Article

How to Control Civil Servants: Designing and Testing a Solution Informed by Game Theory

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Abstract: A fundamental challenge in democracy is how to control civil service organizations. This challenge has been primarily addressed by creating horizontal accountability arrangements, in which independent agencies act as auditors and evaluators of civil service organizations. However, horizontal accountability only partially resolves this control challenge. In this paper, we adopt a design science approach and draw on insights from game theory to develop a set of design principles for controlling civil service organizations. Based on these design principles, a system for controlling civil service staff was created and implemented in a medium-sized Dutch municipality. The results obtained in this municipality are rather promising regarding the enhanced efficiency and transparency of the civil service organization, while the high level of job satisfaction among civil servants is sustained. These findings suggest that the benefits of increased transparency in how civil servants are monitored appear to outweigh the fact that they may have less discretion in their work.

Keywords: civil service; control; performance management; public administration; game theory; design science

1. Introduction

A fundamental challenge in democracy is how to control and manage the performance of civil servants (Chien and Thanh 2022; De Waal 2010; Polidano 2001). While civil servants formally operate under the direction and control of the elected officials of government, they often obtain positions that operate largely without control by these elected officials (Bovens 2000), who are nevertheless held fully accountable to the parliamentary organs for whatever is done by the civil servants (Bovens and Zouridis 2002; Rosser and Mavrot 2017). A recent example is the Dutch tax office that, over a period of more than ten years, wrongfully accused thousands of citizens of fraud, driving them into financial ruin with various subsequent elected officials being unable to control and correct the performance of the tax office's staff (Van den Berg 2021). Other examples of power abuse by civil servants are described by Suleiman (1974); Johnson et al. (1999) and Akech (2011). Another consequence of the difficulty to control civil service organizations is their strong tendency to grow, already noted by Parkinson (1957) and Downs (1967). Thus, despite deliberate efforts to achieve economies of scale by merging municipalities, the number of civil servants (per thousand citizens) tends to increase with the size of the municipality (e.g., Allers and De Greef 2018; Lassen and Serritzlew 2011). As such, the assumption that civil servants act to serve the public good is problematic (Forand 2019; Polidano 2001).

Studies of public bureaucracy (Hodgson 2004; Gehlbach and Simpser 2015; Walton 2005) suggest that civil service organizations continue to be the key instruments for implementing public policies; but these "post-Weberian" studies have moved away from

studying the performance (control) of such organizations. In this respect, the challenge of controlling civil service organizations is, today, primarily addressed by creating horizontal accountability, in which independent agencies act as auditors and evaluators of civil service organizations (O'Donnell 1999; Schillemans 2008). Recent studies suggest that these horizontal accountability arrangements only partially rectify existing deficits in the control over civil service organizations (Parsons and Molnar 2017; Ruth 2018) and other publicly funded organizations (Dal Molin et al. 2017; Ntim et al. 2017), among other things because of major time delays (e.g., via annual reporting and auditing procedures) and the limited expertise and resources available in the independent assessment agencies involved.

Another prominent approach to enhancing the performance of civil service organizations arises from the High-Performance Organization (HPO) perspective. For example, De Waal (2010) describes an HPO framework implying six specific improvement themes: identifying the profile of an excellent public sector manager; strengthening the resoluteness of management; excelling in the core competence of public sector organizations; improving the performance management process; improving process management within the organization; and increasing the quality of the workforce. De Waal's (2010) study as well as many others (e.g., Blackman et al. 2019; Buick et al. 2015) suggest that adaptability to change and frequent and timely performance feedback are key to managing and improving performance.

In this paper, we build on and extend this body of knowledge by addressing the research question of how to *design and test an organizational system for controlling (staff employed by) civil service organizations.* We adopt a design science approach, involving an iterative cycle of creative design and validation-oriented research (Ruijer et al. 2021), to answer this question. Moreover, the creative design efforts in this study go beyond the current body of knowledge, by adopting a game-theoretic perspective (Gürerk et al. 2006; Osborne and Rubinstein 1994).

Section 2 serves to explore the historical and theoretical background of the power of civil servants. Subsequently, Section 3 outlines the design science approach adopted. We then discuss relevant insights from game theory, resulting in a set of design principles for controlling a civil service organization, and describe the system that was implemented in a medium-sized Dutch municipality as well as the outcomes achieved with it. Finally, we discuss the main findings.

2. Theoretical Background

As argued earlier, the assumption that civil servants by definition serve the public good is problematic. Notably, the constitutions of Western democracies merely contain rather general principles regarding the role of civil servants within the framework of the Trias Politica (Labuschagne 2006), also because Montesquieu apparently saw no need to pay special attention to the relatively small civil service organizations existing in the 18th century. Until today, a detailed system for controlling civil service work is not available, due to the widespread assumption that civil servants effectively operate within the framework of the Trias Politica; that is, they are the operating staff of the executive power, thereby serving the political rulers and elected administrators (Labuschagne 2006).

However, the underlying assumption that civil servants serve the public interest is problematic. This was already the case in the early French and American democracies, in which many civil service organizations were undermined by patronage practices (Hoogenboom 1961). More recently, many studies have pointed out that civil servants do not always serve the public interest and/or the politically accountable administrators; moreover, the latter often have major difficulties in controlling their civil servants (e.g., Akech 2011; Johnson et al. 1999; Rosser and Mavrot 2017; Suleiman 1974). A key cause of this control problem is that civil servants have an information advantage over their elected political leaders, reinforced by the fact that civil servants often fail to provide relevant information to these leaders (Downs 1957; Galles and Sexton 1995). Downs (1957) argued that citizens (as voters) and elected politicians choose to be *rationally ignorant* in this setting

(also see: Mizrahi and Minchuk 2019). Rational ignorance arises when the cost of acquiring knowledge is substantially greater than the benefit it could produce. It takes the elected politician too much time and energy to understand various (e.g., performance) problems in civil service operations, making it irrational to waste time on them (Galles and Sexton 1995). A consequence of rational ignorance is that elected politicians tend to hardly interfere with their civil service organizations. Thus, civil servants themselves almost completely control the organizational structure, monitoring processes, HRM tools and other organizational practices. As a result, civil service organizations have a strong tendency to become larger and more complex (Forand 2019; Lassen and Serritzlew 2011), thereby further undermining the control by elected officials. Bovens (2000) has therefore argued that civil servants should be recognized as a "fourth power", next to the other three powers of the Trias Politica.

Despite these observations, the rise of New Public Management (e.g., Andersson and Liff 2012; Barzelay 2001; Nishimura et al. 2021) and New Public Service (e.g., Alford 2016; Osborne 2021) has reaffirmed the belief in 'service in the public interest' (e.g., Hsieh 2019), without questioning the mechanisms used for controlling the performance of civil service organizations. Here, the notions of *transparency* and *accountability* have been promoted, based on the belief that public administration is inevitably becoming more transparent (e.g., Dubnick 2005; Gupta 2008; Holzner and Holzner 2006). However, today there is little evidence that transparency and accountability operate in the way its proponents would like (e.g., Ali and Nicholson-Crotty 2021; Hansen et al. 2015). While some governance practices regarding civil service organizations in democratic societies are able to achieve some level of transparency (e.g., Fung et al. 2007), the quest for transparency often produces unintended side-effects, such as growing distrust among civil servants when they become more exposed (Morgeson et al. 2021; Strathern 2000), new forms of secrecy in reaction to transparency measures (Ringel 2019), and fraud and corruption (Nishimura et al. 2021; Warner 2007). Moreover, Fung et al. (2007) demonstrated that full disclosure of information about public services often results in information that is incomplete, incomprehensible, or irrelevant to citizens.

In sum, the prevailing practices and methods for controlling (the performance of) civil service organizations do not sufficiently acknowledge the actual power of civil servants, tend to assume civil servants automatically act in the public interest, and often produce various unintended effects.

3. Methodology

The research question raised in Section 1 cannot be properly addressed by means of an exclusively descriptive–explanatory approach, because this question involves a so-called wicked problem (Buchanan 1992; Termeer et al. 2019) that cannot be effectively addressed by merely studying it. In this respect, Simon (1969) argued the field of (public) management is essentially a design discipline, one that focuses on 'how things ought to be.' In designing and testing an organizational system for controlling civil service power, we draw on design science, a research methodology that has been arising from Simon's (1969) seminal work and has gained momentum in fields such as information systems (e.g., March and Smith 1995), organization studies (e.g., Romme 2003) and public administration (e.g., Bason 2016; Bason and Austin 2021; Shangraw and Crow 1989). In the field of public administration, there is a long tradition of design that primarily draws on an expert-driven rational (e.g., policy) design approach, often based on a top-down, linear image of the policy-making process (Peters and Pierre 2006). In this study, we employ a more creative and flexible approach to design research (Bason and Austin 2021; Romme and Meijer 2020).

The design science cycle adopted in this study involves three key steps: theorizing; creating; and testing. These steps are key elements of a highly iterative process, in which one goes back and forth between various steps to converge toward a solution that is both theoretically grounded and practically tested (Lewis et al. 2020; Romme and Meijer 2020).

More specifically, *theorizing* is about developing design principles (Romme and Meijer 2020), also in view of criteria such as usefulness, fairness, viability and desirability—especially

from the perspective of users (Bason 2016). In our study, the 'users' are the elected politicians accountable for the civil service organizations. *Creating* involves developing a novel proposed solution. Finally, *testing* involves efforts to scrutinize the solution in terms of criteria such as generalizability, internal and external validity, and reliability (Romme and Endenburg 2006). The acts of theorizing, creating, and testing often go together, with many iterations back and forth.

In this paper, we go through the entire design science cycle. First, we *theorize* about the control of civil service organizations, drawing on game-theoretic insights. Based on the resulting theoretical insights, we develop a set of rules that can inform the design and development of novel solutions. These rules subsequently serve to *create* a control system for civil service organizations, which is then *tested* in a Dutch municipality. Notably, the actual research process was highly iterative in nature: we frequently went back and forth between the theorizing, creating and testing steps; the sequential logic of an academic paper implies, however, that the next few sections can merely report the main (final) results of each step.

The second author of this paper started the design project when he was the municipal clerk of the municipality of Boxmeer. The two other authors are university professors that helped shape this research project at various stages. In this respect, Bartunek and Louis (1996, p. 62) suggest that joint insider-outsider research produces the quality of *marginality*, that is, being neither altogether inside or outside the system: "the outsider's assumptions, language, and cognitive frames are made explicit in the insider's questions and vice-versa. The parties, in a colloquial sense, keep each other honest—or at least more conscious than a single party working alone may easily achieve".

For the "theorizing" step in the design science cycle adopted in this study, the second author (as municipal clerk) at the time decided to draw on a game-theoretic perspective because the extant body of (e.g., NPM) literature on managing and controlling civil service organizations did not provide useful answers to the main research question (see Section 2 for more details). More specifically, only game theory appeared to provide a lens that explicitly acknowledges the actual power of civil servants and avoids making any assumptions about civil servants automatically acting in the public interest. The next section engages extensively with the literature on game theory.

4. Toward Design Principles Informed by Game Theory

By raising the issue of how to control a civil service organization, the question arises of under which circumstances civil servants can be trusted to do what they promise to do, that is, serve the public interest. This problem can be defined in terms of the potential divergence between espoused and actual behavior (Argyris et al. 1985). This divergence does not only occur among employees of civil service organizations. In the remainder of this section, we outline a game-theoretic perspective on this problem to develop design principles for controlling civil service organizations.

Game theory posits that the collaborative behavior of people can be described and predicted using two constructs (Osborne and Rubinstein 1994): dominant strategy and Nash equilibrium. An individual's strategy is *dominant* when this strategy is better than any other strategy for this individual, no matter what strategies are adopted by others. A *Nash equilibrium* occurs if no individual can do better by unilaterally changing her strategy. Imagine that everyone is informed about the strategies of the others. Suppose then that each person asks herself: "Knowing the strategies of the others and assuming these are set in stone, can I benefit by changing my strategy?" If anyone answers "yes" to this question, then that set of strategies is not a Nash equilibrium. However, if all people involved prefer not to switch (or are indifferent between switching and not switching), then a Nash equilibrium exists. The choice of the dominant strategy is determined by the gains and costs expected.

4.1. Stable and Unstable Agreements

Consider making a road trip by car, for which one has to decide whether to drive on the right or the left side of the road. Living in Germany, the driver expects all others to use the right side of the road and thus drive on the right side as well. In the case of a road trip in the UK, the driver is likely to decide to drive on the left side of the road. The personal decision here is primarily driven by the desire to prevent accidents. This example shows that once every driver in a particular country has adopted the (Nash) equilibrium strategy—reinforcing the initial collective agreement—it becomes increasingly difficult to change this agreement. In the above example of car driving, two Nash equilibriums exist: everyone drives on the right (e.g., in Germany) or everyone drives on the left (e.g., in UK). Each newcomer is more or less forced to choose this equilibrium strategy, in view of a collective agreement established a long time ago. Self-interest and collective interest are aligned in this example (Axelrod 1984). More generally speaking, a collective agreement is *stable if the self-interest of an individual aligns with the interest of all others*; each individual will then (almost automatically) stick to the collective agreement. With a stable agreement, there are no (major) conflicts of interest between the participants. The Nash equilibrium thus explains why a specific agreement remains very stable over time.

Collective agreements tend to become unstable when trust issues arise. Issues of trust arise when it is difficult to check if people do what they have promised to do. For example, Anderson (2006) studied budget negotiation practices in various Dutch governmental organizations, to discover a culture of gambling and lying; more than 90 percent of the people regularly engaging in budget negotiations confessed to having lied at least once, although they earlier had promised to be truthful. Similar observations of civil servants withholding and/or manipulating information are reported elsewhere (Allison and Halperin 1972; Durr and Swank 2005; Jones 2017; Halperin 1974).

A trust dilemma occurs when people set up an agreement, but it is uncertain whether the counterpart in this agreement will stick to it. This dilemma especially arises when it is beneficial for an individual to break the agreement, while all others stick to it. For instance, in budget negotiations, it appears better to exaggerate the budget needs of one's department. If all other departments stick to the truth, your department is likely to benefit; if the other department heads also exaggerate, while you speak the truth, your department is likely to suffer. So 'exaggerate' is the dominant strategy. Game theory, therefore, predicts that most people in that setting will exaggerate. Of course, in the reality of most (civil service) organizations, many staff members will do what they have promised and speak the truth, but the outcome of this type of situation nevertheless is highly unstable. Game theory here essentially says: *if it is beneficial to not comply with the collective agreement while all others do comply, it is very likely that at least one individual will break the agreement*. This statement involves a statistical likelihood: if (some) civil servants have incentives to break the agreement, then non-compliance is very likely to occur.

Many scholars have explored and assessed the trust dilemma to demonstrate that initial agreements tend to destabilize over time (Dawes and Thaler 1988; Fehr and Schmidt 1999; Gürerk et al. 2006). That is, even if many participants choose to stick to the agreement in the first round(s), when the game is repeated over many rounds, a growing number of players decides to abandon the compliance strategy. The longer the game is played, the more people choose a strategy that seems to be in their self-interest, but ultimately is disadvantageous for all (Gürerk et al. 2006). In other words, *if the dilemma of trust is sustained over time, almost everyone will eventually break their promise* and adopt a non-compliance strategy.

4.2. Working for the Common Good Requires Sanctions

These insights offer a harsh but realistic perspective. If a group of civil service professionals voluntarily pledges to (collaborate to) serve the public good, game theory predicts they will only deliver on their promise if the individual self-interest aligns strongly with the collective interest. However, given that this group is likely to include some people

whose self-interest does not sufficiently overlap with the collective interest, it is very likely that at least one group member will not stick to the collective agreement (Van den Assem et al. 2012). Over time, a growing number of civil servants will then break their promises.

Notably, Fehr and Gächter (2000) showed that the possibility to sanction non-compliance leads to compliance and therefore after a while to less sanctions. By sanctioning, the non-compliance strategy gradually disappears, with every next round of the game. In fact, the threat of sanctions appears to increase trust as well as the collective benefits (Falk and Fischbacher 2006). Thus: *collective benefits will only arise if those not complying with the collective agreement can be sanctioned*; the threat of sanctions therefore needs to be explicitly incorporated in this agreement.

4.3. Avoiding Sanctions

Getting sanctioned is unpleasant and therefore people may devise strategies to avoid sanctions (other than by merely sticking to the collective agreement). A common strategy here is to (try to) hide one's individual action from those guarding and monitoring the collective agreement (Durr and Swank 2005; Van den Assem et al. 2012). If the guardian of the agreement does not know what the individual is doing, s/he cannot be sanctioned. The strategy of withholding information to prevent (later) sanctions is widely observed in traffic behavior, income tax declarations, exploitation of common resources (e.g., fishing waters) as well as in many large administrative bureaucracies (Allison and Halperin 1972; Jones 2017; Halperin 1974). Therefore: if individuals can *rather easily mask misconduct (e.g., by withholding information) and other forms of non-compliance with the collective agreement, then there will always be people trying to avoid sanctions* in this way.

4.4. Organizational Levels

In the earlier description of the case of department managers negotiating about next year's budget, we assumed it is in their interest to come back to their department as a 'winner'. However, this assumption is only self-evident if the misinformation provided remains hidden or is maybe even accepted by all others as 'part of the game'. If, on the other hand, lying and deceiving are not appreciated by the others and possibly even heavily sanctioned by the boss, it becomes more likely that the department manager is prepared to return to his department as an honest loser. Almost every civil servant is probably aware of the dilemma of choosing between reporting on underperformance in his team or running the risk of sanctions for not reporting it (Anderson 2006; Mulder 2020). Thus, we conclude that *when a civil servant has to choose between the interests of various levels of the organization (i.e., team, department, or organization as a whole), s/he is likely to direct her/his behavior toward the level that offers the most benefits and the lowest risk of sanctions.*

4.5. Registering and Sanctioning

Registering and sanctioning are regular practices for overcoming the problems generated by the dilemma of trust. Registering makes individual behavior visible, which in turn results in individual compliance with agreements to avoid any sanctions (Kopelman et al. 2002; Ostrom 1990). Evidently, meticulous registration and sanctioning already are regular practices in the way democratic governments and their civil service organizations implement and sustain collective agreements regarding common resources and facilities, such as those in the area of traffic, taxation, waste disposal, energy, military service, and so forth (Berge and Van Laerhoven 2011; Gürerk et al. 2006; Henry and Dietz 2011). That is, to sustain a collective agreement in the form of a Nash equilibrium, *it is necessary to register, measure and (if necessary) sanction individual behavior; without the threat of sanctions for non-compliance, the collective agreement cannot be realized and sustained over time.*

Game theory thus suggests that behavioral change of civil servants cannot be achieved by direct interventions (e.g., by having them take a public service oath), but only by changing the rules. By changing the rules, the optimal strategy and thus the Nash equilibrium changes. These mechanisms in game theory appear to be rather universal and therefore

independent from the specific setting. Various studies show that conflicts do not occur if rules and sanctions are clear and comprehensible to everyone from the start (e.g., Falk and Fischbacher 2006; Gürerk et al. 2006). With explicit knowledge of the threat of sanctions, most people not only stick to the collective agreement but over time also internalize it—thereby no longer feeling the threat of sanctions. Moreover, the threat of sanctions ensures there are fewer conflicts, making it enjoyable to live and work together. Overall, this suggests that registering, measuring and sanctioning should be included in the design of the system (Fehr and Gächter 2000; Gürerk et al. 2006).

4.6. Design Principles

Based on the insights arising from game theory, the following design principles for controlling a civil service organization can be formulated:

1. the tasks and responsibilities of each individual civil servant should be clearly specified;
2. standards of performance for these tasks should be specified and agreed upon;
3. the performance of each individual civil servant should be registered; if possible, registration should not depend on inputs provided by the person whose activities are being registered; this is relatively simple today, as there are hardly any activities that do not leave a digital trail;
4. the registered performance should be visible (i.e., transparent) to the civil servant, his fellow workers, the manager of his department, the manager of the manager, and so forth;
5. registered performance needs to be measured in relation to the agreed standards;
6. performance measurements should be carried out by an agent that is neither the manager nor another member of the team in which the assessed civil servant is embedded;
7. negative as well as positive deviations from the performance standards are regularly discussed between the manager and the civil servant, possibly followed by sanctions or rewards;
8. the approach outlined in principles (1) to (7) is followed at all levels of the civil service organization (i.e., including its managers).

5. Creating a System for Controlling a Civil Service Organization

The opportunity to create and test a system based on the principles defined in the previous section arose when the second author of this paper was appointed in 2007 as municipal clerk of Boxmeer, a medium-sized municipality in the Netherlands. In 2007, Boxmeer had 28,726 inhabitants. In the Dutch system of local government, the municipal clerk is the operational manager of the entire civil service organization of the municipality, with the aldermen as elected political leaders being accountable to the city council for the various domains of municipal policy and services. From the start, the municipal clerk of Boxmeer encountered various problems of control: lack of transparency, lack of norms in productivity, lack of accountability at the individual level. To acquire a better understanding of these problems, he studied the literature on public administration but discovered that game theory provided him with a better understanding of what was going on. Based on these insights, he designed a control system for the civil service organization of Boxmeer. As of 2013, most elements of the proposed control system were implemented in this municipality. In this section, we outline the specific system that was created (informed by the design principles outlined in the previous section). The various elements of the system were all formally approved and established by the political leadership of the municipality (i.e., the mayor and aldermen).

5.1. Tasks and Responsibilities

The first key element of the proposed control system is to make transparent agreements about the tasks and responsibilities of each individual civil servant. This requires that all activities of the municipality are mapped out up to the individual level. The mission and tasks of any governmental body are firmly grounded in national laws. In the case of

Dutch municipalities, 85 to 90 percent of the work carried out by civil servants involves the execution of national laws and regulations (Elzinga 2010). For example, in 2018 each Dutch municipality had to execute 147 national laws and additional policy regulations. The execution of these laws and regulations is typically distributed across a substantial number of departments. The municipal clerk holds the final responsibility for the correct execution of all laws and regulations; a departmental head is responsible for a subset of these laws and regulations; a team leader is responsible for a particular segment of this subset, and so forth.

To register and assess the performance of any staff member, generally applicable standards of measurement are needed. In the case of the municipality of Boxmeer, it appeared to be sufficient to distinguish seven aspects of each job: product, data, procedures, consultation, time, finance, and tools. For each aspect, several levels of scope and responsibility (usually three or four) can be distinguished, which are tied to educational qualifications, knowledge and experience, and salary scales. The resulting highly generic job profiles become job descriptions when they are combined to the specific (part of the law) for which the civil servant is responsible. For example, an employee in the department for Spatial Planning is charged with the Dutch Road Traffic Act and European tender rules, extended with other regulations, implying a job description including:

1. *Product*: developing and managing roads in the municipality;
2. *Data:* processing and analyzing data concerning roads, quotations, construction companies, and so forth;
3. *Procedures:* following fixed procedures (e.g., tender rules);
4. *Consultation:* attending regular meetings with colleagues and other stakeholders;
5. *Time:* planning and monitoring contracted activities (e.g., start and completion of work by contractors);
6. *Finance:* controlling a given budget and expenses;
7. *Tools*: using a document management system and several other relevant tools.

As such, the job profile for a specific civil servant does not change when laws and regulations change, but the (more detailed) job description can be updated if necessary. Such updates do not change the labor contract, which is tied to the generic job profile. Adjustments are part of the so-called p-cycle, described in more detail below.

Registration of performance simply involves recording data concerning the seven aspects. In the above example, that means: are roads planned and managed according to the overall road planning of the town; were available data used and analyzed; was the work done in accordance with prescribed procedures; did the civil servant attend the necessary meetings; were all activities for which she was responsible carried out in a timely manner; did the activities remain within budget and were all expenses properly accounted for; did the employee make use of the tools prescribed for the job? Most of the answers to these questions are registered automatically by the systems in use in the municipality.

5.2. Controlling and Sanctioning

A controller function is needed to establish whether the individual civil servant is working in compliance with the agreed specifications regarding time, budget, and so on. The controller examines the records, checks for violations of the norms and reports these periodically to the supervisor. To this end, the controller employs protocols that are nationally established or, if these are not available, draws up a new but transparent protocol. This protocol describes what standards apply in the application of specific laws and regulations and how large the deviation margins may be. After the regular audit by the controller, the deviations are reported in an audit report to the legislative body (i.e., city council), the municipal administration, and the responsible supervisor.

The manager or supervisor at each level is responsible for discussing the individual, team or departmental performance with his/her subordinates. It is up to the supervisor to assess whether any non-compliance is a deliberate fault or there are other reasons (e.g., a lack of training). The supervisor provides a report that lists the planned actions regarding

how the deviations will be resolved in the coming period. If there is no (feasible) solution to a deviation, this is also explained in this report. These control reports are also made available to the city council and the aldermen.

Because a civil service organization lacks the 'discipline of the market', it is critical to account periodically for production and productivity in a well-organized and regulated manner—that is, according to transparent well-established rules that safeguard the legal position of the civil servant. The so-called p-cycle provides the basis for the accountability and appreciation of the work done by all employees (incl. team leaders, department heads, etcetera). The "p" here refers to both "planning" and "personal". The starting point is a constructive appreciation and measurement of individual performance, which are discussed in p-sessions between the staff member and the supervisor. A standard topic in any p-session is (moral) integrity. When a civil servant does not act in accordance with prevailing laws and regulations and other collective agreements and is not transparent about his non-compliance, this constitutes a violation of integrity. However, if someone is completely open about the fact that he did not comply, this is not necessarily considered a breach of integrity. A detailed assessment protocol was developed for evaluating integrity issues.

Another instrument supporting the p-sessions is the so-called performance assessment form, in which the performance of any civil servant can be rated on each of the seven aspects (product, data, procedures, etc.). This rating draws on a scale from A (all agreements fulfilled and more done on top of that) to D (did not keep the agreements without a clear reason). This rating is conducted by the supervisor but is largely grounded in the detailed registration of the various activities (which leaves little room for the supervisor to add her/his own interpretations). If the overall rating is A, the supervisor will opt for occasional checking (decreasing the frequency of the p-meetings) and will also explore whether a career perspective within the organization can be offered. In the case of a B as overall rating, the supervisor may also choose occasional checking for the upcoming period but can also choose to motivate the staff member to step up his/her performance to the A level. In the case of a C, there are more options: if the civil servant is not (yet) able to carry out various tasks, s/he will have to be (re)trained; if s/he is unable to carry out part of the work properly, the possibility of assigning this work to a colleague is explored; if the civil servant refuses to do the work properly, s/he will be reprimanded. In the case of an overall D rating, there are two options: if the civil servant structurally cannot handle most of the work assigned, another career path will be chosen; if s/he structurally refuses to perform (key parts of) the tasks, this means an exit via a dismissal process.

The annual cycle of p-sessions provides an integrated and continual process of conversations, supported by various forms, in which the scores are translated into concrete actions for civil servant and supervisor. The final evaluation takes place at the end of the annual cycle: in this specific p-session, the supervisor discusses the functioning of the employee on each aspect, in relation to the agreements made and the performance displayed—also in view of the competencies required for the job. The p-meeting approach differs from the usual appraisal methods, by assuming a highly constructive approach that is rolled out in a transparent manner. In assessment interviews, it is common to establish a weighted average of the scores for various aspects of work. In the p-cycle used here, scores for each of the seven aspects are averaged over a longer time period, but there is no average score for all aspects. By doing so, attention is focused on aspects that need improvement.

6. Testing the System

This section describes the results of the implementation of the control system in Boxmeer, a medium-sized Dutch municipality in the south of the Netherlands with approximately 30,000 inhabitants. The system was stepwise implemented. In 2013, the municipal administration (i.e., the mayor and aldermen) accepted and authorized the various legal underpinnings of the system, after consulting the works council. The municipal administration deliberately sought to increase the efficiency of the civil service operation, while maintaining the high level of job satisfaction among civil servants in

Boxmeer. In the remainder of this section, we first describe the various outcomes obtained in this municipality.

6.1. Efficiency and Related Outcomes

The results of the system's implementation can be assessed in terms of the internal staff volume, hiring external staff, absenteeism, and educational costs. In this respect, we can compare the performance of Boxmeer with the national benchmarks available from a Dutch agency that collects and publishes the annual data of all Dutch municipalities. Table 1 reports the development over time of the number of civil servants (in full-time equivalents) per thousand inhabitants. The differences between Boxmeer and the national average for municipalities of the same size are rather small, throughout the entire period.

Table 1. Staff volume in fte's per 1000 inhabitants (source: https://www.aeno.nl accessed on 21 June 2021).

Year	National Average (%) [1]	Boxmeer (%)
2011	7.3	6.6
2012	7.2	6.4
2013	6.8	6.7
2014	6.4	6.5
2015	6.3	6.4
2016	6.3	6.2
2017	6.3	6.1
2018	6.1	6.9
2019	6.5	6.8
2020	6.8	6.3

[1] National average is based on all Dutch municipalities in size class 4 (20,000–50,000 inhabitants).

However, Table 2 shows major differences in the hiring of external staff. This table demonstrates that hired external professionals, measured in terms of the percentage of the total wage bill of the internal staff volume, is substantially lower for Boxmeer across the entire period. For example, in 2020, municipality Boxmeer hired, on top of its 6.3 civil servants per thousand inhabitants, an additional external staff volume of 4.5 % of its wage bill (see Table 2) compared to a national average for comparable municipalities of 16.6 %. This is a substantial efficiency advantage of more than 10 percent. For other years, a similar efficiency advantage can be inferred from the data.

Table 2. Hired external staff relative to total wage bill (source: https://www.aeno.nl accessed on 21 June 2021).

Year	National Average (%) [1]	Boxmeer (%)
2011	10	1.6
2012	10	2.2
2013	8.4	2.2
2014	10	2.0
2015	14	4.1
2016	13	4.9
2017	17	4.75
2018	19.5	5.1
2019	17.9	4.9
2020	16.6	4.5

[1] National average is based on all Dutch municipalities in size class 4 (20,000—50,000 inhabitants).

Tables 3 and 4 demonstrate that the absenteeism ratios and the educational expenses per civil servant in Boxmeer follow the national averages. In most years, the absenteeism ratio in Boxmeer is substantially lower than the national average, and in the other years the differences are very small (see Table 3). Table 4 shows that in 2011–2012 the educational

expenses were somewhat higher in Boxmeer; but in the remaining years, these expenses are comparable with those in other municipalities. Table 3 thus suggests that the substantial efficiency improvements obtained by the new control system apparently do not give rise to higher absenteeism among civil servants, as one particular indication of their mental and physical wellbeing. Table 4 implies this higher efficiency does not generate higher expenses for training and educating civil servants in Boxmeer. In other words, the higher level of efficiency in its operations did not require major investments in new professional skills and competences.

Table 3. Absenteeism as a percentage of total internal staff volume (source: https://www.aeno.nl accessed on 21 June 2021).

Year	National Average (%) [1]	Boxmeer (%)
2011	5.4	4.7
2012	5.3	4.3
2013	5.2	4.7
2014	5.1	3.7
2015	4.9	5.0
2016	5.1	5.3
2017	5.3	5.2
2018	5.6	6.0
2019	5.4	4.4
2020	5.4	4.4

[1] National average is based on all Dutch municipalities in size class 4 (20,000–50,000 inhabitants).

Table 4. Average educational expenses per staff member (source: https://www.aeno.nl accessed on 21 June 2021).

Year	National Average (in €) [1]	Boxmeer (in €)
2011	996	1165
2012	1020	1167
2013	1010	924
2014	996	1005
2015	1085	1073
2016	1018	1024
2017	1011	1064
2018	1026	950
2019	988	903
2020	795	851

[1] National average is based on all Dutch municipalities in size class 4 (20,000–50,000 inhabitants).

6.2. Effectiveness

As of 2013, each civil servant in Boxmeer had a job description, as outlined in Section 5. The municipal administration also implemented a system of regular p-sessions with each civil servant. Moreover, every six months the list of laws and regulations (to be executed) was updated and assigned to individual staff members. Each staff member is expected to know the assigned laws and regulations and to be able to apply these. The p-sessions serve to check and discuss any misalignments and adapt the educational plan accordingly. As of 2014, the municipal administration also implemented a procedure for filing and processing the objections of citizens against decisions by civil servants, which serves to assess whether they acted according to the prevailing laws and regulations. The number of objections and appeals has decreased significantly since the new job descriptions, p-sessions and related procedures were implemented (Municipality Boxmeer 2018a).

A similar pattern can be observed in the services provided to citizens. The total number of visitors to Boxmeer's civil service building was relatively stable in the period 2013–2017, but the relative number of visitors served within five minutes has increased to 93% in 2017 (Municipality Boxmeer 2018b). Moreover, the number of incoming phone calls was rela-

tively stable over time (46,000–47,000 per year), but the percentage of incoming phone calls which needed to be transferred to specialized departments dropped significantly to around 6000 per year (Municipality Boxmeer 2018b). The improved registration approach enabled the front office staff to provide 87% of all required information directly to citizens calling, without the help of the civil servant handling the case (Municipality Boxmeer 2018b).

Other positive effects were observed in budget control. Detailed registration and control of all processes show that, as of 2017, budget overruns no longer occurred. In this respect, the overall transparency of the organization made it impossible to manipulate budget negotiations. Finally, the job satisfaction of civil servants appeared to be rather positive. In 2011, two years before the implementation of the new system, the job satisfaction was measured via a survey; and this survey was again sent to all civil servants of Boxmeer in 2015, two years after the implementation started. The overall satisfaction level on a scale from 1 to 10 was 7.8 in 2011 (Municipality Boxmeer 2011) and 7.6 in 2015 (Municipality Boxmeer 2015). This suggests that the relatively high job satisfaction of civil servants in Boxmeer was not affected by the new control system.

7. Discussion and Conclusions

Many governments have been exploring 'design thinking' approaches to reframe policy issues and generate and test new solutions (Lewis et al. 2020). Our study demonstrates that design approaches may offer novel perspectives and solutions for policy making and public administration. More specifically, we developed design principles for controlling civil servants, which were then applied in the civil service organization of a Dutch municipality, where it served to address recurrent problems arising from lack of transparency, lack of individual accountability, and deficient controls (cf., Morgeson et al. 2021; Ringel 2019).

The results of implementing the system in a Dutch municipality show substantial improvements in the efficiency of the organization, without compromising the service levels offered to citizens and the job satisfaction of the civil servants themselves. In this respect, our findings suggest that the power of civil servants does not constitute a fundamental challenge to the constitutional principles of Trias Politica (cf., Bovens 2000; Labuschagne 2006) but can be effectively addressed by means of an internal control system that registers, measures and (if necessary) sanctions the performance of civil servants.

At first sight, one can associate the control system developed and tested in this paper with Taylor's "scientific management" approach, which tends to conceive of employees as cogs in the machinery of civil service (Rosen 1993). Future work will have to spell out the similarities and differences between scientific management and the control system based on game-theoretic insights described in this paper. Taxpayers, elected political leaders, and civil servants have a common interest in civil services that are provided in a highly effective as well as efficient manner. In the private sector, big companies such as Google, Facebook and Amazon appear to thrive by applying new forms of scientific management (Ebert and Freibichler 2017) and many other companies have also been adopting so-called 'agile' methods in which the workflow at the individual level is specified and monitored in extremely detailed ways (Martins and Zacarias 2017). Our findings suggest that a highly transparent system of meticulous registration and measurement of workflows is also the optimal solution for controlling civil service organizations.

A related concern is that the game-theoretical perspective (and the design principles inferred from it) may draw on a somewhat *reductionist* conception of human behavior—one that assumes civil servants are largely motivated by self-interest rather than a commitment toward the public interest. Notably, game theory does not make such assumptions about human behavior; it merely assumes that at least some (e.g., 1% of all) civil servants have a personal or professional motivation that does not sufficiently overlap with the collective interest pursued by their organization. This rather realistic assumption is sufficient for game theorists to demonstrate that, over time, a growing number of civil servants will not comply with collective rules if the latter are not sufficiently specified and operationalized

in registration, measurement, and sanctioning procedures (cf., Fehr and Gächter 2000; Van den Assem et al. 2012).

Thus, the key problem in controlling civil service organizations is not behavior guided by self-interest, but a deficient system for assuring that *all* civil servants fully comply with the laws they are supposed to execute. Our test in a Dutch municipality also underpins this insight: the new control system did not affect the high job satisfaction among civil servants in this municipality (see Section 6). In other words, the mere fact that civil servants may have less discretion in their work appears to be compensated by the increased transparency of how they are monitored, rewarded, and so forth.

This is one of the first studies in public administration research that applies Simon's (1969) idea of design science in a straightforward manner. The key advantage of this approach is that it covers the entire cycle from theory development to practical solutions. Moreover, design science appears to combine creative efforts with a more analytical approach (cf., Bason and Austin 2021). In terms of design science, our study provides a so-called alpha-test of the control system designed; an alpha test involves an assessment of the practical application of a solution (incl. its underlying design principles) in which the designer plays an active role (Romme and Dimov 2021). Future work will have to engage in so-called beta-testing of this control system in other municipalities and other types of (e.g., national and international) civil service organizations, in which other practitioners and researchers scrutinize the system and its underlying principles.

Future implementations of this control system in other municipalities will also help to determine whether this first test in a Dutch municipality has suffered from attribution errors. That is, it is difficult to assess (with a high degree of certainty) by means of a single case whether the observed outcomes arise from the implemented control system or from any other (local) conditions in this municipality. The actual causal effects from this type of intervention can only be determined by creating a larger body of evidence in multiple municipalities.

The alpha status of the test in a single Dutch municipality is also evident from the key role of one of the authors of this paper, who had the unique opportunity (as a municipal clerk) to pioneer and implement the system over a long period, one that was substantially longer than the typical appointment term (of 4 years) of elected officials. This raises the question whether the implementation of this type of system in other municipalities can be effectively done if it is largely up to mayors and aldermen to initiate this transformation. The pivotal role of the top-level civil servant committed to this type of transformation may be a necessary condition for its ultimate success. Moreover, one can hypothesize that large-scale implementation of such a control system in both local and national civil service organizations can only be accomplished if the national legislative body creates a legal framework for it (e.g., Bourgault and Gow 2021). Such a common framework would also facilitate the dissemination of best practices as well as learning across different civil service organizations.

These reflections resonate with Termeer et al. (2019, p. 167), who observe that new or existing governance methods are often unproblematically proposed as solutions "to solve wicked problems, while only imperfect solutions, partial solutions or small wins are achievable in practice". Therefore, we sought to develop a solution for controlling civil servants that is: (a) grounded in an elaborate theoretical framework; (b) codified in a set of preliminary design principles; and (c) extensively tested and implemented in a real-life civil service organization. Despite this thoughtful approach, we acknowledge the major (and possibly prohibitive) institutional and other barriers that will arise when anyone attempts to develop and implement this type of organizational system in other civil service organizations in the Netherlands or other democratic countries (cf., Termeer et al. 2019).

In conclusion, a fundamental challenge in democracy is how one controls the power and performance of civil servants. This problem has been previously addressed by establishing horizontal accountability of civil service agencies (O'Donnell 1999; Schillemans 2008) and introducing high-performance management methods (Blackman et al. 2019; De

Waal 2010), resulting in ambiguous (if not disappointing) outcomes. In this study, we used game-theoretical insights to design a system that enhances the capability for *internal* control of the civil service organization. The results obtained in the civil service organization of a Dutch municipality are promising, which calls for future research exploring the applicability of this type of control system in other civil service organizations.

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