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From Street-Level to System-Level Bureaucracies: How Information and Communication Technology Is Transforming Administrative Discretion and Constitutional Control¹

The use of information and communication technology (ICT) is rapidly changing the structure of a number of large, executive public agencies. They used to be machine bureaucracies in which street-level officials exercised ample administrative discretion in dealing with individual clients. In some realms, the street-level bureaucrats have vanished. Instead of street-level bureaucracies, they have become system-level bureaucracies. System analysts and software designers are the key actors in these executive agencies. This article explores the implications of this transformation from the perspective of the constitutional state. Thanks to ICT, the implementation of the law has virtually been perfected. However, some new issues rise: What about the discretionary power of the system-level bureaucrats? How can we guarantee due process and fairness in difficult cases? The article ends with several institutional innovations that may help to embed these system-level bureaucracies in the constitutional state.

The Issue: Discretionary Power of Civil Servants in the Constitutional State

Bureaucracy is no longer what it once was. The term conjures up mental visions of massive buildings in which large groups of men—bureaucrats are, without exception, men—encumbered by stacks of files frown heavily into duplicates and triplicates of important reports embellished with impressive-looking signatures. Bureaucrats are well known to be small-minded pencil pushers who can reject or approve an application for no better reason than the fact that your existence has somehow annoyed them.

This was the specter that haunted Weber, Hayek, and Popper: Large numbers of faceless officials whose *freies Ermessen* (discretionary power) could cause an open society to be smothered in the bud. Decades of legal and administrative ingenuity have been devoted to curtailing the influence of these tiny cogs in the wheel of power. An elaborate system of legal protection and the sweeping applica-

tion of the principles of sound administration over the past decades have more or less successfully led to the erection of a *cordon sanitair* around the majority of large-scale executive organizations. Hayek's prophecy of doom—in which he held that the rise of the welfare state, with its social benefits and subsidies, licenses and decisions, win-

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dow clerks and discretionary powers, would irrevocably lead us on a road to serfdom—has become a self-denying prophecy (Hayek 1944, 1960). A constitutional and a welfare state have ultimately been shown to be reconcilable.

Meanwhile, the large-scale executive public agencies of the welfare state appear to be quietly undergoing a fundamental change of character internally. Information communication and technology (ICT) is one of the driving forces behind this transformation. Window clerks are being replaced by Web sites, and advanced information and expert systems are taking over the role of case managers and adjudicating officers. Instead of noisy, disorganized decision-making factories populated by fickle officials, many of these executive agencies are fast becoming quiet information refineries, in which nearly all decisions are pre-programmed by algorithms and digital decision trees. Today, a more true-to-life vision of the term “bureaucracy” would be a room filled with softly humming servers, dotted here and there with a system manager behind a screen.

This article explores the implications of this transformation from the perspective of the democratic, constitutional state. What does it entail for the democratic control of administrative power and for the rule of law? Will it hasten the fulfillment of the doomsday scenarios of Weber, Popper, and Hayek, or is it the consummation of the ideal of perfect legal and rational authority? How does this transformation relate to the ideals of the constitutional state? Which constitutional ideal is actually served by ICT?

First, we will take a look at how the “traditional” *street-level* bureaucracy ultimately became embedded in the democratic constitutional state over the course of the twentieth century. Then we will describe how the development of ICT has prompted some of these large executive agencies to transform into *screen-level*, and even *system-level* bureaucracies. In each case, we will be guided by three questions: (1) To what extent is there an exercise of administrative power, and in what respect is this problematic from the perspective of the constitutional state? (2) What institutional arrangements are available to constrain these practices? (3) What is the underlying ideal of the constitutional state?

Street-Level Bureaucracies and the Constitutional State

Street-Level Bureaucrats as Policy Makers

Many contacts between citizens and public authorities involve individual transactions. Citizens ask for a benefit, rent rebate, or a permit, and they hand in their tax return or are ticketed now and again. They must generally deal with

large organizations that may handle literally thousands of such individual cases on the basis of administrative routines. Public-service workers occupy a critical position in these interactions between individual citizens and large “decision-making factories.” They apply the regulations and administrative routines to concrete situations. Although the final decision is formally handed down by the executive agency, it is the welfare workers, adjudicating officials, tax inspectors, and police officers who, in practice, decide to grant a benefit payment, lay down the conditions attaching to a permit, and determine the amount of an assessment or fine.

Many of these public-service workers are *street-level bureaucrats*: They are public employees who interact directly with individual citizens and have substantial discretion in allocating facilities or imposing sanctions (Lipsky 1980).² They must continuously make decisions, major and minor, about whether or not to apply the rules and how they should be interpreted in a specific case, be they the doorman at the office of the social services or a welfare worker assessing an application for a social benefit payment (Dunsire 1978; Knecht 1986). Is the applicant employable in the labor market? Should a deductible item be considered when determining the taxable income level? Can the parents of a student be qualified as unwilling to pay, meaning that the amount to be contributed by the parents may or may not be subtracted from the student’s grant? Annually, millions of decisions are made at this level by public-service workers—choices that can have an enormous impact on the daily lives of ordinary citizens.

Policy comes alive in the daily practice of street-level bureaucracy. It is here that, despite detailed rules and regulations, reality is shown to be far more complex and varied than legislators had ever dreamed. This creates the possibility of discretionary powers for the street-level workers. They become more than the implementing agents of policy; they are, in fact, policy makers as well: “[T]he decisions of street-level bureaucrats, the routines they establish, and the devices they invent to cope with uncertainties and work pressures, effectively become the public policies they carry out. I argue that public policy is not best understood as made in legislatures or top-floor suites of high-ranking administrators, because in important ways it is actually made in the crowded offices and daily encounters of street-level workers” (Lipsky 1980, xii).

It is chiefly this actual decision-making power that traditionally has invoked great concern. What about the democratic control and accountability of all these self-appointed, nameless policy makers? How can they be prevented from developing into tiny oligarchs, “a self-willed and uncontrollable apparatus before which the individual is helpless?” (Hayek 1960, 262).

Disciplining the Discretionary Power of Street-Level Bureaucrats

Over the past century, the discretionary power of street-level bureaucrats in these large executive agencies has been restrained and curbed in a number of ways. An appropriate framework in which to analyze this is the doctrine of the *trias politica*, with its segregation of the legislative, executive, and judicial powers. We shall interpret this from a Continental European constitutional perspective.

In the first place, the legislature itself has attempted to embed its authority in the practice of the executive. Key to the constitutional embedding of the street-level bureaucracies in countries with a Continental legal tradition, such as the Netherlands, Germany, and France, is the requirement of legality. The actions of administrative bodies must ultimately be founded on generally prevailing laws. Hence, the legislature strives to set standards by which to discipline the actions of the executive authorities. The development of a set of new legal principles governing the actions of public authorities did much to curb this discretionary power. The classic eighteenth-century notions of legality, legal certainty, and legal equality were refurbished in the twentieth century and applied to the new, more extensive range of activity of public authorities in the welfare state. This strongly restricted the range of activity of street-level bureaucrats. The process of decision making, for instance, has been strongly circumscribed by the principle of careful preparation, the fair-play principle, and the prohibition on *détournement de procédure*. Furthermore, a number of principles refer to the justification and structure of decisions, such as the limited means justification principle and the formal legal certainty principle. Finally, there are principles that impose standards on the quality of the content of decisions, such as the principle of proportionality, the principle of legal certainty, the principle of legitimate expectations, the principle of equality, and the prohibition on *détournement de pouvoir*. It was the development of these procedural and material principles of sound administration, as they are called in the Netherlands, that brought the welfare state explicitly within the bounds of the rule of law and that, at least for now, has kept the fulfillment of Hayek's prophecy of doom at bay.

A number of checks and balances were also introduced in the executive power itself. An important disciplinary institution in executive public agencies is hierarchy. Decisions that do not come within the standard repertoire are not left to the street-level bureaucrat, but must often be evaluated by those higher in rank, such as special adjudicating officials. The obligation to obtain the signature of a superior is another means of checking the power of low-level public servants. Policy regulations can also serve to limit the power of street-level bureaucrats. The executive power thus indicates how it proposes to handle this discre-

tionary power.³ Also, decision making by street-level bureaucrats has been surrounded with a broad range of checks and balances. An example of these are the checking procedures or "ex ante legal review" of decisions made by the public servant at implementation level. Municipal social services used to submit the decisions made by welfare workers to a member of the legal staff in advance to review its lawfulness. Moreover, ex post objection proceedings are common in many street-level bureaucracies, and they are even mandatory in the Netherlands under the General Administrative Law Act.

Finally, the *trias politica* points toward the judiciary as the disciplinary authority. Over the past century, a coherent and densely woven system of legal protection against the public authorities has developed. Citizens and corporations can generally appeal the decisions of street-level bureaucrats in the administrative division of a district court or a specific administrative tribunal. This allows the administrative court to review the manner in which a street-level bureaucrat makes use of his administrative discretion. Administrative justice in the Netherlands is characterized by low-threshold access to the administrative court, thanks to the absence of compulsory representation at law. As a result, the judiciary is considered the disciplinary institution for the street-level bureaucracy not only formally, but also in actual fact.

Legality as the Constitutional Ideal

The power of the street-level bureaucrat is hemmed in from various sides. The legislature determines what and how a situation should be weighed, but it leaves a margin of discretionary power and policy freedom to the executing official to implement this in practice. The exercise of this power is prescribed up to a certain point by legal rules and principles, such as the principles of sound administration. Organizational checks and balances have been incorporated into the executive to constrain the choices and decisions of the street-level bureaucrats. Finally, the court reviews the legality of these choices and decisions.

The underlying constitutional ideal is legality. In the Netherlands and in Continental countries such as Germany and France, the legality requirement comprises three aspects: (1) the administrative action must be founded on the law; (2) the law must provide a standard for the content of the administrative action; and (3) the administration must apply the law (Oldenziel 1998, 45). The legality requirement means that decisions made by street-level bureaucrats are required to be based on the rule of law. In the Continental tradition, law is primarily regarded as a set of (general) rules posited by the legislature. This formal, positivist approach to developing legal rules is believed to provide assurance to citizens about their legal position, the presumption being that they are protected from random

actions on the part of the administration. Formally laying down general rules in law also implies that representative bodies will be involved in their adoption. The obligation to lay down and spell out these rules ensures that they will be known and recognized. Intervention on the part of the public authorities is fine, provided it is based on already publicly expressed general rules.

In the common law tradition characteristic of the British legal system, the point is again to ensure that public authorities adhere to the law. This tradition, however, takes a different approach. In the British constitutional ideal described by Dicey ([1885] 1959), the safeguards for civil liberties are to be guaranteed by the “common law.” The strength of the unwritten English constitution is the very fact that it need not rely on “declarations or definitions of rights so dear to foreign constitutionalists.” The civil rights and liberties are not explicitly stated in, but protected by common law. Inherent in this legal tradition is the idea that every citizen is free to do that which is not prohibited by law. As these liberties are not set down, but are continuously confirmed and upheld by judicial decisions and common law, it is difficult for the state to undertake any interventionist action. After all, the tradition offers a criterion that respects the acceptability of state intervention. Legality, according to this system, means the public authorities’ actions accord with the common law. Administrative measures derogating from common law will be rejected. Common law goes hand in hand with the sovereignty of Parliament: Parliament is the legislative power, from which no one may diverge.

As this tradition is vulnerable to an interventionist Parliament, some movement has been seen recently in the direction of the Continental tradition (Leyland and Woods 1997). If the idea of a common law falters in a civil-liberal political climate, supplementary protection in the form of a drafted set of legal rules may well be the solution—or so it would appear. All this notwithstanding, the common law tradition continues to shy away from actually setting down and hammering out the legal relations between citizens and the public authorities (Henket 1991).

From Street-Level through Screen-Level to System-Level Bureaucracy

A number of large executive organizations have undergone a process of gradual but fundamental change over the past few decades. Key in change was information and communication technology (ICT). The sheer dynamism caused by the introduction of computers affected both the organization of the street-level bureaucracy and the underlying legal setup. In a relatively short period of time, the street-level bureaucracy has changed into what we could call a *screen-level bureaucracy*. The decision-making pro-

cess has been routinized, as Inbar (1979) predicted. Insofar as the implementing officials are directly in contact with citizens, these contacts always run through or in the presence of a computer screen. Public servants can no longer freely take to the streets, they are always connected to the organization by the computer. Client data must be filled in with the help of fixed templates in electronic forms. Knowledge-management systems and digital decision trees have strongly reduced the scope of administrative discretion. Many decisions are no longer made at the street level by the worker handling the case; rather, they have been programmed into the computer in the design of the software.

Meanwhile, a number of major executive organizations have progressed even further and are rapidly developing into what could be termed *system-level bureaucracies*. To illustrate this, we will take a closer look at two cases in the Netherlands: the system of student loans and grants, and the enforcement of traffic regulations.⁴

The System of Student Grants and Loans

Traditionally, an important element of the welfare state has been promoting accessibility to higher education for students from all reaches of society. In the Netherlands, a system of scholarships was established for gifted young people lacking financial means as early as the start of the preceding century. The grants were traditionally the domain of the Ministry of Education, Culture and Science. For a long time, the executive agency created to manage this system displayed all the characteristics of the classic street-level bureaucracy.

Scholarship applicants inevitably came into contact with the officials at the State Student Grants Department. For each student, these officials were required to establish not only whether he or she was gifted enough, but also whether he or she was indeed indigent and, therefore, eligible for a grant. The amount of the grant was also contingent upon these criteria. Officials had a tremendous amount of leeway in coming to a decision. The Ministry of Education viewed the granting of a scholarship less as a right and more of a favor: Just as the student was free to decide to embark on a study, the public authorities felt free to decide whether or not to grant a scholarship and to decide the amount thereof. It was sometimes necessary, for example, to estimate the income of parents who, as small shopkeepers, failed to maintain adequate financial accounts. Or it was determined that a girl should be granted less than a boy, as she could sew her own clothes. The majority of the workers charged with the allocation of the student grants knew their “clients,” as the group remained more or less the same each year. They sometimes called the students to find out how they were doing, or contacted the dean at the institute attended by the student to inquire about the student’s academic progress.

The street-level bureaucrats thus determined who got what and why, and their judgment was wholly based on the individual student's situation. This could work to the advantage of one student, but turn out less favorably for another in the same situation. There were incidents in which the head of the department saw a student arriving at the office of the executive agency in a car, and subsequently he decided that anyone able to afford a car could also afford to pay for his own education. To the extent that the official's discretion in allocating grants was restricted, this occurred through the ranks of the hierarchy: After all, the line chiefs were required to sign off on decisions and thus were able to retain some hold on what went on.

By the mid-1960s, the administration of student grants was mechanized, setting in motion the gradual transformation from a street-level bureaucracy to a *screen-level bureaucracy*. The first computers were installed, and increasingly they assumed more and more functions of the allocating officers. In the first instance, this mainly concerned supporting actions, such as storing information on the student or printing the officer's decision. The computer nonetheless ate into the responsibility of the public servant. As computers continued to take over more and more functions, the organization was increasingly forced to formalize aspects of the assessment process. This was partly due to the gradual broadening of the student grant system, which meant a higher number of applicants. It was also related to the dynamism generated by ICT: Automation of one step in a process demands the standardization and formalization of the preceding steps. If templates were created for the layout of decisions, categories needed to be defined that could be resolved in a particular way. As a result, more and more cases could be assessed according to a standard method. If the assessment has been standardized, precisely which information is needed for the assessment is also known. Hence, the data collection phase can also be formalized and standardized.

The discretionary margin in rules and regulations thus continued to be squeezed. By the early 1980s, the leeway available to the allocating officer had been largely reduced to accepting or rejecting the decisions proposed by the computer. Formally, street-level bureaucrats were still responsible for assessing applications for student grants; in practice, they merely pressed a button to indicate their acceptance of the computer's decisions.

In 1986, formal confirmation of the transition to a screen-level bureaucracy was given with the entry of a new Student Finance Act, which laid down in elaborate detail the assessment process. The Central Student Finance Directorate of the Ministry was transformed into the independent *Informatiseringsbank*. There was no room for street-level bureaucrats at this new executive organization. Form processors replaced allocating officers. The work of these

screen-level bureaucrats consisted mainly of entering forms filled in by students into the computer. The computer, then, without any input from the officials at all, made a decision on the application and printed it. The decision was subsequently sent to the student. Only if the student lodged a formal objection was the application referred for assessment to a living person. A few street-level bureaucrats were retained in the Objection and Appeals Department; otherwise, the organization was wholly transformed into a screen-level bureaucracy.

Some 10 years later, around 1996, the organization was once again sucked into a large-scale reorganization process. There were a number of reasons for this. In the first place, the "customer" had wholly disappeared from view in the organization. The organization had become wholly focused on the processing of forms, which, according to the management, had had detrimental effects on the service to the students. Dissatisfaction among students was rampant, and complaints were numerous. The employees were also dissatisfied: The drastic automation measures had left them with the virtual equivalent of a conveyor-belt job, making their work considerably less interesting. The computer system also failed to function up to standard. During the early years, attention had been devoted mainly to production control. Since the 1990s, the focus has shifted to the interrelations between processes. In the same organization, different schemes were being implemented on different computer systems. The same people occurred (sometimes at the same time) in different systems.

Therefore, it was decided to redesign these systems through a new reorganization and a new name: *Informatiebeheergroep* (IBG). Now that data collection (filling in forms) is increasingly performed electronically through floppy disks, modems, and the Internet, the screen-level bureaucrats are also gradually disappearing from the organization. After all, in the new IBG, employees are no longer needed to process forms, as the information is generally entered directly by applicants into the computer. A wholly new, organization-wide computer system is currently being developed, which will allow various regulations and schemes to be implemented and will embrace all the tasks of the executive organization. Moreover, the system is connected to that of other executive agencies, allowing the data stored therein to be utilized (such as income data from the tax authorities, personal data from municipalities, etc.).

In this way, the screen-level bureaucracy is gradually changing into a *system-level bureaucracy*. The members of the organization are no longer involved in handling individual cases, but direct their focus toward system development and maintenance, toward optimizing information processes, and toward creating links between systems in various organizations. Contacts with customers are important, but these almost all concern assistance and informa-

tion provided by help desk staff. After all, the transactions have all been fully automated.

Enforcing Traffic Regulations

In an altogether different domain of government policy—the enforcement of traffic regulations—a similar development may be observed. In the Netherlands, traffic regulations were traditionally enforced under penal law. This meant that, to punish a violation, an independent and unbiased judge needed to assess each case individually.

Until 1990, traffic offenses were dealt with by a chain of street-level bureaucrats that started with the police officer who observed the violation. Let's take a speeding violation as an example: A patrol car notices that a car is speeding. The car is stopped and the police officer addresses the driver. Depending on the impression made by the driver, a warning could have sufficed. If the driver appeared to be the type who would not be impressed by a warning, a ticket would be written out. Often, a word of reprimand was enough: The police thus made it clear that they took traffic violations seriously, and passing traffic duly took note. In formal legal terms, the ticket was a transaction. If the driver paid the fine, criminal proceedings could be averted. If the driver did not pay up, the case was transferred to another street-level bureaucracy, namely to the office of the public prosecutor. Here, the case was again assessed to decide whether prosecution was indeed inevitable. As a rule, a transaction, which tended to be higher than the first, was once again proposed to the suspect. Depending on the circumstances under which the violation occurred, a lower amount could also be imposed, or prosecution could even be waived. If the transaction proposed by the public prosecutor also failed to be paid and, in his opinion, the suspect should not be allowed to get away with it, the public prosecutor brought the case before yet another street-level bureaucrat, the subdistrict court. The subdistrict court ultimately imposed a sanction—in almost every case, a fine that was to be collected by the police. If this, again, failed to be paid, in most cases not much happened. In a few rare instances the police came to the person's door to collect the—by then very substantial—fine owed.

The end of the 1970s heralded the arrival of computers in this domain as well. The various street-level bureaucracies such as the police, the public prosecutor, and the central court payment office all computerized their records, although the core of their assessment task remained unaffected by the computer. It remained a criminal-judgment process in which all the circumstances of the case could play a role: Was there a reason that caused the person to speed? Was he a repeat offender? Had a dangerous situation arisen? Gradually, this process of assessment eroded in various phases, although until the end of the 1980s, the process remained largely as outlined.

Then, in 1990, a new system was introduced. Henceforth, traffic offenses were to be settled within the scope of administrative law. At the same time, a large-scale information system was developed and introduced that encompassed the street-level bureaucracies. The street-level bureaucracy had become a screen-level bureaucracy in a single stroke.

This transformation becomes evident if we examine the way in which average speeding violations are currently settled. In the first place, speeding violations are generally no longer observed by individual police agents, but by cameras installed by the police at various locations for that purpose. The camera photographs the license plate and registers the violation. The data are fed by administrative police staff into the computer, after which they are forwarded through the computer network to the Centraal Justitieel Incassobureau (CJIB), a new central collection organization specially created for this purpose. Here, the digital files are received and processed into fines that are sent to offending citizens without any human intervention required. No criminal transaction is offered; instead, an administrative sanction is imposed directly. Legally, no judicial intervention is required. The majority of cases are paid immediately or following various computer-generated collection activities. The person in question may appeal to the public prosecutor, at which point a street-level bureaucrat will take a look at the case for the first time. These cases are, however, far and few between. The computer handles the overwhelming majority of cases independently.

The emphasis, in dealing with traffic violations, has therefore shifted to the collection agency. This organization is a supreme example of the screen-level bureaucracy. Whereas up until now, the various street-level bureaucracies boasted a considerable measure of legal expertise (each individual violation demanded a legal judgment), this is by no means the case in the new situation. Any actual people concerned with a case basically perform technical administration work. Employees enter data, verify addresses, or handle payments that are unable to be processed by the computer. No legal or professional assessment is involved. Criminal law, which demanded an individual assessment, has been replaced by a standardized judgment under administrative law. Exceeding the maximum speed limit by, for example, 15 kilometers an hour, is punishable by a fixed fine regardless of the circumstances of the case. Cameras are suitable for collecting such information, as human judgment serves only to obscure the observation. If, in the past, it was possible to establish convincingly that a traffic sign had been missing, the public prosecutor could reduce the amount of the fine. This is no longer possible: The law does not permit it, nor is the executive organization so equipped.

ICT has wrought a transformation at the CJIB over the past years, similar to that at the student finance organization. The various schemes and regulations (plus the corresponding executive processes) were originally all organized into separate computer systems and subsequently combined into a single system. Also, a need for more accessibility to the “customer” gradually came to be felt. (Initially, it was felt that the collection agency should not be able to be approached by “customers” at all—the administrative penalty did not, for example, state the telephone number of the CJIB). This network of screen-level bureaucracies is gradually changing into a system-level bureaucracy. The accent shifts to the optimization of processes. The former approach, in which cases received individual treatment (from data collection to issuing judgment) has been fully computerized. Core activities of the organization are directed at upgrading process efficiency and searching for potential combinations with other executive processes outside the bounds of the separate organization. The street-level bureaucracy, which focused on a professional, legal judgment of each individual situation, has been replaced by a system-level bureaucracy in which computer networks are maintained, perfected, and intricately linked to one another.

The Characteristics of System-Level Bureaucracies

In both cases, the executive public organizations completely changed in nature as a consequence of the application of ICT. They are, even in the most literal of senses, no longer to be qualified as *street-level* bureaucracies. Contacts with citizens no longer take place in the streets, in meeting rooms, or from behind windows, but through cameras, modems, and Web sites. ICT has come to play a decisive role in the organizations’ operations. It is not only used to register and store data, as in the early days of automation, but also to execute and control the whole production process. Routine cases are handled without human interference. Expert systems have replaced professional workers. Apart from the occasional public information officer and the help desk staff, there are no other street-level bureaucrats as Lipsky defines them. The process of issuing decisions is carried out—virtually from beginning to end—by computer systems. The information required is supplied electronically and processed by the computer, while the end product also will soon be delivered electronically by e-mail (currently, a written decision is still automatically printed and sent). Only if the

citizen emits some kind of signal (such as a complaint or notice of objection) will a specialized official enter into the picture.

This system-level bureaucracy will ultimately employ three groups of employees: (1) those active in the data-processing process, such as system designers and the legislative specialists, legal policy staff, and system managers associated with these processes; (2) management and those controlling the production process; and (3) the “interfaces” between citizens and the information system, such as public information officers, help desk members, and the legal staff charged with handling complaints and objection notices on behalf of the organization. The hundreds of individual case managers have all vanished. Their pivotal role in the organization has been taken by systems and process designers.

The boundaries with other (sub)organizations have become much more fluid, both in terms of system design, information exchange, and work processes. The various legal frameworks have been combined into a single system, and data about individual clients go back and forth between various agencies. Large parts of the work process can be outsourced to other organizations.

Compared with the street-level and screen-level bureaucracies, the characteristics of the system-level bureaucracy are summarized in the table 1.

How representative are the two cases we have described? Will the introduction of ICT eventually transform all street-level bureaucracies into system-level bureaucracies? We have already made one caveat: This article is not about all sorts of street-level bureaucracies, it is only about large “decision-making factories,” executive agencies that handle thousands of individual cases on the basis of a legal framework.⁵ It remains to be seen whether similar transformations can be observed in non-legal, non-routine, street-level interactions, such as teaching, nursing, and policing. However, similar transformation have also been observed and described with regard to other executive legal agencies (Bing 1995; Snellen

Table 1 Comparison of Characteristics

| | Street-level bureaucracy | Screen-level bureaucracy | System-level bureaucracy |
|--|--|---|---|
| Role of ICT | Supportive | Leading | Decisive |
| Functions of ICT | Data registration | Case assessment and virtual assembly line | Execution, control, and external communication |
| Human interference with individual cases | Full | Partial | None |
| Organizational backbone | Case managers | Production managers | Systems designers |
| Organizational boundaries | Strict, with regard to other organizations | Strict, both within and between organizations | Fluid, both within and between organizations |
| Legal regime | Open, ample discretion, single legal framework | Detailed, little discretion, single legal framework | Detailed, no executive discretion, exchange between legal domains |

1998), large bureaucracies (Zuurmond 1994, 1998), and a statistical office (Heeks and Davies 1999).

We can identify several circumstances that may foster a transformation from a street-level into a screen-level and eventually to a system-level bureaucracy. Some of these involve the nature of the legal context. A conditionally programmed legal framework will lend itself much easier to ICT applications than a goal-oriented legal framework (Luhmann 1966; Lenk 1990). In the former case, the law has an if/then structure, which easily can be translated into algorithms and decision trees. In the latter case, the legal framework only enumerates the interests that must be taken into account and weighed by the executive officer. More generally, a legal culture that emphasizes legal certainty and formal equality will enhance the transformation, because laws and regulations will often contain a detailed description of the relevant criteria and legitimate exceptions. The elaborate system of administrative law that has accompanied the rise of the welfare state in Continental Western Europe is an example.

The organizational context is important, too. We have already emphasized the number of cases that must be processed. Large-scale organizations that involve many workers who perform similar tasks lend themselves more easily to informatization. Centralization is another factor. If these street-level bureaucrats would work in numerous independent agencies, there would be much less pressure to develop an automated system. Within centralized organizations, management and staff have more opportunity to capitalize on the economy-of-scale argument. This is not a sufficient condition in itself. A large street-level bureaucracy will only develop into a screen- or system-level bureaucracy if there is a dominant coalition of legal experts and system designers backed by efficiency-oriented managers.

These contextual factors will often enhance one another. Once ICT applications have been introduced, the pressures to centralize the organization, to formalize the legal regime, and to standardize the work will increase. These pressures, in turn, will foster the development of new ICT systems.

The System-Level Bureaucracy and the Constitutional State

The Zenith of Legal and Rational Authority

From the perspective of Weber, Popper, or Hayek, the transformation of these major executive agencies is to be applauded. After all, hardly any margin remains for the arbitrary exercise of power in implementing rules and regulations. The personal preferences or biases of the official handling the file can no longer play a role in the

granting of a scholarship, allowance, or speeding ticket. The expert system is blind and will not look out the window to check whether you have come by car. In principle, all administrative discretion can be mapped out entirely in syllogisms and algorithms (Zuurmond 1998, 265). Research in comparable executive agencies reveals that the legal quality of the decisions strongly increases when they are fully supported by expert systems (Groothuis and Svensson 2000, 9).⁶

Thus viewed, the system-level bureaucracy may be regarded as the zenith of legal rational authority.⁷ Thanks to ICT, implementation of the law has been almost wholly disciplined. In principle, legislature and execution run completely parallel to one another. It is not the courts, as in Montesquieu, but the executive organization itself that is the *bouche de la loi*.

A New Issue: Discretionary Power of Designers

Because of this transformation, the concept of policy execution has acquired a wholly different character. Execution no longer relates to the application of rules to individual cases but to the design of separate executive information systems and to linking separate processes and information systems. Execution has become mainly a matter of translation and policy design. This invokes new questions about the embedding of these system-level bureaucracies in the constitutional state.

The system designers, legal policy staff, and IT experts in particular are to be regarded as the new equivalents of the former street-level bureaucrats. By this we mean that they are the persons whose choices can affect the practical implementation of a policy. These system-level bureaucrats have the discretionary power to convert legal frameworks into concrete algorithms, decision trees, and modules. They are constantly making choices—which definitions should be used, how should vague terms be defined, how are processes to be designed and interlinked? Therefore, just as the street-level bureaucrats were not in their time docile policy implementation robots, but policy makers themselves. Their choices can, after all, be decisive for the “nature, amount, and quality of sanctions and benefits provided by their agencies” (Lipsky 1980, 13). In this way, for example, the system of travel expenses was translated in a specific fashion into the system algorithm of the Student Finance Act. (The administrative court, it should be noted, did not accept this interpretation.)

The question is, therefore, what about the discretionary power of these *system-level bureaucrats*? This is mainly a matter of political control and accountability rather than of legality and the rule of law. It does not concern the application of general rules to individual cases, but the drafting and composing of the rules themselves. At issue is the segregation of politics and administration. The informa-

tion system is essentially political in nature, and the links between separate systems are politically relevant because, for example, political consequences may be ensuing from such a link. If an information system such as that of the tax authorities is linked to that of the student grant office, the income data of both should, in fact, be harmonized for the sake of efficiency. How have these forms of power been dealt with? Who checks the developers and their systems? To whom are they accountable for the manner in which they have converted analogue legislation into digital decision trees, scripts, and algorithms?

Another Issue: *Lex Dura Sed Lex*?

ICT makes it possible to perfect the legality of the execution in the extreme. Such detailed structuring is possible that even in the assessment of individual cases, as it were, no derogation from the rules can be made. The question is whether justice is served by perfecting legality. Has the law become too unyielding? Could blind application of the law, in the literal sense, also lead to arbitrariness, precisely because no account is taken of the circumstances of the case? Can an expert system that leaves no room for *Einzelfallgerechtigkeit* (justice in each particular case) still be regarded as just? Van den Hooven (1998) earlier pointed to the risks of “epistemic enslavement” accompanying the rigid application of expert systems. Computerization, taken too far, makes insufficient allowance for special circumstances and can lead to absurd or downright hazardous situations.

This is mainly a question of due process. There is a real danger that a number of facts, which are relevant from the perspective of delivering individual justice, will get lost in the transition from analogue to digital policy implementation. Once again, arbitrariness would emerge as a constitutional risk, although this time in a guise other than a street-level bureaucracy. Here, arbitrariness is not a question of a lack of impartiality, but of excessive rigidity.

This digital rigidity, moreover, reduces the responsiveness of public administration, and hence undermines the legitimacy of governance. Is the law, in principle, not an open institution that is meant to create the opportunity for each citizen, and in individual cases to open up discussion of these rules from the perspective of his own, concrete situation? What then, is the constitutional ideal behind the system-level bureaucracy? A rigid form of legality—*lex dura sed lex*—or is a form of discursiveness or material justice needed after all, to safeguard the legitimacy of the constitutional state in the information society?

Disciplining the System-Level Bureaucracy

What to do about these new constitutional risks? The following are a few institutional innovations that could aid

us in our search to embed the system-level bureaucracy in the constitutional state.⁸

Introduction of ICT Supervision

If the construction and linking of information systems is not a mechanical implementation activity, but is in fact a form of legislation, it should be subject to public accountability. Parliament must have the opportunity to check and make adjustments to the digital translation of its policy frameworks and general rules. This could be provided in a number of ways. First, when introducing new executive rules, these should be subjected to an informatization review. Such a review would clearly illustrate in advance what to expect during the digitalization of the execution process and which policy-relevant choices could be put forward. Subsequently, the major public executive agencies could be asked to devote specific attention in their reports and annual statements to the information technology frameworks and expert systems used in their executive tasks and to report the ensuing issues and questions. They also should be more transparent in their reports about the ways in which various information systems are linked.

A more drastic step is the introduction of separate forms of ICT supervision. Representative bodies have only limited expertise in the area of ICT and would benefit from more systematic reviews. This could be realized, for example, by carrying out incidental ICT reviews at specifically targeted large-scale executive bodies as part of the parliamentary inquiry into the implementation of legislation. Moreover, such ICT supervision could conceivably become institutionalized over time, forming part of the Audit Office review or through relegation to a separate supervisory authority.

Hardship Clauses and Panels

The issue of digital rigidity can partially be provided for through hardship clauses and other feedback mechanisms by which analogue information can be supplied to the system. Citizens must be given the opportunity to draw attention to specific circumstances that do not fit within the existing algorithms or to patently unjust outcomes. It may be useful to work with customer panels as a means of reviewing and achieving a further, more structural refinement of the expert systems. Customer panels, particularly combined with hardship clauses, can promote openness and social orientation (instead of a strict application of the rules) at the relevant executive bodies. The former street-level bureaucracies were characterized by what was often a mixture of orientations: Whereas one street-level bureaucrat could be focused on the individual citizen, another would apply the rules as mechanically as possible. Customer panels are a different way to introduce a citizen-

focused executive style into the generally independent system-level bureaucracies. Also a citizen's charter can be drawn up, in which the executive agency guarantees the citizens that a staff member will assess their individual situation if requested.

Public Accessibility to Expert Systems

An innovation that would increase both the democratic control and the justice of the system-level bureaucracies is to open up the accessibility of the expert systems themselves. Citizens and interest organizations should be able to access the electronic forms, decision trees, and checklists used by the organization to make decisions directly on the Internet. In the words of de Mulder (1998), this is fourth-generation legislation, to which public access should be the norm, just as to earlier generations, in connection with the knowledge of the rules and the legal certainty of citizens.

Such digital openness will strengthen the position of the individual citizen toward these powerful "infocracies" (Zuurmond 1998, 270). The citizen can check whether justice has been done and can focus public attention on the implicit values of the expert system by instituting legal proceedings. This is an important means of preventing epistemic enslavement. Secondly, it keeps the system designers alert. They may be asked to account for the decisions made in translating legislation and policy into decision trees. In this way, forms of horizontal accountability develop in which social organizations and critical citizens, in addition to the usual democratic agencies, can act as countervailing powers.

Transparency as a Constitutional Ideal

A complementary constitutional ideal looms behind such a disciplining of the system-level bureaucracy. Next to legality, transparency is another important principle of the constitutional state in the information society. Recognizable rules, open decision making, and accessible information are key conditions for disciplining these new forms of legal and rational authority.

The required transparency is relevant on several levels. First and foremost, the algorithms and computer processes should be made transparent. Which interpretation of the rules is exactly concealed in the algorithm? What links have been introduced between which systems? In addition, transparency in the realization of systems is crucial. Street-level bureaucrats were called to account for their functioning by the disciplinary institutions; as a result, street-level bureaucrats were forced to reveal their grounds and considerations. Now that these considerations have shifted to the process of system development, it is important that this process be rendered even more transparent. After all, the point is to enhance the transparency of the dynamics between the law, the organization, and the system for politicians and citizens. In our cases, the process of transformation from street-level bureaucracy to screen-level and system-level bureaucracy was an insidious one. The responsible administrators and politicians obviously contributed by approving modifications in regulations and investments in information technology, but an explicit debate on the desirability of these transformations never did ensue.

Transparency does not develop spontaneously. New institutional checks and balances are needed to encourage more transparent conduct on the part of the public agencies. The "rule of law" not only relates to the actual application of the formal rules, but also to (the capability of) doing justice to the rules and to individual situations, as well as to the transparent, identifiable, and accountable manner in which this is to occur. Constitutionality is more than the strict execution of the law; it also refers to the ongoing obligation of the public administration to provide a satisfactory answer to the question of why the law and its application should be considered just. In view of the rise and proliferation of screen-level bureaucrats and even of system-level bureaucrats, we must accept that in today's large-scale welfare state, such accountability is no longer feasible in each concrete case. As we have seen, there are other means of embedding this in public administration. These will serve to safeguard this transparency that has rapidly emerged as a new constitutional ideal.

Notes

1. An earlier version of this article was presented at the 2001 PAT-Net conference, June 21–22, 2001, Leiden University, the Netherlands.
2. Not all street-level bureaucrats are public-service workers in large executive agencies. This article is not about all sorts of street-level bureaucrats. It is only about those public-service workers that are involved in the routine handling of large amounts of formalized transactions. Hence, it is not about the delivery of concrete, individual services by teachers, health workers, or judges—public-service workers who are also labeled by Lipsky as street-level bureaucrats.
3. Policy regulations do not have the effect of general binding regulations because they are subject to an “inherent derogatory authority.” This implies that a street-level bureaucrat must ask himself in every case whether to apply the rules of policy. Nonetheless, the actions and choices of the street-level bureaucrat are bounded in practice by (internal) policy rules.
4. For a detailed discussion of these two cases, see Zouridis (2000, 117–265).
5. See note 2.
6. Interestingly, Groothuis and Svensson (2000, 9) find that most errors were made in situations in which the expert system provided incomplete support. In those cases, civil servants relied too heavily on the system. It may well be, therefore, that our screen-level bureaucracy is the third-best option from the perspective of the constitutional state.
7. Zuurmond (1994, 1998) refers to this connection as a transition from a Weberian bureaucracy to an “infocracy.”
8. The following suggestions are all institutional in character: It may well be that technological innovations eventually will render them obsolete. New XML-based software may make it possible in the near future to externalize system design and even the handling of transactions. Private parties would then be able to design their own systems within the parameters set by the legislature and compete for citizens as customers of their executive services. This would move us beyond system-level bureaucracy into the realm of hybrid organizations. The use of fuzzy logic might help to incorporate more specific circumstances into the binary decision trees, thus softening the digital rigidity.

References

- Bing, Jon. 1995. Three Generations for Computerized Systems for Public Administration and Some Implications for Legal Decision Making. In *25 Years Anniversary Anthology in Computers and Law*, edited by Jon Bing and Olav Torvund, 211–38. Oslo: Tano.
- de Mulder, Richard. 1998. The Digital Revolution: From Trias to Tetras Politica. In *Public Administration in an Information Age: A Handbook*, edited by Ig Snellen and Wim van de Donk, 47–55. Amsterdam: IOS Press.
- Dacey, Albert Venn. [1885] 1959. *An Introduction to the Study of the Law of the Constitution*. London: Macmillan.
- Dunsire, Andrew. 1978. *The Execution Process*, vol. 1. Oxford, UK: Martin Robertson.
- Groothuis, Marga, and Jörgen Svensson. 2000. Expert System Support and Juridical Quality. In *Legal Knowledge and Information Systems, Jurix 2000: The Thirteenth Annual Conference*, edited by Joost Breuker, Ronald Leenes, and Radboud Winkels, 1–10. Amsterdam: IOS Press.
- Hayek, Friedrich August. 1944. *The Road to Serfdom*. London: Routledge.
- . 1960. *The Constitution of Liberty*. London: Routledge/Kegan Paul.
- Heeks, Richard, and Anne Davies. 1999. Different Approaches to Information Age Reform. In *Reinventing Government in the Information Ages: International Practice in IT-Enabled Public Sector Reform*, edited by Richard Heeks, 22–48. London: Routledge.
- Henket, Maarten. 1991. *Statutes in Common Law and Civil Law: Their Interpretation and Status*. Utrecht: Rijksuniversiteit.
- Inbar, Michael. 1979. *Routine Decision-Making: The Future of Bureaucracy*. London: Sage Publications.
- Knegt, Robert. 1986. *Regels en redelijkheid in de bijstandsverlening: Participerende observatie bij een sociale dienst* (Rules and reason in social welfare. Participatory observation within a welfare department). Groningen: Wolters Noordhoff.
- Lenk, Klaus. 1990. Entscheidungsunterstützung in der Verwaltung. In *Entmythologisierung von Expertensystemen: Entscheidungsunterstützung in der Öffentlichen Verwaltung* (Decision support for the administration. In Demythologization of expert systems: Decision support for public administration), edited by Hinrich Bonin, 67–78. Heidelberg: Decker und Müller.
- Lipsky, Michael. 1980. *Street-Level Bureaucracy: Dilemmas of the Individual in Public Services*. New York: Russell Sage Foundation.
- Luhmann, Niklas. 1966. *Theorie der Verwaltungswissenschaft: Bestandsaufnahme und Entwurf* (A theory of public administration: Update and design). Köln/Berlin: Grote.
- Oldenziel, Harald. 1998. *Wetgeving en rechtszekerheid: Een onderzoek naar de bijdrage van het legaliteitsvereiste aan de rechtszekerheid van de burger* (Legislation and legal security: A research into the contribution of the requirement of legality to the legal security of citizens) Deventer: Kluwer.
- Popper, Karl. 1945. *The Open Society and Its Enemies*, vol. I and II. London: Routledge.
- Snellen, Ig. 1998. Street Level Bureaucracy in an Information Age. In *Public Administration in an Information Age: A Handbook*, edited by Ig Snellen and Wim van de Donk, 497–505. Amsterdam: IOS Press.
- van den Hooven, Jeroen. 1998. Moral Responsibility, Public Office and Information Technology. In *Public Administration in an Information Age: A Handbook*, edited by Ig Snellen and Wim van de Donk, 97–111. Amsterdam: IOS Press.
- Weber, Max. 1922. *Wirtschaft und Gesellschaft* (Economy and society). Tübingen: J.C.B. Mohr.
- Zouridis, Stavros. 2000. *Digitale disciplineren: Over ICT, organisatie, wetgeving en het automatiseren van beschikkingen* (Digital disciplinization: on ICT, organization, law, and the automation of legal acts). Delft: Eburon.
- Zuurmond, Arre. 1994. *De infocratie: Een theoretische en empirische heroriëntatie op Weber's ideaaltype* (The infocracy: A theoretical and empirical reorientation of Weber's ideal type). Rotterdam: Phaedruss.
- . 1998. From Bureaucracy to Infocracy: Are Democratic Institutions Lagging Behind? In *Public Administration in an Information Age: A Handbook*, edited by Ig Snellen and Wim van de Donk, 259–71. Amsterdam: IOS Press.