Governance by pilot projects: Experimenting with surveillance in Dutch crime control
Grommé, F.

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5. Governance by Pilots: Organisational Ambiguity in Crime Control
**Introduction**

In 2003, the UK Cabinet Office published *Trying it Out: The Role of ‘Pilots’ in Policy-Making*. The report stated that the number of pilot studies used by the UK government had increased since 1997. Pilot studies test innovations by employing them more or less experimentally for a restricted period in a field setting (Vreugdenhil et al., 2010). The Cabinet Office concludes that ‘a pilot should be undertaken in a spirit of experimentation’ (Jowell, 2003, p. 5) and ‘once embarked upon, a pilot must be allowed to run its course. Notwithstanding the familiar pressures of government timetables, the full benefits of a policy pilot will not be realised if the policy is rolled out’ (Jowell, 2003, p. 5).

The report thus crafts a special position for pilots as an institutionalised technique for governing. As will be discussed in this article, crime governance is one of the domains in which pilots have become accepted practice, particularly in the Netherlands, where the focus of this article lies. In this field, the market offers a myriad of crime and surveillance solutions. Pilot studies help policy makers and other professionals to act in light of technology’s promises and uncertainties. As Donna Haraway notes, ‘we live in the timezone of amazing promises’ (Haraway, 1997, p. 41). In crime control, generating precise knowledge about suspects and preventing law violations are among the promises of technologies such as acoustic aggression detection, data mining software and DNA marker spraying.

Yet pilots seldom seem to operate unambiguously or deliver conclusive answers (Billé, 2010; Vreugdenhil, 2010). The UK Cabinet Office states that they are often ‘poorly specified,’ their ‘nomenclature’ referring to a wide variety of practices (Jowell, 2003, p. 6). Part of the issue is that they seem to be employed for a variety of interests. A pilot study can for some be a local installation preceding wide-scale usage, while for others it is a learning process. These degrees of freedom have also provoked critical reflections. Some argue, for instance, that pilots are playgrounds for technicians to try out new technologies without taking into account their risks (Krohn and Weyer, 1994; Levidow and Carr, 2007). In crime control, they have been used to demonstrate the state’s capacity for surveillance, and have offered corporations opportunities in the domain of public security (Boyle and Haggerty, 2009). Furthermore, they have enabled authorities to avoid or adapt data sharing regulations (Grommé, 2012).

This article addresses the organisational ambiguity that may contribute to these issues. It draws lessons from pilot studies for governance using experimental formats. Scholarly work is traditionally not well equipped to understand ambiguity (Law and Singleton, 2005).

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It is assumed that pilots and other such experimental formats are either organised as finite, unambiguous, coordinated projects, or that, being experimental, they are largely free from organisational restrictions. My aim is not to resolve or reject ambiguity, but to take it seriously as part of this organisational form and contribute a vocabulary with which to address it. Organisational form is broadly understood here as the accomplished shape of an organisational entity, for instance, short-term, continuous, compact or large-scale. I ask how organisational form is relevant to pilots as a format for governance. Or, simply: what does it mean to govern by pilots?

My concern is with governance in terms of managing technological futures. I refer to ‘potentiality’ here to capture this aspect of governance. When potentiality is articulated, it means that something becomes ‘incomplete yet with a power—a potency—to develop into something else,’ and thus starts to facilitate ‘hope and futurity’ (Svendsen, 2011, p. 416). Articulating potential is part of governance because it is part of naming, framing and realizing future applications of technology (Taussig et al., 2013). This reflects on future practices of making crime measurable and manageable in the Netherlands, including methods of surveillance and the types of crime to be targeted.

Anthropological studies of potentiality remind us that the act of articulating futures is neither detached nor imaginative. It is a practice deeply embedded in current social contexts and involves reshaping existing social and material relations (Svendsen, 2011; Gibbon, 2013). It follows that engaging with future possibility significantly affects present practices. The political concern of such engagements with the future is stressed by Adams et al. (2009). They note that futures can come to ‘abduct’ the present in the sense that early interventions into present practices are justified by future possibility (p. 251).

What follows is an exploration of the pilot format drawing on ethnographic research on three pilots in Dutch crime control. As noted, the market for crime control technologies is exceptionally promising, and pilots are very common in this field. The cases presented are of a pilot on aggression detection at a bus station; a pilot on data mining in a local government; and a pilot with a marker spray on public transport. I followed each pilot ‘in action’ over a period of fifteen to twenty-two months. Research included work floor observations, interviews and document studies. Among the locations I observed are local government policy offices, a police station and on trams. I conducted interviews with policy makers, police officers, ticket inspectors, corporate safety and security specialists, and corporate engineers and scientists.

The article is structured by three analytical steps. Following Damian Hodgson and Svetlana Cicmil (2007), I first show that, as organisational objects, pilots come into being through practices. I draw on insights from Science and Technology Studies (STS), specifically Actor-network theory (ANT), to understand how the pilots were done in terms of changing arrangements of actors, administrative and managerial artefacts and knowledge.
I specifically inquire into how pilots come into being based on narratives ranging from goal-oriented and linear to undetermined and non-coherent. Second, building on this detailed examination, I suggest that organisational ambiguity is relevant for governance. I do so by showing how potentiality was articulated in the three case studies. Third, I contrast and compare my findings with John Law’s notion of ‘projectness’ (2002) to suggest how the findings in this article contribute to current notions about experimental governmental formats. I suggest that the project is not the only lived reality; in addition to projectness, we might also consider ‘pilotness.’

**Organisational Form**

**Organisational Objects**

Aramis was an automated train system, developed in France through a series of trials and tests, and was intended to revolutionise urban public transport. Bruno Latour wrote that Aramis

> is also a work program, a flow chart, and a distribution of tasks … Finally, all these mingled programs, all these trials, all these attempts to produce a real story, written down: a ponderous text, the report of phase 0. … Next came protocols, signed agreements. Then we went on to hardware, to Orly, to grease and sparks and cement mixers and printed circuits. (Latour, 1996, p. 80)

In this fragment, Latour highlights Aramis as an organisational accomplishment. He notes that it was an experimental project, as well as a collection of hardware. It needed to be brought into being as a project narrative with phased timelines, protocols and a ‘ponderous’ report.

Latour’s description is a valuable insight into experimental governmental formats: projects, programs and pilots need to be enacted, and can be studied as ‘organisational objects’ (Hodgson and Cicmil, 2007). That is, they are entities that come into being through practice, and are therefore ‘simultaneously real, discursive, and social’ (Latour, 1993b, p. 64).

The project is an example of a prominent, and often scrutinised, organisational object. Critical and neo-institutionalist studies of projects in contemporary (capitalist) organisations have shown that management literature has introduced and standardised the project as a work form (Boltanski and Chiapello, 2005). Administrative and managerial knowledge and artefacts, such as training programs, best practices and certification, protect and constitute the legitimacy of a project (Hodgson and Cicmil, 2007). In addition, informal institutions, daily interactions and professional fields reproduce projects and other organisational objects (DiMaggio, 1991; Lindgren and Packendorff, 2006).
Aramis was, however, never constituted as one solid, unambiguous project leading to clear results. There was no ‘love’ for Aramis, as it was never given a chance to modify, to adapt, and so aims and timelines were never agreed upon (Latour, 1996, p. 296). This is not an exceptional account. STS studies of scientific and technological projects and programs have shown similar characteristics (Singleton and Michael, 1993; Law, 2002). Management and organisation studies have, moreover, highlighted resistances to projects and their hybridity in terms of control and discipline (Hodgson, 2004; Hodgson and Cicmil, 2007). This resonates with a body of literature about public policy and administration that emphasises the relevance of incrementalism and ‘muddling through’ (Grin, 2010; Lindblom, 1959).

To note deviations from goal-orientatedness and control is therefore nothing new. Pilot studies, however, introduce a novel sensitivity to the study of organisational objects. It is often assumed that actors at least strive to perform a goal-oriented, coherent narrative of their activities; this is the preferred cultural technology of modernity (Law, 2002). Yet pilot studies incite us to think about ambiguity not as a lack of performance, but as a performance in its own right. The few scholars to have studied pilots have been challenged by the multiplicity of uses, aims and effects that can be at work in one pilot study. To illustrate such difficulties, Heleen Vreugdenhil (2010), on the basis of an in-depth examination of pilot studies, has designed a typology by which a pilot study can be characterised. It comprises nine different uses and six characteristics, broken down into eighteen sub-characteristics. She shows that a single pilot study can be ascribed a broad range of values within these typologies, and that, therefore, the “pilot study” appears to be an ambiguous concept’ (Vreugdenhil, 2010, p. xii).

There is, furthermore, no reason to assume that actors within pilots do not understand their activities as ambiguous and thus perform them accordingly. Understanding the clear, pure and controlled project as a performed reality typical of modernity, we might start to consider whether there also is a place for other realities. Or as Law et al. claim, ‘the will to purity is starting to lose its grip’ (Law et al., 2012, p. 16).

The challenge for this article is therefore to open up an investigation of organisational objects that acknowledges project-like characteristics such as goal-orientatedness as well as indeterminacy. In this article, I rely on insights from ANT to understand how the pilot is brought into being as an organisational object. I will investigate how three pilot studies in Dutch crime control take shape in terms of the relations between human and non-human actors (Latour, 1996; Law, 2002). In particular, I study how pilot narratives take shape in relation to administrative and managerial knowledges and artefacts such as evaluation reports, project planning schemes and financial plans. In this view, the pilot does not exist separately from the socio-material constitution of its narrative(s).4

Two insights into actor networks assist this exploration of the pilot study. The first insight is that performances of organisational form are time and place specific. Specifically, their enactment varies with particular arrangements of human and non-human actors.
Second, actors can simultaneously perform detachment and commitment to a program of activity. Vicky Singleton and Mike Michael (1993), for instance, highlight that general practitioners positioned themselves both inside and outside a national cervical screening program by problematizing it, distancing themselves and making other networks more prominent in their activities. In fact, such ambivalent commitments were crucial to the survival of the program, as it would not have been workable otherwise. This means that an organisational object, such as a program, does need to be a fully unitary and coordinated whole.

**Pilot Narratives**

In what follows, I develop my analysis along the lines of the following aspects of pilots as organisational objects: mixed temporal and spatial dynamics, (in-)determinacy and (non-)coherence. I chose these themes because they help to articulate the findings from my fieldwork. I use them to learn where they might lead me, how I might adapt them and where their limits are (Mol, 2012; Strathern, 2005).

Temporal and spatial dynamics refer to the rhythms, tempos, timelines and spatialities that actors attribute to their activities. Project-time, for instance, is often performed as delimited and fragmented. This is accomplished with administrative and managerial artefacts such as financial planning and project outlines. Monitoring, by contrast, is a routine and ongoing activity. Spatiality refers to the spatial narration of activities, for instance, whether activities are local or related to events elsewhere. These dynamics, Noémie Tousignant (2013) suggests, are intertwined with actors’ sense of directionality and commitment. For instance, performances of continuity related to monitoring can bring into being a connection to a longer-term social purpose, as opposed to the detachment often related to short-term projects.

Practices can also be characterised by an accomplished indeterminacy. Actors do not always perform a ‘progression towards diagnostic closure’ (Street, 2011, p. 826). Indeterminacy can even be a valuable accomplishment as it can ensure a variety of directions for future action.

Non-coherence, finally, is understood here as a performance combining various seemingly incompatible logics. In other words, an activity is not made accountable with a singular, logical and coherent explanation of events. An example by Law et al. (2012) is the intertwining use of the logics of divination and western medicine in Taiwanese patient narratives. The point is not that people do or say incompatible things; they do this all the time. Of interest here is the absence of attempts to craft compatibility and logical decision-making. Law et al. suggest that non-coherences allow different traditions to exist next to each other, and thus claim that the practice of non-coherence is a tolerant one.
Working through these analytical themes, I finally arrive at three qualifications of potentiality, which capture how we can think of governance by pilots by considering their form.

**Mixed Temporal and Spatial Dynamics**

*Pilot Confusion: Aggression Detection at a Bus Station*

Aggression detection is a sound detection technology that alarms the police in case an ‘aggressive sound’ is recorded. In case an alarm should sound, nearby cameras are directed to the sound’s origin so that the police can observe live images. The pilot study on aggression detection outlined below ran for a year at a bus station in the city of Stadhout from 2010 to 2011.

When I started fieldwork on the aggression detection pilot study, I was aware of the variability of origin stories (Haraway, 1997), of the ways in which aims and goals typically shift, and of blurred beginnings and endings. Nevertheless, I wrote the following field notes after my first interview with the city’s project leader:

> It is not clear whether this is about a test, pilot or implementation. It is evident that there are many adjustments along the process and that there has not been an evaluation yet. The technology [aggression detection] has been in use since June 18. Before, a demonstration was conducted … If I ask [the project leader] what is called a test and what is not, the issue does not become any clearer. The project leader tells me she does not see the test as merely a technology test. She also wants to learn whether the bus drivers’ experiences of personal security improve. On the other hand, she tells me the pilot has ended because the technology is operational. (field notes, September 17, 2010)\(^6\)

I had assumed that the pilot study would at least include monitoring, evaluation, integration into local practice, and a somewhat structured learning process. However, I encountered degrees of flexibility and indeterminacy beyond what I had ever read about. Plans or research strategies did not exist in writing. I was not even certain if this was a pilot at all.

This loose governmental format might be a good place to start an inquiry into pilots. My concern is not whether labels such as pilot, test and project are applied correctly. Of interest here is that the use of this label was not self-evident in this case study. I therefore ask what governmental formats were applied, and what they meant for the performed temporal and spatial dynamics.\(^7\) As I will show below, this case is particularly illustrative for the performance of mixed spatial and temporal dynamics, such as routine, innovation and urgency.
Urgency and Routine

The aggression detection case did not start out as a pilot in 2007. The ‘installation’ of aggression detection had been requested by the local bus companies (call for tender, November 2007). This was a matter of urgency, as policy makers said in interviews, because bus drivers were frequently being harassed by visitors of a nearby nightclub. The temporal dynamic, therefore, was urgency, it was a measure taken to improve the situation.

A few months into the project, however, another dynamic was added: routine. This dynamic arrived a few months into the pilot, with the central city’s agreement to fund aggression detection as part of the introduction of camera supervision (central funding was not self-evident because cameras were installed under the supervision of a local council). The Mayor decided ‘to combine both wishes [aggression detection and camera supervision] into one project’ (Mayor’s letter, March 2008). In the funding decision letter, he expressed his interest in the outcomes ‘as this assisting technology has never been used before in a camera project in the framework of public order in Stadhout.’ The results, he added, should be communicated as part of the annual camera supervision evaluation.

Consequently, aggression detection was made subject to the timelines of the surveillance camera project in the area. These timelines were part of an ongoing political debate in Stadhout. Some contended that camera supervision should be applied in a project-based format: in finite periods of a year, under the conditions of effectiveness and urgency. The deployment of cameras, and of aggression detection, could then be extended after evaluation. Others regarded camera supervision as a measure that should be normalised and continued, notwithstanding the effects. The performances of the nature of the aggression detection pilot thus alternated. The pilot was both exceptional (an urgent response to the situation) and part of a routine application of camera supervision, to be renewed yearly.

Innovation and Stasis

At this point, the label ‘pilot’ had not yet been applied as a governmental format in official documentation. It first appeared in the 2010 Camera Supervision Protocol, a detailed instruction for the use of camera supervision: ‘The usage of aggression detectors is a pilot in the city of Stadhout, and is realised in cooperation with regional agencies’ (Camera Supervision Protocol, February 2010). In this document, exceptionality is performed with the pilot format; it is an exception to the regular use of camera supervision.

Note that the spatial dynamics also changed with the introduction of the pilot terminology. The pilot was made part of a city-wide and even regional effort, whereas, beforehand, it was an action to remedy a local urgency. This is a spatial dynamic characteristic of innovation programmes. We see this more clearly in the Stadhout Mayor’s response to a city councilor’s
written request for clarification. His question was whether the Mayor and College of Alderpersons (the city’s executive board) planned to notify citizens with a sign of this ‘eavesdropping technology,’ as is required for camera surveillance. The Mayor answered:

This is the first application of aggression detection in a municipal camera supervision project in the municipality of Stadhout; it concerns a pilot. The camera supervision project fulfils all legal requirements, among which is the public announcement of camera usage. In addition, the district has contacted the Dutch Data Protection Authority (Dutch DPA) about aggression detection’s employment. Aggression detection a) allows for more precise usage of camera footage. As a consequence, it diminishes privacy infractions; b) does not record sound. Based on these arguments the Dutch DPA does not object to aggression detection’s usage and publicly announcing camera supervision suffices. (Mayor’s letter, September 3, 2010)

The letter argues that the introduction of aggression detection did not need notification because all regulations regarding camera supervision had been respected. Moreover, the Dutch DPA approved of aggression detection as a privacy enhancing innovation. The latter argument thus made the pilot part of an overarching program to improve and innovate camera supervision. This was a larger policy aim overriding the councilor’s objections.

A final aspect of the pilot’s performance is worth mentioning here. Notwithstanding the long-term dynamic of a policy discussion about improving camera supervision, the need to manage a local emergency was reiterated in all formal documents. The Mayor’s response to the city counsellor also contained a lengthy description of the situation around the local bus station. This was exactly the same description used in the first calls for tender three years earlier, and exactly the same description would appear again in the evaluation. This is striking because the nightclub, the alleged source of the problem, had in the meantime been closed down and local police believed the situation to have improved.

In terms of the ‘internal dynamics of accretion and innovation, the rhythms of experiments and programmes’ (Tousignant, 2013, p. 730), we can say that the pilot’s narration in protocols, letters and evaluation reports fell rather flat. It lacked a story of improvement, change or innovation at the test site (the most detailed descriptions of the pilot seem to be my own). As a result, the pilot was turned into a sub-paragraph in the developing story of camera supervision.

We can now make sense of my initial interview with the policy officer responsible for the aggression detection pilot. We learn that the pilot study had never been attributed a clear and organisational status. The city’s performances varied between an urgent measure, routine usage and innovation for elsewhere. These performances have in common that the pilot was never attributed a full narrative. In short, it was a measure of urgency that was never committed to, and a program that did not specifically relate to the bus station.
(In-)Determinacy

Above, we learned that the aggression detection pilot study was not guided by an elaborate project plan or a research outline. The second pilot study I discuss is very different in this respect. This was a pilot study on data mining executed at Burgcity’s Department of Community Safety. Data mining is a statistical technique for the analysis of large databases with a high number of variables. It is explained by professionals as the application of an algorithm that automatically or semi-automatically retrieves relationships from data. This pilot was mentioned in numerous documents that consistently stated the main purpose, research questions and project phrases. Nevertheless, the pilot was not consistently performed as an undertaking that would lead to clear, determinate results.

Data Mining in Burgcity: Contested Indeterminacy

Burgcity and Data Inc., the corporate data analyst involved in the pilot and supplying the software, stated the following aim: ‘The development of an instrument that allows municipalities and crime control partners in the neighbourhood to quickly and easily be notified of (perceived) problems with youth, to understand the problems, and to develop the best possible approach [to youth crime]’ (status report, February 2011). In contrast to the aggression detection pilot, the aim expressed in the planning documents and reports was not to implement. It was to develop a new application of data mining in youth crime policy; an application that would lead to new policy approaches.

The pilot was initiated as a research project divided into phases, which should result in an innovation. However, we also find variations to this narrative among policy officers. When the pilot was first presented to an audience of crime control professionals at a conference, it was still a ‘developmental trajectory’ leading to any outcome. For instance, if privacy restrictions would hinder the pilot study, this would be valuable information as well. As one of the participating Burgcity policy officers told me, ‘I just want to see what will happen.’ I was even advised to focus on another pilot to study, ‘one with real outcomes.’ This attitude was possible because Burgcity did not fund the pilot directly. Rather, it was funded by the Ministry of the Interior through an innovation program.

The policy officers’ foresight about privacy and data sharing constraints was correct. The pilot arrived at a deadlock when the police could not legally share address information about suspects with a private company such as Data Inc. This was relevant as the study aimed to combine police data about young offenders, government data and commercial data. Yet Data Inc. contended that it needed such information in order to arrive at analytical results that could inform policy. A ‘breakthrough’ was achieved by the city’s information specialist. She was able to use existing data sharing agreements with the police and other crime control
actors to facilitate Data Inc.’s access to police data. These agreements were drafted in the context of other projects, among which the foundation of a central database for future criminal analyses.\textsuperscript{10} Using these agreements, Data Inc. was allowed to set up a database for this pilot project using police data. Access was still restricted, as data was not made available at the level of house addresses. Furthermore, Data Inc. was required to set up its database on a separate PC that would remain in the Burgcity policy office. Notwithstanding these restrictions, Data Inc. was now able to use data at a more detailed level.

A 2011 status report presented the consequences of the breakthrough. As the project had been stalled for several months, Data Inc. used the document to gather momentum again. Applying an ‘iterative model’ for data mining processes (CRISP-DSM), Data Inc. contended that the team had now arrived at the ‘evaluation phase,’ but needed to return to the ‘data understanding phase’ (status report, February 2011). The report challenged the indeterminacy performed earlier by the Burgcity policy officers. Data Inc. contended that now that the data were available, they should be analysed to learn more about problem youth. These analytical results were intended to inspire the development of a policy instrument. The team was expected to work steadily towards these outcomes according to the CRISP-DSM phases. Data Inc. thus made an effort to produce a pilot along the narrative of progress towards closure. The company’s contestation of indeterminacy characterises the final stages of the project. Funds were running out and Data Inc. needed tangible outcomes in order to develop a marketable instrument.

Burgcity reacted ambivalently. Now that the policy officers had seen the software in action, they were less eager to participate in analytical sessions, and preferred to prioritise their daily tasks at the Department of Community Safety. In addition, the department’s information specialist had been running pilots with Data Inc.’s competitor as well, and so far Data Inc. was losing the race. Nevertheless, the policy officers did attend the sessions. And as they attended them, they performed Data Inc.’s narrative of progress. As an officer described the pilot to one of her colleagues, ‘We’re in an iterative process,’ referring to the CRISP project management model.

\textit{Affirmed Indeterminacy}

Towards the evaluation phase, Data Inc. started to allow for indeterminacy. The company wrote the following conclusion in the evaluation report:

\textit{The foregoing points out that data mining can lead to interesting results on a municipal scale, as well as on the scale of neighbourhoods and sub-neighbourhoods. On the municipal scale it is evident that we can construct a good multi-dimensional topology … On the scale of the individual sub-neighbourhoods we have also produced interesting findings.}
It was not possible to build a model for the early identification of problem youth (see Appendix 3). It did become evident that a large part of youth nuisance in this neighbourhood is related to its spatial characteristics … (evaluation report, November 2011)

It was not possible to construct a model for the detailed analysis of problem youth, so Data Inc. contended. Nevertheless, Data Inc. used the report to show that it was possible to perform an analysis on aggregated data (a neighbourhood analysis). In addition, it presented the possibilities of a spatial analysis of the urban environment in order to find risk locations.

The report was therefore full of promise. It stated that Data Inc. could have provided a clear answer, if only the circumstances had been better. The reader learns more about these circumstances in Appendix 3, as referred to in the above quote:

Municipalities that want to introduce data mining are advised to ascertain their data supply and to set up clear agreements with partners offering data. It is advised to call in external and independent expertise in this process. (evaluation report, November 2011)

This is not a surprising statement from a company that was refused access to police data. It expresses frustration, but also performs indeterminacy. Data Inc. performed a pilot that did not lead to ‘real’ results, aside from the outcomes and opportunities it presented in the main part of the report. Consequently, there is no clarity about what the technology can ‘actually’ do.

Two variations of indeterminacy stood out. As they were not being held financially accountable, Burgcity’s policy officers performed indeterminancy as open-endedness. Near the end of the pilot, this performance approached indifference, as the policy officers intended to end their engagement in the pilot. For Data Inc., while at first they narrated the pilot as an effort that would lead to clearly defined results, finally they performed a pilot that did not enable the production of clear answers. This variation of indeterminacy can be referred to as inconclusiveness.

A company such as Data Inc. was motivated to develop a marketable instrument. To do so, it needed outcomes. However, keeping opportunities open was better than closing them off. This suggests that indeterminacy may not necessarily be a sign of failure; it may be relevant in its own right (Street, 2011).

(Non-)Coherence

In the previous section, we learned that Data Inc. presented the pilot as a systematic effort, divided into different project phases that logically followed each other. The company even hid the events that delayed in the appendix of their evaluation report. Yet actors do not always present their actions as entirely compatible, clean and logical. This is what this section is about.
In this final case study, a pilot about the use of a marker spray on public transport, actors did not always seem concerned with producing coherent pilot narratives.

**First Non-Coherence: Partially Resolved**

In 2010 and 2011, the public transport company Tramcom conducted a pilot study on Codemark, a spray containing a liquid marker. The marker was intended to empower Tramcom’s ticket inspectors, who had increasingly reported verbal and physical assaults. Codemark is a transparent liquid containing SDNA, which is an industrially manufactured string of fifteen to twenty base-pairs (DNA’s molecular building blocks). The string functions as a ‘code’ that can be sprayed onto an assailant’s body. Ticket inspectors wore a canister filled with Codemark on their belts during their inspection rounds on trams and at stations. In case a sprayed assailant was arrested by the police within a week, the code found on his or her body could be matched with the code on the spray can worn by the inspectors. In Dutch courts, Codemark can serve as complementary evidence.

However, Codemark’s main function, as emphasised by the distributing company, was to deter passengers from performing aggressive acts. The logic of Codemark’s usage was that the inspectors would preferably not use it; Codemark was to work preventively. DNA’s reputation in popular culture as inescapable scientific evidence, part of the ‘CSI effect’ (after the popular television program by CBS), was to deter passengers from assault, and a media campaign was planned to emphasise this.

The project plan written by Tramcom’s leading policy officer presents the framework for narrating the pilot along the lines of cause and effect. What was needed were before-and-after measurements of reported incidents of threat and assault.

> **Before the pilot starts we will execute a baseline measurement … For the evaluation these trends will be compared to the number of incidents after the start of the pilot in 2011. The outcome of this comparison will have to demonstrate whether Codemark has any effect on the number of incidents. (project plan, November 2, 2011)**

If the pilot did not lead to ‘sound results’ (i.e. results leading to a singular story), it would be extended for another six months (project plan, November 2, 2011). This method was also used by other organisations (mostly municipalities) that introduced Codemark. Their reports showed striking results. For instance, one municipality report stated that in one shopping centre, the number of burglaries and robberies dropped from ten cases between January and August 2009 to six cases in the same months in 2010 (evaluation report, September 2010). To most readers, as it was for the evaluation report’s authors, it is however clear that these numbers do not offer conclusive evidence that potential perpetrators were indeed deterred by Codemark itself.
The project plan presented a logic of usage as means of evidence. Management summaries and product descriptions offered to clients contended that Codemark should be integrated into the chain of custody. The police needed to be knowledgeable about Codemark, and possess sufficient equipment to process it for forensic investigation. In addition, Codemark's usage should be supported by the public prosecutor. This logic of integration was adopted in the project plan, and supplemented by Codemark training for the inspectors.

So now there were two logics. The first logic was a preventive ‘CSI effect,’ the second was usage as means of evidence. The latter sat uncomfortably with Tramcom’s management. Tramcom’s aim was to prevent incidents from taking place at all, in order to avoid the risky moments of spraying, arrest and the time-consuming processes of prosecution. To make this tension workable, Tramcom introduced the term ‘credible deterrence’: deterrence based on ‘the increasing familiarity [with Codemark] among the group of wrongdoers and ample media attention’ (project plan, November 2, 2011). Training on usage and integration into the chain of custody would make Codemark credible in case it was successfully used a means of evidence. A successful case could be communicated in the press and would spread through word-of-mouth.

As for Tramcom’s ticket inspectors, they had their reservations about how well credible deterrence would work. Some inspectors argued that as soon as passengers found out what it is, ‘water with a code,’ passengers would ‘only laugh at them.’ Consequently, some inspectors invented an alternative usage of Codemark. They started to pretend that they were carrying pepper spray, using the spray can’s resemblance to a pepper spray can. In hostile confrontations with passengers, they pointed the Codemark canister at the passenger and used the professional pepper spray policing command ‘I will spray’ instead of ‘I will mark.’ Passengers reported that they believed the inspectors were carrying pepper spray. We thus learn that even though Tramcom found a method to coordinate the conflicting logics of operation, the inspectors found their own methods to resolve incongruities.

Second Non-Coherence

Due to budget cuts, Tramcom was unable to execute the media campaign. In the evaluation report it concluded that:

*The planned communication strategy has not been executed. This is lamentable… In case of good communication, in combination with all the other measures, Codemark would most likely have had more effect.* (evaluation report, June 2012)
The public did not learn about Codemark as was planned, so it was unlikely that potential assailants had been deterred. In the quote above, Tramcom acknowledges that, according to the project plan’s method of measurement, it was not possible to determine what Codemark’s effect was. In addition, Tramcom acknowledged that ‘all kinds of factors that will not be discussed as part of this evaluation’ could have influenced rates of reported assault (evaluation report, June 2012).

The number of assaults against ticket inspectors neither significantly increased or decreased compared to the previous year. Tramcom argued that ‘the introduction of Codemark has not led to the desired result with regard to decreasing rates of violent assault.’ This shows that the public transport company did not seem too worried about creating a narrative of the pilot in terms of a single, coherent, causal logic. The main message seemed to be that Codemark ‘just’ does not work, even though the pilot’s execution could have been better.

Tramcom even underlined the failure of Codemark’s ‘CSI effect’ by mentioning what it perceived as a more effective manner of using Codemark, namely using it as if it were pepper spray.

The de-escalating effect was mostly related to the fact that bystanders thought the ticket inspectors were carrying PEPPER SPRAY. It is evident that the inspectors should not stimulate this misunderstanding. However, this is a welcome side effect. (evaluation report, June 2012, capitalisation in original)

The above quote depicts a mixed message. Tramcom management did not unambiguously support the deception of passengers, yet it was evidently relieved that some potentially dangerous situations had been averted. This resulted in a narrative of the pilot study’s development that hovered between two logics. The first is the CSI logic, the second is the pepper spray logic, neither of which was entirely refuted or supported; instead, they were made to exist alongside one another. In Law et al.’s (2012) words, they seemed to ‘collapse.’

‘To conclude, the case of Codemark first showed a non-coherence that was partially resolved in the project plan by the notion of ‘credible deterrence.’ This way, the plan prepared a singular pilot narrative according to a causal logic; effect measurements were to be part of this narrative. In the evaluation report, non-coherence was made more manifest by telling a story in terms of two non-conclusive logics with loose ends.

Reflecting on cases in medicine and agriculture, Law et al. (2012, p. 15) argue that there is ‘no need to be scared’ of non-coherence because it may increase tolerance and prevent traditions from clashing. But we should distinguish between empirical fields. This case raises the question of whether we should accept ‘sloppy’ reasoning and loose ends in documents that are intended to ensure public accountability, even if we accept that not all events can be made logically coherent.
Futures: Three Articulations of Potentiality

Varieties

In this section, I proceed to reflect on how, for each pilot, enactments of the organisational object took part in producing potentiality. Below, I first briefly recapitulate the differences and commonalities between the cases.

Each of the aspects of organisational ambiguity highlighted for the individual cases—mixed spatial and temporal dynamics, (in-)determinacy and (non-)coherence—can be found in the other cases as well. With regard to spatial and temporal dynamics, for instance, blurred performances of routinisation and exceptionalism marked the data mining case. Think of the effort to implement CRISP-DSM phases into the practices of Burgcity’s policy officers, as opposed to the officers’ efforts to keep the data mining pilot study apart from their regular jobs. Yet not all three characteristics of organisational form were relevant to each pilot study. Indeterminacy, for example, was hardly performed in the Codemark pilot study, as Tramcom’s policy officers contended that they were able to explain the development of the pilot with the help of descriptive statistics.

These variations in narrative came about alongside varying arrangements of human actors and administrative and managerial bodies of knowledge and artefacts. A research plan, for instance, was absent from the aggression detection pilot. By contrast, the Codemark pilot was shaped by a template for evaluation from the start. Another relevant difference is the connection made between the pilot studies and long-term policy programs, as in the cases of aggression detection and data mining. Codemark, by contrast, was not part of a long-term strategy. Funding structures also affected these differences. Funding programs for innovation, as in the case of data mining, demand transferrable results. The Codemark case differed from this because it was funded for local acquisition and usage. Finally, variations reflected policy discussion regarding the question of whether technologies should be applied permanently or only for as long as necessary. Aggression detection became part of the debate about camera supervision, and was therefore mobilised in long-term policy programs. The Codemark pilot was especially shaped by the supplier’s management summaries and best practice scenarios. Accordingly, these organisational documents emphasised the constitution and maintenance of a permanent forensic infrastructure.

Potentialities

To clarify how ambiguity in organisational form is relevant, I will attempt to draw out how temporal and spatial dynamics, (in-)determinacy and (non-)coherence in the three case studies articulated potentiality. This calls for a more general reflection in this section on
the character of each pilot. In what follows, I build on the previous sections, but instead of attending to specific instances and actions, I will mainly highlight what makes pilots different from governmental formats such as the project.

In my discussion of the aggression detection case study, I focused on its spatial and temporal dynamics. Boundaries were blurred between aggression detection as a) part of an innovative program performed in the city of Stadhoud; b) as part of local implementation and routinisation; and c) as an urgent measure to decrease violence against bus drivers. The attribution of these tempos and timelines gave the activities in the aggression detection pilot a directionality towards the future (Tousignant, 2013). In particular, the pilot as an innovative program was associated with (future) camera supervision. This was accomplished by the Mayor’s letters, in which larger programs of innovation in Stadhout justified the pilot in the name of future privacy improvements. Consequently, the potentiality articulated by the pilot was not exactly located at the present time and place. Instead, in performing ‘pilotness,’ potential was articulated as ‘a future elsewhere.’ This was enforced by the underperformance of the pilot in policy documents, where it became a static sub-paragraph of the camera supervision project.

I discussed the data mining pilot in Burgcity in terms of indeterminacy, alternating with determinacy. Performing indeterminacy can keep multiple directions for future action available (Street, 2011). In the case of data mining, the performance of an open-ended developmental program made the pilot irrelevant for the future of Burgcity. Burgcity’s future was fixed as data mining ‘would happen anyway,’ as a policy officer stated in an interview. This was reinforced by regulations that only allowed for the pilot’s database to temporarily exist on a PC unconnected to the database for future usage. The pilot therefore related to future practice, but only loosely. In tension with Burgcity’s policy officers, Data Inc. performed the pilot as a viable possibility for the city’s future, and Dutch local governments in general. It did so by performing inconclusiveness: the pilot’s results did not represent the technology’s ‘actual’ possibilities. In both versions, indeterminacy contributed to articulating the potentiality of Data Inc.’s software as an ‘option’ for the predetermined future of data mining. As the previous section pointed out, the viability attributed to this option varied. Burgcity lost interest in the software offered by Data Inc., while Data Inc. had an interest in maintaining that its software would contribute to policy making.

Finally, in my discussion of the Codemark case, I focused on performances of non-coherence, alongside performances of coherence. One non-coherence in the Codemark pilot was partly smoothed out by the concept of ‘credible deterrence.’ However, the Codemark pilot study was not always performed as a coherent effort. Two logics were collapsed in its narrative performances during the evaluation: both a ‘CSI logic’ and a ‘pepper spray logic’ explained the pilot’s results, with neither being fully discredited or affirmed.

The Codemark pilot stands out because, finally, Codemark’s future usage did not seem to be its main concern. Tramcom did not integrate Codemark into longer-term innovation
or policy programs. Instead, non-coherence allowed for the presence of pepper spray in the evaluation report as a technology with potential. Pepper spray’s future usage, however, was contested. Tramcom did not fully support Codemark’s usage as if it were pepper spray, and did not plan to supply its inspectors with actual pepper spray. In the spirit of non-coherence, therefore, something was made present that was contentious, even though it was widely discussed. So to conclude this case, performing non-coherence articulated an undesirable (yet necessary) future application of pepper spray. Codemark was a failed alternative to this future.¹⁴

In sum, performances of ambiguity articulated three sorts of potentiality: a) a technology to be applied elsewhere; b) the technology as an option (for a predetermined future); and c) the technology as an undesirable (yet necessary) solution. This article points out only three characterisations, but there might be more ways in which technological possibility is organised. I end this section by pointing out that the material components of the pilots, such as microphones, PCs, databases and spray cans, were relevant in shaping these modalities of potentiality. Especially relevant were the equipment’s partial disconnections and incomplete installations. The most obvious example is Data Inc.’s separated database. In the aggression detection pilot study, moreover, the system was continuously being connected and disconnected. The Codemark spray cans were fully operational, but at times did not serve as Codemark. Disconnected equipment both connected the pilot locations to future practice, and disconnected them from operation ‘here and now’ (Tousignant, 2013).

Pilotness

Organisational form has a relation to how the future is named, framed and realised. We are most familiar with the way in which this is accomplished in projects, where futures are the ‘result of a delimited time frame, clear goals, and clever management’ (Langstrup, 2011, p. 577). This is a particular directionality of action in which a goal on the horizon determines the steps taken towards the attainment of that goal (Schütz, 1951).

The project as an organisational form did not disappear from the cases discussed above. ‘Projectness’ is a preferred cultural technology that organises science, technology and many other fields. Projectness is reflected in and supported by organisations’ management structures and administrative practices and artefacts; think of professions such as project managers. These structures are especially relevant during routine events, such as procurement and evaluation (Hodgson and Gicmil, 2007). Projectness is also reiterated because indeterminacy and non-coherence do not seem to travel well. When stories are retold, they often become projects, erasing ambiguities. For instance, the aggression detection pilot study was retold as a large-scale technological project headed by the Netherlands Organisation for Applied Scientific Research in city council discussions a year after its evaluation (council minutes, May 2012).
Yet it is interesting to note the variations in managing future possibility that are demonstrated in the previous sections. In the words of Singleton and Michael, actors ‘sometimes stand uncomfortably in simultaneous relations of enrolment and betrayal’ (1993, pp. 257-8). Actors distance themselves, enrol in other programs, shift priorities, while at the same time committing to a project. Projectness might rely on such variations, while also being challenged by them.

We can at least conclude that the performances shown in this article lacked projectness. At most, they were performances of ambivalences, detachments and provocations. Coming back to the pilot as a governmental format with experimental characteristics, we thus learn that technoscientific ‘forms of life’ change (Haraway, 1997, p. 50). Purity and rationality are no longer the only ingredients for the production of truth and legitimacy, as they were in classical experimentation (Shapin and Schaffer, 1985). In the age of increasingly blurred boundaries between corporate, government and scientific practices, different registers of truth production combine to generate new storytelling practices (cf. Krohn and Van den Daele, 1998; Krohn, 2007). Consequently, ‘the distributions of the social world – project distributions, political distributions, but also the more classic distributions of ethnicity, gender, or class – are sustained as much in narrative incoherence as they are in narrative coherence’ (Law, 2002, p. 202).

Projectness is not the only lived reality. ‘Pilotness’ might serve as an adequate shorthand for the variety of ways in which governmental formats may foster ambiguity and arrange futures accordingly. Pilotness as a quality of governmental formats transcends the category of the pilot. Varying tempos and timelines, (in-)determinacy and (non-)coherence are not limited to the pilot study format, but in this article three pilot studies have attuned us to these characteristics of narrative form.

**Conclusion**

Pilots are an increasingly institutionalised governmental format. Policy makers, corporate actors, scientists and engineers employ them to improve their understanding of the promises and uncertainties of science and technology. Technological promises and uncertainties are especially relevant problems in crime control, where technology suppliers promise that technologies will reduce crime, pacify security employees and improve public image. We also know, however, that these technologies risk eroding fundamental liberties, such as the liberty to display one’s emotions in public space in the case of aggression detection.

Pilots thus play a relevant role in governance, yet we know little about how their seemingly ambiguous organisation might be relevant. What does it mean to govern by pilots? And what do we learn about experimental government formats? I highlight five outcomes of this study to answer these questions.
First, governance by pilots means to govern by ambiguity. I do not say this to pledge my confirmation of a postmodern research agenda. The point is not that the world is inherently ambiguous, that modernity is over, or that we have entered a post-bureaucratic phase. Instead, this study has specified three types of organisational ambiguity relevant for governance: mixed temporal and spatial dynamics, (in-)determinacy and (non-)coherence.

With regard to aggression detection, I showed that the pilot’s narration can be simultaneously local and urgent; routine, yet innovative and dislocated; and static yet without narrative. The data mining pilot highlighted performances of indeterminacy alternating with determinacy. It also distinguished two types of indeterminacy: open-endedness and inconclusiveness. The Codemark pilot study pointed out that non-coherence was made workable at first by introducing the notion of credible deterrence. Next, it showed that non-coherence was also actively performed by combining two logics in the evaluation report.

Second, the ambiguous pilot format allows for different qualifications of potentiality. The qualifications highlighted in this paper are a potential for future application (elsewhere), an option (for a predetermined future) and an undesirable (yet necessary) application. These qualifications of potentiality are relevant as these futures are already made materially present on the pilot locations. In addition, they give direction to future activity. In crime control, this relates to how crime is made manageable and measurable.

Third, ‘pilotness’ implies a relative lack of control. We already know that pilot participants do not always aim for total control and at times welcome surprises (Krohn, 2007). What we learn here is that, as a governmental format, pilots produce potentialities, even if they are considered undesirable, as the pepper spray in the Codemark case illustrates.

Fourth, experimental formats do not necessarily imply a tolerant attitude to open-endedness, shifting aims and open outcomes. This type of experimentality is a fragile state. Even if experiments are organised along the lines of open-endedness, they may easily shift in the direction of goal-orientedness or control. We learn that experimentality itself takes shape along the lines of the organisational and administrative artefacts that are drawn together. This is most clearly illustrated by the case of Codemark, where open-endedness, goal-orientedness, inconclusiveness and indifference alternated with the application of formats such as a project plan and evaluation report.

Fifth, to govern by pilots is not only to ‘abduct’ the present, as argued by Vincanne Adams et al. (2009). Present practices are affected in various ways that require attention. The application of privacy and data sharing laws and regulations illustrates this. In the case of aggression detection, the technology was assumed to make camera surveillance less invasive. This allowed for the neglect of current regulations stipulating that the public should be notified they are being recorded. Future possibility thus abducted present practice. In the case of data mining, however, the present held the future captive. Limited corporate usage of police data was permitted, yet present regulations also restricted access levels and
demanded detachment from the city’s operational database. In practice, this means that the ambiguity of pilots produces a variety of regulatory regimes. This is worrisome in the domain of crime control, where pilot studies have become institutionalised. It suggests an increasingly flexible application of law and regulation in the name of innovation.\textsuperscript{15}

To conclude, these findings may inform inquiries into other (more or less experimental) governmental formats. The present study suggests that projectness is not the only lived reality. We might attend to pilotness as well in order to understand how organisational objects are relevant for governance.

**Notes**

1. The first is often assumed in STS accounts, for instance Fujimura (1987), and in governmentality accounts, for instance Towghi and Vora (2014). The second is often implicit in accounts stressing the particularity of experimental forms, such as Rheinberger (1995).
2. The sociology of expectations and of promise have addressed how actors govern what is not yet there but nevertheless shapes present practices. I choose to use the language of potentiality here because this line of work emphasises the embeddedness of articulations of potentiality in local social and material contexts (Gibbon, 2013; Svendsen, 2011).
3. I use fictitious names for people, organisations and places in order to guarantee the anonymity of my informants. I do not mention the titles of internal documents in the bibliography for the same reason.
4. This is a different undertaking than investigating properties such as horizontal organisation, hierarchy or post-bureaucratic work forms; see for instance Hodgson (2004), Boltanski and Chiapello (2005). My interest is in the shaping of the pilot in terms of spatial and temporal narratives.
5. The system measured characteristics of sound, not the meaning of words.
6. All empirical quotes are translated from Dutch by the author.
7. To maintain readability, I continue to refer to the aggression detection trial as a ‘pilot,’ even if this label was not always applied.
8. The city board was held accountable because it partly funded the pilot.
9. See Chapter 3 of this book for a more detailed account.
10. The data were provided on the basis of a datasharing agreements between police, municipality and external parties. The legal basis was the Protection of Personal Data Act (*Wet Bescherming Persoonsgegevens*), article 8.e and 8.f. Later the Police Data Act (*Wet Politiegegevens*) article 20 was invoked.
11. Tramcom recorded 67 cases of violent assault, 78 cases of threat and 158 cases of ‘aggression’ in the first six months of 2011 (Internal report, July 2012).
12. Synthetic DNA has been used in research for several decades under the name ‘oligo.’
14. Usage of pepper spray on public transport is a frequently returning topic on the political agenda. Dutch regulations currently allow for the use of pepper spray by private security officers in selected domains, these exclude public transport (Ministerie van Veiligheid en Justitie, January 10, 2011).
15. In this sense, pilot studies are reminiscent of Agamben’s state of exception, as they are ‘neither external nor internal to the juridical order’ (Agamben, 2005, p. 23).