need tight monitoring such as review procedures.

IDA is not a coherent application. Rather, it consists of a set of registrations and applications loosely linked to each other. The registration of applicants is by far the largest database; it contains each applicant's application history for the past ten years. It is coupled to a database on houses and apartments that contains data on rent and housing status (dependent/independent). For other data such as income, HIS relies on the Tax Service. Individualized decision making is impossible; all information is processed in batches of 50 entities. Individual files do not exist. Often, each step in the decision processes is prepared by different operators. Checking how individual decisions have been arrived at is thus impossible. Hence, when individualized decision making is necessary, as with reviews and grievances, the whole procedure is started again from scratch. All written information is put on microfiches, but the extent to which this can be tracked back varies. In a random sample of 150 files which we carried out, only 33 were complete enough to allow analysis, complete meaning that the original application and decision were available.

Discretion and ICTs: the implementation of the General Administrative Law Act

Because ICTs constitute the core of HIS, especially of C&A, the development of applications and redesign of databases is a continuous process. Each year, the systems are marginally improved and the law is changed accordingly. In systems such as these, not the adoption of new systems, but the implementation of new legislation uncovers how discretion and boundary practices have been influenced by ICTs. Informatization is a core characteristic of such organizations. Bit by bit, operational discretion moves beyond the scope of managerial control. New legislative challenges are answered by attempts to further informatize the organization. Continual adaptation of ICTs makes establishing the influence of new systems on operational discretion difficult. However, implementing a piece of legislation that forces the agency to somehow include operational discretion in its administrative processes forces management to deal with it and shows how ICTs have been influencing such discretion. For HIS, the implementation of the General Administrative Law Act (Awb) was such an occasion. HIS' management reacted by trying to curb

the increase in discretion through the use of ICTs. It tried to eliminate human discretion from the primary administrative processes whereby the organization was transformed from a decision factory into an information refinery. Accordingly, our case focuses on the interaction between ICTs and operational discretion during the implementation of the Awb between 1994 and 1998.

The Awb contains rules of administrative law that apply to all administrative procedures. The law was primarily meant to codify all generally accepted rules, and only implemented a small number of innovations. In the first two years (1994 and 1995) the Awb was expected to have only limited consequences. Standard correspondence was redrafted to reflect the Awb's terminology, and no further adaptations were made. Nevertheless, codification always implies some degree of modification and is never a neutral process. Soon after its promulgation, it became evident the Awb had a bigger impact on HIS than was expected. It affected HIS in a number of ways. For instance, the Awb's definitions for what constitutes a decision and a review suddenly increased the number of decisions HIS produced from 850,000 to 1,000,000. Hitherto, reclaims were considered to be subject to private, not public, law review. The Awb changed this by rendering a public law status to the payment schemes that HIS offers its clients.

The implementation of the Awb uncovered how much discretion actually existed at HIS, despite its intensive use of ICTs. The most crucial one was with respect to the harshness clause. HIS' systems designers were well aware that their system did not provide a fully reliable representation of all social realities before Awb's promulgation. Often, automated processing led to rejections whereas individual review immediately revealed the claim deserved granting. The harshness clause attempts to remedy such cases. However, internal organizational guidelines restrict the number of individual review cases per batch to a maximum of 4 per cent. Furthermore, each of these decisions is subjected to individual managerial review. The introduction of the Awb led to a decrease in recourse to the harshness clause, contrary to what the legislature had expected. The explanation for this is discretion: HIS' operators have considerable discretion in using the harshness clause. Since the organization insists on a limited use of the clause, the use of it actually decreased.

The Awb was designed to bolster the position of claimants in individual review procedures. For HIS, this meant more cases needed individual consideration. In reality, the opposite happened. HIS' operators, in the conviction that the Awb would result in a lengthier harshness clause and longer individual review procedures, turned away from individual review and started following internal automated procedures more rigidly. Consequently, the number of complaints and appeals increased. Using discretion, operators labelled these complaints 'letters' and sent out standard responses rather than individualized decisions. For a long time, because the operators lacked boundary practices, HIS-management was unaware of this connection and

the reality behind the 'increase in correspondence'. They assumed 'labelling correspondence' was a low-discretionary process and that the use of the harshness clause was under close supervision. Yet, the 'non-use' of the clause was not under supervision, and was actually a critical process. Only when the external law department, responsible for handling appeal procedures, complained about the dramatic increase in appeals and favourable legal rulings for the plaintiffs, did management initiate an inquiry and discover the underlying causes. The legal department's claim was backed by the outcome of a 'quality-survey'.

The survey learned that operators categorically labelled requests for review as 'letters', thereby blocking an applicant's entry to administrative review procedures. Because management was so detached from operator practices, it had no idea of the discretion in labelling; they had deemed the administrative group's instructions crystal clear. Management reacted to the situation by automating the existing organization to eliminate discretion. A team of highly skilled operators under the close supervision of 'quality officers' was formed to handle the intricate cases outside the normal channels. The rest of the work processes were automated as far as possible.

From 2002 onwards, HIS stopped gathering 'actual data', instead relying on other agencies such as the Tax Service. The move was designed to gain control over the quality of incoming data by excluding the applicant as much as possible. Data mining became a keyword. Yet, the move had the opposite effect. In September 2002, the organization collapsed; due to information overload, it no longer possessed the capacity to gauge the quality of incoming information. Furthermore, the data from other agencies proved to be faulty, calling into question the principle of data mining. Signalling systems that provide early warnings – by virtue of allowing operators to share in the applicant's world – had been put out of order. As a result, hundreds of thousands of applicants had to wait for months until provisional grants were issued. The position of the incumbent minister was in jeopardy; Parliament and the National Audit Office began inquiries, and HIS' senior managers were replaced. In the end, HIS was dismantled, and national housing subsidies were integrated into income tax law.

CONCLUSION

The literature on informatization almost univocally supports the conclusion that shop floor discretion disappears under the influence of ICTs. Being unconvinced by this, we formulated a rival hypothesis: instead of destroying operational discretion, informatization leads to an increase in inanimate artefacts used to control operators, which makes it impossible to see how much discretion operators actually use.

Managers using ICTs to steer and monitor what operators do limit their control to formal aspects of organizational life. ICTs obscure the informal use of discretion. Only by supplementing automated monitoring with direct

association and participation into operational practice, can managers gauge the amount of discretion actually used. We identified such controls as 'participatory boundary practices': links provided by human beings who act as interpreters between the different 'practices' in an organization. According to Argyris, substituting participatory boundary practices for inanimate artefacts – which is what we think the use of ICTs often leads to – can narrow managerial vision to such an extent that organizations eventually run the risk of disintegration.

We put our hypothesis to the test in a comparative case study of informatization processes in two organizations, the 'Section for Individual Housing Subsidies' (HIS) and the 'National Service for Programmes' (LASER). In HIS, participatory boundary practices were absent. The operators did not seriously participate in organizational life and managers knew little about their operators' practices. The organization was mechanical; it was held together by MIS's that only registered production facts such as the quantity of applications handled, the number of inconsistencies, and so on. What these data meant, how operators worked, what their standards were, and what their perceptions of other departments was, was unknown, even to middle management. Operational practice was absent from the mind map of most of the organization's employees, and communicative channels were lacking. Direct contact between PA and C&A was limited to an absolute minimum. In such an environment, ICTs are perceived as a means: to gain control over the *terra incognita* of operations; to standardize the way operators work from a legal-technical perspective; to root out discretion. As long as it is the ambition to somehow provide individualization, however, the opposite happens. Automation then leads to administrative tragedy.

LASER, on the other hand, was awash with boundary participation. The developing of regulations among the various regional units and the fragmentation of design and adaptation over both regional and national units, necessitated continuous discussion and consultation between practices. In this environment of intense communication, new ICTs became the object of conflict and strife. But at least these quarrels were voiced in the open. More importantly, no one even considered having ICTs replace the existing ties between practices. Rather, ICTs were seen as a way to enhance communication.

What do these results mean in terms of our research question? We posited artefacts serve as linkages between practices and thus make discretion visible and asked ourselves whether the penetration of ICTs into organizations should thus entail a substitution of participatory boundary practices for artefacts with the result that discretion becomes invisible. Do these two case studies confirm our hypothesis? LASER displayed remarkable resistance to the introduction of new artefacts. Each effort stumbled over the complexities of livestock subsidies and participatory boundary practices actually gained in strength; that is, intensive discussions between practices bred recognition of each other's predicaments. Operational discretion,

however, suffered. An increased understanding of the administrative complexities by non-operators led to the shirking of responsibilities by operators. HIS, by contrast, was characterized by a loss of participation and an increase of 'operational rebellion'. Discretion flourished.

Our comparison of these two cases, then, seems to confirm our hypothesis: the mere presence of artefacts does not restrain or hinder the use of discretion. In fact, artefacts and discretion are mutually reinforcing. The more artefacts exist, the more practitioners succeed in maintaining their discretion. Discretion owes its existence to 'blind spots'. The presence of artefacts increases the number of these blind spots, and thereby reinforces the existing monopolies over discretion.

In line with our hypothesis, the analysis also points to the loss of organizational integration when this is solely promoted through artefacts. While writing this article, both organizations have been reorganized. LASER has 'gone digital'. One of the livestock regulations was the first to be integrated into a digital counter. Through this, applicants can electronically file their application, including all the necessary documents, follow the processing of their application online, and with a few mouse clicks alter their data. This has only been made possible by an integration of the work processes at the front office through the development of a central database that stores all information on the size and location of tracts of land. A new bureau, Basic Registration, has been created to handle all data registration processes. This greatly relieves LASER's job and has resulted in a loss of peripheral operational processes. Consequently, the number of operations has declined, as has operator discretion. LASER, in short, has witnessed further integration; all because management understands the way the organization operates.

HIS, on the other hand, no longer exists. The tidal wave of requests for review and the unanticipated consequences of isolating the operational core have led to its demise. Housing subsidies have subsequently been integrated into the tax law, and the Internal Revenue Service now administers Housing Grants. Generally, the individual elements associated with the harshness clause have been deleted. The remainder has been transferred into income tax administration.

We conclude with a fundamental observation and a dilemma. Arriving at decisions tailored to the individual – a central tenet of the social Rechtsstaat – is impossible without operational discretion. This is so even for a purely process-oriented organization such as HIS and, therefore, must apply to most public organizations. This leaves us two options. We can renounce our ambitions to highly tailored decisions. This greatly decreases the administrative burden and increases efficiency, but also relinquishes cherished ideals. Or, we can recognize and appreciate operational discretion, and put our trust in professional integrity. This consequently forces us to rely on participatory boundary practices instead of solely on artefacts, but leaves us with vast bureaucracies.

REFERENCES

- Allison, G.T. 1971. *Essence of Decision: Explaining the Cuban Missile Crisis*. Boston: Little, Brown and Company.
- Argyris, C. 1994. *On Organizational Learning*. Cambridge, MA: Blackwell.
- Bovens, M. and S. Zouridis. 2002. 'From Street-Level to System-Level Bureaucracies: How Information and Communication Technology is Transforming Administrative Discretion and Constitutional Control', *Public Administration Review*, 62, 2, 174–84.
- Crozier, M. 1964. *The Bureaucratic Phenomenon*. London: Tavistock.
- Danziger, J.N. and K.V. Andersen. 2002. 'The Impacts of Information Technology on Public Administration: An Analysis of Empirical Research from the 'Golden Age' of Transformation', *International Journal of Public Administration*, 25, 5, 591–628.
- Denhardt, R.B. 1984. *Theories of Public Organization*. Pacific Grove: Brooks/Cole Publishing Company.
- Dunsire, A. 1978. *The Execution Process. I. Implementation in a Bureaucracy*. Oxford: Martin Robertson.
- Franken, H. 1993. 'Kanttekeningen bij het automatiseren van beschikkingen' [Comments on the Automation of Decisions], in H. Franken e.a., *Beschikken en automatiseren. Preadviezen uitgebracht door Prof. Mr. H. Franken e.a. voor de algemene vergadering van de Vereniging voor Administratief Recht op 14 mei 1993*. Alphen aan den Rijn: Samsom H.D. Tjeenk Willink, pp. 7–50.
- Goggin, M.L., A. Bowman, J. Lester and L. O'Toole. 1990. *Implementation Theory and Practice: Toward a Third Generation* Glenview, Ill. Scott, Foresman/Little, Brown Higher Education.
- Gouldner, A.W. 1955. *Patterns of Industrial Bureaucracy*. London: Routledge & Kegan Paul.
- Kagan, R.A. 1978. *Regulatory Justice: Implementing a Wage-Price Freeze*. New York: Russell Sage Foundation.
- Lenk, K. 1998. 'Informatie als een sleutelconcept in de studie van het openbaar bestuur' [Information as a Key Concept in the Study of Public Administration], in F.B. van der Meer and A.B. Ringeling (eds), *Bestuurskunde en Praktijk. Liber Amicorum voor prof.mr. dr I.Th.M. Snellen*. Samsom: Alphen aan den Rijn, pp. 141–60.
- Lipsky, M. 1980. *Street-Level Bureaucracy: Dilemmas of the Individual in Public Services*. New York: Russell Sage Foundation.
- MacIntyre, A. 1985. *After Virtue: A study in Moral Theory*. London: Duckworth.
- Osborne, D. and T. Gaebler. 1993. *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector*. New York: Plume.
- Seely Brown, J. and P. Duguid. 2000. *The Social Life of Information*. Boston, MA: Harvard Business School Press.
- Schokker, J.T. 1996. *Wet en informatiesysteem in de maak: een onderzoek naar processen van wetgeving en systeemontwikkeling vanuit een taalspel perspectief* [Law and Information System Under Construction. A Study into Processes of Legislation and Systems Development from a Language Game Perspective]. Delft: Eburon.
- Snellen, I.Th.M. 1993 'Het automatiseren van beschikkingen bestuurskundig beschouwd' [The Automation of Decisions from a Public Administration Perspective], in H. Franken e.a., *Beschikken en automatiseren. Preadviezen uitgebracht door Prof. Mr. H. Franken e.a. voor de algemene vergadering van de Vereniging voor Administratief Recht op 14 mei 1993*. Alphen aan den Rijn: Samsom H.D. Tjeenk Willink, pp. 51–117.
- Van de Donk, B.H.J. 1997. *De arena in schema: een verkenning van de betekenis van informatisering voor beleid en politiek inzake de verdeling van middelen onder verzorgingshuizen* [The Arena Outlined: an Exploration of the Meaning of Informatisation for Policy and Politics with Regard to the Distribution of Funds Among Homes for the Elderly]. Lelystad: Koninklijke Vermande.
- Wenger, E.C. 1998. *Communities of practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.
- Wilson, J.Q. 1989. *Bureaucracy: What Government Agencies do and why they do it*. New York: Basic Books.
- Zeeff, P.H.H. 1994. *Tussen toezien en toezicht: veranderingen in bestuurlijke toezichtsverhoudingen door informatisering* [Between Supervising and Supervision: Changes in Administrative Supervisory Relations Caused by Informatisation]. The Hague: Phaedrus.
- Zouridis, S. 2000. *Digitale disciplineren: over ICT, organisatie, wetgeving en het automatiseren van beschikkingen* [Digital Disciplining: on ICT, Organisation, Legislation and the Automation of Decisions]. Delft: Eburon.
- Zuurmond, A. 1994. *De infocratie: een theoretische en empirische herorientatie op Weber's ideaaltype in het informatietijdperk* [The Infocracy; a Theoretical and Empirical Reorientation on Weber's Idealtype of the Rational Legal Bureaucracy in the Information age]. The Hague: Phaedrus.

- Zuurmond, A. 1998. 'From Bureaucracy to Infocracy: Are Democratic Institutions Lagging Behind?', in I.Th.M. Snellen and W.B.H.J. van de Donk (eds), *Public Administration in an Information Age. A Handbook*. Amsterdam: IOS Press, pp. 259–72.
- Zamboni M. 2001. "Rechtsstaat": Just What is Being Exported by Swedish Development Organisations?', *Law, Social Justice & Global Development*, 2 (http://www2.warwick.ac.uk/fac/soc/law/elj/lgd/2001_2/zamboni), accessed 18 October 2005).

Date received 5 October 2004. Date accepted 24 February 2006.