

## Routines, artefacts and technological change: investigating the transformation of criminal justice in England and Wales

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## **TITLE PLUS ABSTRACT**

### **Routines, artefacts and technological change: investigating the transformation of criminal justice in England and Wales**

#### **Abstract**

Organisational routines embed and are increasingly embedded within IT artefacts. In this paper, I challenge the conventional notion that warrants the primacy of human activities in the study of routines and bring artefacts in general and IT artefacts in particular to the very centre of my theorising. Through an in-depth case study of crown prosecutors' work, I endeavour to explain the way legislative and IT artefacts are implicated in the transformation of police-prosecutor routines. I show that legislative artefacts play a constitutive role that generates a new role position and a new system of social practices while IT artefacts serve a regulative function that enforces a newly-programmed sequence of steps onto pre-existing practices. I argue for the benefits of foregrounding legislative and IT artefacts to develop a nuanced account of organisational routines that responds to recent calls for research that contextualises the IT artefact outside single settings. I draw on the Transformational Model of Social Activity (TMSA) to unpack the causal linkages between legislative and IT artefacts. Theoretical and practical implications are discussed.

**Key words:** Routines, artefacts, automation, digitisation, embeddedness, morphogenetic approach.

Total number of pages: 50

## INTRODUCTION

The study of artefacts in the realm of organisational routines is a neglected albeit important research topic. In this paper, I join a growing body of research that advocates a renewed focus on artefacts in general (Cacciatori 2012; Turner and Rindova 2012) and information technology (IT) artefacts in particular (Volkoff *et al.* 2007; Lyytinen *et al.* 2009; Runde *et al.* 2009; D'Adderio 2011; Pentland *et al.* 2012). I conceive of artefacts as complex assemblages of abstract functions (or purposes) aptly instantiated through specific structures (or forms) and deal with the interplay between legislative and IT artefacts. I take the English System of Criminal Justice as my research setting because it has recently experienced a significant transformation in police-prosecutor interactions and ask the following question: how are legislative and IT artefacts implicated in the transformation of police-prosecutor routines?

I regard this transformation as my theoretical unit of analysis and draw analytical generalisations (Yin 2003) concerning the way legislative and IT artefacts are implicated in the ongoing re-elaboration of organisational routines. I consider legislative and IT artefacts as two ends of a continuum. At one end of the continuum, legislation relies on objects (e.g., manuals, handbooks, etc.) that intrinsically lack the structural features to perform their function. For example, a legislative act enforces its rules by means of collectively-accepted and recognised sanctions. At the other end of the continuum, IT artefacts rely on objects (e.g., software, computing devices, etc.) that are designed in such a way to enable them to perform their function *apart from* human intervention. For example, by virtue of its design, a search engine can dynamically update its search space on the basis of previously-keyed search items even if the user is unaware of that process. By drawing on the Transformational Model of Social Activity (TMSA) (Bhaskar 1989), I unpack the causal linkages between legislative and IT artefacts over time and show that legislative and IT artefacts are implicated in the transformation of police-prosecutor routines in dramatically different ways.

While legislative artefacts play a constitutive role because they generate of a new formal position (i.e., the position of duty prosecutor) and, therefore, a new position-practice system (i.e., the two-way

interaction system between police and prosecutors), IT artefacts serve a regulative role which enforces a newly-programmed sequence of steps onto pre-existing routines. More specifically, my data shows that a particular piece of legislation (i.e., the Statutory Charging scheme and the associated Criminal Justice Act 2003) is a necessary condition for the emergence of a new formal position (i.e., the duty prosecutor) in the English System of Criminal Justice. Instead, IT artefacts serve a regulative function because, by encoding two-way interactions in the technology, IT artefacts enforce a new sequence of steps onto pre-existing work practices (e.g., case request, consultation, pre-charge decision). I trace these constitutive and regulative roles to the way legislative and IT artefacts relate to the position-practice system. While legislative artefacts stand to formal positions in a relation that is internal and necessary, IT artefacts stand to formal positions in a relation which is external and contingent because formal positions presuppose the existence of legislative rather than IT artefacts.

My findings are both theoretically and practically significant. Theoretically, my contribution is twofold. First, I provide a nuanced account of the complex phenomenon of organisational routines which reveals the bundle of internal and external relations that underpin the unfolding of interaction patterns over time. Though routines scholars have recently acknowledged that routines exist at multiple levels (Salvato and Rerup 2011; Pentland et al. 2012), they are yet to explain the relational character of organisational routines (Cf. Feldman and Rafaeli 2002; Pentland and Feldman 2005: 804; Turner and Rindova 2012: 35). I show that routines are complex phenomena that encompass a surface and a deep layer, the former being the interaction pattern, the latter being the bundle of internal and external relations between artefacts and (formal) positions. As police-prosecutors' routines shift from face-to-face to technology-embedded consultations, the surface layer is constantly changing. Yet, the deep layer tends to persist over time because police and prosecutor roles presuppose each other for their existence. Hence, routines are at once both shifting and stable phenomena.

Second, I respond to calls for further research that contextualises the IT artefact outside a single site (Cf. Currie 2012: 240; Akhlaghpour *et al.* 2013). By comparing early adopters with laggard sites, I show that a more pronounced level of information automation emerges from the design and implementation of the two-way interface between police and prosecutor systems. The two-way

interface synchronises the information flow across the police-prosecutor systems with little or no human intervention. Rather than regarding the interface as a static object that partitions complexity through nearly-decomposable, loosely-coupled systems (Ulrich 1995; Baldwin and Clark 2000), my findings show that the two-way interface is a dynamic object (Hanseth and Lyytinen 2010; Yoo *et al.* 2010; Kallinikos *et al.* 2013a) that increases the degree of interdependence between Case Management Systems (CMSs), thus fostering the automatic transformation of police outputs into prosecutors' inputs (and vice versa). By automating the information acquisition process across police-prosecutor systems, IT artefacts turn prosecutors' work routines into a new set of procedures (e.g., case request, consultation, pre-charge decision). Hence, IT artefacts play a dual role because they automate the information acquisition process while standardising prosecutors' work routines. Put differently, IT artefacts serve a regulative function that encompasses both agentic and structuring properties. The agentic property is associated with IT artefacts' ability to act on their own at increasing levels of automation (Parasuraman *et al.* 2000; Ball and Callaghan 2012), the structuring property instead corresponds to the standardising purposes that IT artefacts serve (Kallinikos 2011).

As well as theoretical implications, my findings make a practical contribution because they go beyond the usual rhetoric that IT artefacts reduce administrative burdens and improve overall efficiency and effectiveness (Fielder *et al.* 1994; Sauer and Willcocks 2007). More specifically, I call for police-prosecutor collaboration in setting up shared data standards while stressing the need for designers who are able to grasp the logics underpinning legislative transformations. The remainder of this paper unfolds as follows. Section two gives background information about routines and artefacts by explaining the way artefacts in general and IT artefacts in particular have been conceptualised by organisational routines scholars. Section three outlines the methodology being deployed to investigate the transformation of criminal justice in England and Wales. Section four describes the case at hand by focusing on the transition from secure emails to direct inputs in the Case Management Systems (CMSs), the systems in use to track and progress electronic case files. Section five discusses my core findings by drawing on the TMSA to unpack the causal linkages between legislative and IT artefacts over time. Section six concludes the paper with final remarks.

## BACKGROUND

Organisational routines may be conceived as generative systems that produce recognisable, repetitive patterns of interdependent actions carried out by multiple agents (Feldman and Pentland 2003). Two approaches underpin routines studies. While the traditional view of routines conceived of them as sources of inertia and standardisation (March and Simon 1958), a new conceptualisation has recently emerged that celebrates their flexibility and their ability to generate new practices and patterns of action (Pentland and Reuter 1994; Feldman and Pentland 2003; Pentland and Feldman 2005).

Informed by Weick's (1979) work, this new conceptualisation of routines has shifted the focus from routines as static objects to routines as ongoing endeavours, from routines as things to routines as processes, from routines as structures to routines as ongoing practices undertaken by human agents.

Whether analysed with old or new lenses, however, routines are potentially transformational because they are endowed with intrinsic tendencies that lead to the elaboration of pre-existing structural arrangements (Volkoff *et al.* 2007; Runde *et al.* 2009). Whether the elaboration of structural arrangements leads to an episode of change (i.e., morphogenesis/transformation) or stability (i.e., morphostasis/reproduction), tracing the dynamism of routines requires the use of theoretical models which are specifically concerned with flow and change (Mutch 2010; Njihia and Merali 2013).

Archer's (1995) Morphogenetic Approach has long been the hallmark of critical realist studies of change (Porpora 2007). *Morpho* (i.e., shape) and *genesis* (i.e., generation) signal that the shaping of structure is the product of agents' interactions from which the process of social structuring emerges (Archer 1995). While morphogenesis takes place when agents' interactions produce a transformation of the underlying social structure, morphostasis occurs when such interactions reproduce the existing social structure.

Thus, the Morphogenetic Approach is premised on the assumption that: 1) (social) structure necessarily pre-dates the actions leading to its reproduction or transformation; 2) structural elaboration necessarily post-dates the action sequences which gave rise to it (Archer 1995: 15). This approach is compatible with the Transformational Model of Social Activity (TMSA) because both

models regard social structure and action as two separate entities that can be disentangled for analytical purposes, the Morphogenetic Approach being a “straightforward temporal elaboration of the TMSA” (Runde *et al.* 2009: 11). The figure below subsumes the Morphogenetic Approach under the TMSA.

**[Insert Figure I here]**

Thus, social interactions unfolding over time  $T^2-T^3$  are conditioned by pre-existing social structures at time  $T^1$  and lead to the transformation (i.e., morphogenesis) of the pre-existing structural order at time  $T^4$  and/or its reproduction (i.e., morphostasis). To capture these nuances, I shift my focus from fleeting events anchored in the “here and now” to enduring and evolving structures (Faulkner and Runde 2012) so as to give structure a stronger ontological grounding (Bhaskar 1989) and cast structure at the forefront of my theorising (Mutch 2013).

Studying routines through the lenses of structure is an appropriate research strategy for a variety of reasons. First, (social) structure, conceived of as a complex arrangement of social positions implying each other for their existence (Archer 1995; Danermark *et al.* 2002; Porpora 2007; Aaltonen and Tempini 2014), provides the contextual backdrop where social practices necessarily unfold. Since structural arrangements pre-exist social interactions and since their elaboration is the outcome of past actions (Archer 1995), studying routines through the lenses of structure immediately brings the *time* dimension into the playing field (Winter 2012). Second, structural approaches to routines theorising are more conducive to etic (external) rather than emic (internal) studies (Iannacci and Hatzaras 2012). Instead of studying routines from the inside, one can research them from the outside so as to avoid guessing what actors think and mean in specific situations. The role of procedural memory in the unfolding of routines means that “organizational actors cannot always give fully accurate accounts of the sources of their action” (Birnholtz *et al.* 2007: 329). Not only can participants’ descriptions neglect significant dimensions of routines. Observing patterns in variety is also a challenging task because these patterns are intangible and travel across space and time (Becker *et al.* 2005). To the extent that patterns and similarities are a core property of routines (Cohen and Bacdayan 1996; Schulz

2008), *recognising* such patterns from the outside may warrant the existence of a genuine routine. Third, routines are surrounded by an aura of *objectivity*. Even social constructionist approaches to routines emphasising the cognitive dimension acknowledge that routines “are ongoingly subsumed under general orders of meaning that are both objectively and subjectively real” (Berger and Luckmann 1967: 39). This, in turn, calls for a realist ontology of sorts that can provide novel insights in the field of routines (Runde *et al.* 2009; Iannacci and Hatzaras 2012). Fourth, and most importantly, practice-based studies of routines have been slow at incorporating the notion of artefacts (D’Adderio 2011). Contrary to practice-based approaches, structure-based approaches have traditionally incorporated the notion of artefacts in their conceptualisation of routines. For example, Schulz (2008) has argued that artefacts, variously conceived as technical and social ones, are pivotal reproduction mechanisms that keep routines on track. Lyytinen *et al.* (2009) have claimed that material artefacts and routines are carriers of institutional logics. Similarly, Kallinikos (2011) has argued that technical artefacts and institutional orders share essential affinities insofar as they both govern, albeit with different means, social practices. More recently, Faulkner and Runde (2013) have conceived of artefacts in general and IT artefacts in particular as structured continuants which are composed of distinct parts that are organised in some way and tend to be fully present at each and every point in time. Thus, a structural approach can provide a nuanced account of how routines emerge and re-emerge over *time* because it acknowledges the unfolding of *recognisable*, recurrent interaction *patterns* that are *objectively* imprinted on (technical) *artefacts*. Having established that I am taking a structural approach in the study of routines that draws on the TMSA and brings artefacts to the very forefront of my theorising (Volkoff *et al.* 2007; Runde *et al.* 2009), how have routines scholars conceived of artefacts?

### **Artefacts and routines**

According to conventional wisdom, artefacts codify or prescribe, as well as enable and constrain the unfolding of organisational routines but they are not part and parcel of organisational routines as they



lie outside the organisational routine proper (Pentland and Feldman 2005; Pentland and Feldman 2008). This approach can be represented as follows.

**[Insert Figure II here]**

According to this stream of scholarship, routines embody two different aspects, the ostensive and performative (Feldman and Pentland 2003; Pentland and Feldman 2005; Pentland and Feldman 2008).

The ostensive aspects correspond to the structuring aspects of routines. The performative aspects instead are those specific actions undertaken by specific people at specific times and places to bring the routine to life. While the ostensive aspects simultaneously enable and constrain action, the performative aspects create, maintain and modify the ostensive aspects of routines (Feldman and Pentland 2003). Accordingly, artefacts can either influence the ostensive and performative aspects of routines or represent them as when a tracking database provides archival traces of work processes.

However, Pentland and Feldman's conceptualisation of artefacts has raised several criticisms because it conceives of artefacts as rigid, mindless and static objects (Volkoff *et al.* 2007; Raymond 2010). For example, Raymond (2010) argues that, by drawing on structuration theory, not only have Pentland and Feldman overlooked the materiality of artefacts in general and IT artefacts in particular. They have also failed to distinguish between IT artefacts and more accessory artefacts. By taking a closer look at the distinctive features of IT artefacts, Raymond (2010) maintains that such artefacts are flexible, mindful and dynamic objects insofar as they embody a capacity or potential to act on their own independently of human action.

Other scholars have gone to great length to emphasise that formal procedures and rules play a pivotal role when embedded in artefacts such as software and/or entangled into thick organisational interrelationships (D'Adderio 2008). They have argued that the most successful procedures are those that manage to enrol an array of materials and tools. Accordingly, artefacts, especially IT artefacts, not only make organisational practices visible; they may also hide rules by black-boxing organisational procedures so much so that neglecting to include them in the study of routines dynamics can only, at best, provide a partial picture of the complex processes under investigation.

Following this train of thought, such scholars have, therefore, advocated that it is imperative to bring artefacts in general and IT artefacts in particular to the centre of routines theorising. This new conceptualisation of artefacts can be depicted as follows.

**[Insert Figure III here]**

Compared with the traditional manufacturing technologies of the 60s, IT artefacts such as software-based artefacts are modular, re-combinable, distributed and interactive (Pentland and Feldman 2007). This, in turn, calls for new conceptualisations of IT artefacts.

### **Theorising IT artefacts: emerging approaches**

The renewed interest in IT artefacts and their prominent role in the unfolding of routines have led to new conceptualisations of IT artefacts. I have identified two schools of thought according to whether they stay within or go beyond the confines of organisational routines theory as developed by Feldman and Pentland in various publications. In what follows, I attempt to highlight the basic tenets underpinning such new theoretical approaches.

### **Conceptualising IT artefacts within the confines of organisational routines theory**

Conceptualisations of IT artefacts within the confines of organisational routines theory are essentially geared towards ideas revolving around the ostensive and performative aspects discussed by Feldman and Pentland. For example, Volkoff *et al.* (2007) conducted an in-depth study of enterprise systems and developed the concept of embeddedness to capture the material aspects of technology. They argued that software-based artefacts in general and enterprise systems in particular are an integral part of organisational routines. Software-based artefacts are sources of structural conditioning that have a real existence and are relatively independent and enduring. By emphasising the materiality of technology, Volkoff *et al.* (2007) developed a theory of technology-mediated organisational change as a three-stage cycle in which: 1) the ostensive and material aspects become aligned during design and construction (i.e., structural conditioning); 2) the ostensive and performative aspects interact but are constrained by the material aspects of technology (i.e., social interaction); 3) new rounds of

interaction develop between the material and ostensive aspects (i.e., structural elaboration/reproduction). Following in the footsteps of Volkoff *et al.* (2007), Raymond (2010) has distinguished between artefacts that are embedded in organisational routines and those that are not. He labelled those artefacts that lie outside organisational routines as accessory artefacts (e.g., furniture, office buildings, etc.) and those artefacts that are an integral part of organisational routines as embedded artefacts (e.g., IT artefacts providing archival traces of work processes). Embedded IT artefacts play a mediating role in the recursive relationship between the ostensive and performative aspects of routines, as well as a generative role because they are endowed with a capacity to act on their own independently of human action. Since embedded IT artefacts are an integral part of organisational routines, they may be seen as objectified instantiations of both the ostensive and performative aspects of organisational routines.

Yet other scholars have drawn from recent theoretical developments within the field of socio-technical studies to characterise the mutual adaptation between formal routines and rules on the one hand (i.e., the ostensive aspects of routines) and actual performances on the other (i.e., the performative aspects of routines) as iterative cycles of framing (selective retention), overflowing (variation) and reframing (selective retention) of knowledge inputs and outputs by which standard operating procedures and rules are performed (D'Adderio 2008). Lastly, Pentland and Feldman (2008) themselves have used the example of a failed software implementation to discuss the role of IT artefacts in shaping organisational routines. They argued that designers and managers alike cannot hope for new patterns of action by simply introducing new software that prescribes such new patterns of action. In their in-depth case study, they showed that, by selectively using (or choosing not to use) the technology, users continued to enact their pre-existing social practices.

Though these approaches have made forays in the material aspects of routines (Volkoff *et al.* 2007) and have acknowledged the existence of artefact-to-artefact, as well as artefact-to-human routines (Pentland and Feldman 2008), their conceptualisation of (IT) artefacts is at a very embryonic stage and they are yet to shed some light on the types of relations that artefacts and (formal) positions can

entertain (Cf. Feldman and Rafaeli 2002; Pentland and Feldman 2005: 804; Turner and Rindova 2012: 35).

### **Conceptualising IT artefacts beyond organisational routines theory**

Conceptualisations that go beyond the confines of organisational routines theory deploy new theoretical approaches that go beyond structuration theory, the meta-theoretical framework underpinning organisational routines theory as developed by Feldman and Pentland. The dual nature of technical artefacts is an exemplar of these new approaches.

### **The dual nature of technical artefacts**

Drawing on critical realism, scholars have approached the study of technical artefacts by disentangling their structural and agentic properties (Faulkner and Runde 2009; Runde *et al.* 2009; Iannacci and Hatzaras 2012; Faulkner and Runde 2013). Compared with structuration theory (Giddens 1984), critical realism advocates the analytical separation between structure and agency, the former pre-existing the latter (Archer 1995). This insight has triggered a re-conceptualisation of technical artefacts in the organisational routines literature. For example, some scholars have advocated the “dual-nature” conception of technology according to which one needs to distinguish between function and form of a particular technical object (Kroes and Meijers 2006; Faulkner and Runde 2009; Runde *et al.* 2009). Whereas function refers to the use that members of a community have collectively assigned to a specific object, form refers to the structural or syntactic characteristics that an object must necessarily possess to perform its function (Faulkner and Runde 2011). For example, a word-processing programme serves the function of enabling users to create and edit documents on a computer. But to perform its function it relies on a complex arrangement of constituent parts (e.g., sets of logical instructions) that are not physical objects. Drawing on the Searlean insight that syntax is necessary but not sufficient for semantics (Searle 1980; Iannacci and Hatzaras 2012), Faulkner and Runde (2011) show that the meaning (or function) assigned to a technical object is a complex social phenomenon that is embedded in social beliefs, as well as physical and/or not physical structures. Scholars in this stream of research have also propounded that their approach is suitable for

longitudinal studies where technological change is interwoven in a cyclical process of transformation whereby new material, non-material or even hybrid forms emerge from pre-existing (social) functions and trigger the emergence of new (social) functions and new technical forms. Other scholars have argued that the dissociation of function, form and matter from one another is the hallmark of technological evolution (Kallinikos 2012).

This new wave of routines studies is a conspicuous addition to routines theorising as it argues that the form and function of technical artefacts may be seen to bear the imprint of the social and historical conditions where such artefacts are built and used (Rose and Jones 2005). Considering that even social artefacts (e.g., laws, money, etc.) rely on some kind of form to perform their function (e.g., laws rely on acts, money on paper notes or digital tokens, etc.), in the remainder of this paper I draw on this approach to investigate how legislative and IT artefacts are implicated in the transformation of police-prosecutor work routines. To this end, I deploy the TMSA to portray the process of legislation-induced, socio-technical restructuring and technology-driven, socio-legal change.

## **METHODOLOGY**

In this section I outline the methodological approach I undertook in my case study. My empirical investigation was prompted by the emergence of new patterns of interactions revolving around the newly-coined role of duty prosecutor because I regarded this event as an instance of transformation in the making of Police-Crown Prosecution Service (CPS) relations. I elicited data with regard to how police officers and duty prosecutors interact in the context of the Director's Guidance on Statutory Charging. My objective was to investigate a remarkable change in the evolution of the CPS in order to shed light on the emergence of new work practices entailing a reciprocal degree of interdependence between police and prosecutors whereby the outputs of each unit become the inputs for the other unit (Thompson 1967). This dramatic change may be seen as a period of transformation in the CPS because it is imbued with tensions, contradictions and identity losses (Iannacci 2009; Cordella and Iannacci 2010), thus providing a clear point of data collection in an extended stream of time, events, people and processes (Pettigrew 1990).

Since my goal was to investigate the role that legislative and IT artefacts play in the transformation of Police-CPS relations and since the boundaries between the aforementioned transformation (i.e., the phenomenon of interest) and its context were not clearly evident, I adopted a case study approach to undertake this research (Yin 2003). More specifically, I used a causal chaining technique (Miles and Huberman 1994) to unpack the causal linkages between legislative and IT artefacts and chart the cyclical process of legislation-induced technological change and technology-driven legislative change over time. Subsequently, through several iterative moves going from data to theory and back again from theory to data (Cf. Danermark *et al.* 2002: 109), I formulated analytical generalisations concerning the way legislative and IT artefacts are involved in the transformation of police-prosecutor work routines.

My primary data were collected through semi-structured interviews, focus groups and observations spanning a period of over five years. The main topics discussed during interviews and focus groups were related to work practices and exchanges of evidential material between police officers and duty prosecutors. Data collection entailed the study of the CPS web site, various documents and online reports. Data collection took place between May 2006 and January 2012. Interviews, focus groups and observations were conducted at various CPS locations in London, Yorkshire and Humberside and the West Midlands. The rationale behind the choice of these three sites stems from the fact that I wanted to pursue a simultaneous logic of literal and theoretical replication (Yin 2003). Whilst the Yorkshire and Humberside sites literally replicated the London site with regard to their use of the one-way interface between Police and CPS, the West Midlands were a contrasting case in that they were one of the “early adopter sites” that had been testing aspects of digital working by switching from the one-way to the two-way interface. Thus, I followed the replication logic by trying to predict contrasting results across sites (i.e., low vs. high levels of information automation) for predictable reasons (i.e., one-way interface vs. two-way interface). Details regarding my fieldwork are reported in the Appendix.

My longitudinal comparative case study produced a large amount of data which was analysed by extracting key themes and topics in order to build a plausible chain of events concerning the complex

interplay between legislative and IT artefacts. Both interviews and focus group sessions were transcribed and repeatedly checked to discover common threads, categories and themes. These topics were subsequently aggregated in a final narrative with an eye towards developing analytical generalisations about the way legislative and IT artefacts are implicated in the transformation of work routines. My orientation to data collection and analysis was iterative and theoretically informed. I spent a considerable amount of time reviewing background documentation and preliminarily observing prosecutors' interactions with police officers in various police stations across London. This allowed for some flexibility in data collection as several themes emerged but only a few were considered relevant and examined more deeply. In particular, the unit of analysis was the Statutory Charging scheme, an ambitious programme aiming to transfer charging decisions from the police to the CPS. I regarded this scheme as my embedded unit of analysis (Yin 2003) because it enabled the study of the transformation of Police-CPS interactions across three distinct levels, namely, the macro, the meso and the micro level<sup>1</sup>. Thus, I endeavoured to study the enactment of this scheme at multiple levels of analysis to explain how macro-level legislative changes cascade into meso and micro-level interactions and how such interactions, especially IT artefact-to-IT artefact interactions, affect further waves of organisational and legislative changes.

### **THE CASE FOR DUTY PROSECUTORS**

The CPS is the Government department responsible for prosecuting criminal cases investigated by the police in England and Wales. The CPS was established in 1985 by the Prosecution of Offences Act on the basis of a clear separation between the prosecution and investigation functions, the former being a prerogative of the CPS, the latter falling within the police remit. Albeit headquartered in London and York, the CPS has recently been restructured in 13 geographical areas, a substantial departure from its previous model encompassing 42 areas (CPS Annual Report and Resource Accounts 2010-11).

A significant transformation that has occurred in recent years has been propelled by the Criminal Justice Act (2003) that has challenged, to a degree, the axial principle of a clear separation between prosecution and investigation functions (Iannacci 2008; Cordella and Iannacci 2010). Since most of the police charges resulted in discontinued cases, the Criminal Justice Act (2003) has ratified a new

charging scheme (i.e., Statutory Charging) which transfers the charging decisions from the police to the CPS and grants the CPS the opportunity to provide early advice and guidance with regard to specific lines of investigation. In the Statutory Charging scheme, a police custody officer is in charge of custody decisions. Whenever suspects are detained in custody, custody officers are required to direct investigators to consult duty prosecutors acting on behalf of the CPS. During these consultations, the prosecutor is expected to identify whether a case is likely to proceed to trial and to advise on lines of enquiry and evidential requirements.

The Statutory Charging scheme was introduced in response to recommendations made by Lord Justice Auld in his “Review of the Criminal Courts in England and Wales” published in October 2001.

Legislation introduced in the Criminal Justice Act 2003 made it a legal requirement. However, prior to the Auld report, other reports attempted to improve the situation. Yet the role of the CPS remained essentially overly dependent on early investigative decisions taken by the police. Not only did the police omit any considerations of whether a charge was necessary in the public interest. They were also undertaking a precautionary approach with a tendency to overcharge suspects which, lacking relevant evidential material, could lead to a large number of discontinued cases (Brownlee 2004).

The Statutory Charging scheme was first implemented as a pilot in February 2002 at nine locations in five CPS areas across England and Wales. The evaluation of its impacts showed that, despite fewer charges, conviction rates had improved in six of the nine pilot sites (Brownlee 2004). Given these positive results, the Attorney General announced that the Government intended to bring forward legislation (i.e., the Criminal Justice Act 2003) to effectively transfer from the police to the Director of Public Prosecutions, acting through local crown prosecutors, the responsibility for deciding whether there is sufficient evidence to charge a detained person in relation to the majority of offences (Iannacci 2008). The first edition of the Director’s Guidance on Charging issued in May 2004 explicitly prescribed face-to-face consultations between police investigators and duty prosecutors by maintaining that “early consultations with crown prosecutors will provide an opportunity for advice to be obtained on the charges likely to proceed in any case and the evidence that will be required to support those charges, as well as enabling evidentially weak cases to be identified and concluded



early”. It specifically stipulated that “in order to facilitate efficient and effective early consultations and make charging decisions in prosecution cases, crown prosecutors will be deployed as duty prosecutors for such hours as shall be agreed locally to provide guidance and make charging decisions”. It also envisaged a complementary telephone service “by a centrally managed out of hours duty prosecutor arrangement to ensure continuous 24 hours service”, as well as “charging by post”.

The Statutory Charging scheme has dramatically changed the charging routines between police and prosecutors from one-way interactions (i.e., charge then prosecute the suspect or not) to two-way interactions (i.e., request a pre-charging decision, conduct a consultation and then issue a pre-charging decision response). Police investigators can no longer send case files to the CPS at their discretion because this process could translate into a fruitless expenditure of resources in terms of reviewing case files that could be potentially hopeless from the outset. To eliminate or at least reduce the number of hopeless case files and produce more robust prosecution cases, police investigators are now required to engage in consultations with CPS duty prosecutors at the early stages of their investigation. As remarked by a duty prosecutor:

The Criminal Justice Act (2003) introduced the concept of statutory charging, so the CPS is now responsible for deciding for the charge. So the officer who is responsible for the case will go to the CPS duty prosecutor and present the facts of the case and say: “can this case be charged? And what is the most appropriate offence for it to be charged?” In simple straightforward cases that come within the scheme it might be straightforward to say “charge a defendant with an offence and bail him to attend a particular court”. In other instances, the CPS duty prosecutor might say “no! It can’t be charged yet. You need to carry out further investigation and obtain evidence as to whatever”. There is a much earlier involvement of the CPS and it can even go further back to before the suspect is being arrested because the police may come to the CPS and ask for an early legal advice.

In the Statutory Charging scheme, duty prosecutors are responsible for making charging decisions, as well as providing advice and guidance in the most serious, sensitive or complex cases. Whenever

possible all charging decisions should be based on the full evidential and public interest tests. When the full evidential material is not available, the duty prosecutor can make an early charging decision based on the “threshold test”. This test entails a reasonable suspicion that the person to be charged has committed the offence rather than a realistic prospect of conviction (i.e., the sufficiency of evidence). As remarked by a duty prosecutor:

We also have this concept of a “threshold test”. It applies to those cases where the police because of the character of the suspect wish to keep him in custody but they may not yet have all the evidence. But they can assure the prosecutor that given an appropriate period of time, they believe further evidence will be made available. So the prosecutor can make a decision based on what (evidence) she believes will be coming not necessarily what is immediately before her. On that basis, the prosecutor can charge the suspect now but she needs to arrange an action plan for further inquiries.

Whenever the “threshold test” is applied, a specific date must be agreed between the duty prosecutor and the investigating officer for a review of the case in accordance with the full code tests (i.e., sufficiency of evidence and public interest tests), these tests setting out the general criteria to regulate the discretion of crown prosecutors (Iannacci 2008). Decisions on all charging matters are recorded in writing on an ad-hoc form called the “MG3” form (i.e., Manual of Guidance 3) which contains two sides: the front side is a “request for a charging decision” and must be completed by the investigating officer, while the rear side, which is filled out by the duty prosecutor, includes the charging decision or, alternatively, either the steps to be taken before this decision can be reached or the reason for declaring no further action (Brownlee 2004).

Under the new scheme, upon deciding to detain a suspect, custody officers can direct investigators to consult a duty prosecutor. The new and revised Guidance on Statutory Charging (i.e., the fourth edition) prescribes two alternative procedures depending on the seriousness of the case. While the most serious, sensitive and complex cases require face-to-face consultations, the other cases

contemplated in the Guidance can be dealt with over the telephone with the support of IT artefacts.

More specifically, the Guidance mandates that:

In order to ensure a speedy and responsive charging service, referral arrangements for all but the most serious and complex cases will be by telephone. The police will submit pre-charge reports and key evidence across the electronic exchange, by direct input, secure e-mail, or fax. The police will then telephone to consult with a CPS prosecutor... Face-to-face consultations will take place in the most serious, sensitive and complex cases.

While the most serious cases require face-to-face consultations between investigators and duty prosecutors, the newly-revised Guidance has ensured a speedy and responsive charging service for the remaining cases by means of telephone calls. In the latter cases, police investigators are required to submit pre-charge reports and key evidential material through electronic exchanges whether by direct input in their systems, secure e-mails or by fax. Police investigators must then make relevant arrangements for these case files by telephone. To be sure, even the most sensitive and complex cases require electronic exchanges of evidential material but given their seriousness “an early telephone consultation should take place to confirm that a face-to-face consultation is necessary and to confirm what written material is to be submitted in advance” (Director’s Guidance, 4<sup>th</sup> edition, 2011).

### **The Statutory Charging scheme: from secure emails to direct inputs**

The Statutory Charging scheme has heralded the emergence of new work routines characterising Police-CPS interactions. As mentioned above, the police are no longer making initial charging decisions because they are required by law to consult duty prosecutors to obtain pre-charge decisions and then charge the detained suspects accordingly. As remarked by a duty prosecutor:

From this case, I can see that it came in for pre-charge decision yesterday. There are 10-12 witness statements. The pre-charge decision response went back to the police yesterday. I can see the defendant details. The police charge should be following the pre-charge decision (what the CPS told them). The police have done as they were directed to. Whoever is working with this case will have no issue with the police charge because what they have charged is something

we have specified from the outset. But if they charged an offence that we haven't specified to them, the Case Management System (CMS) will tell me on the screen that it was an unauthorised charge. In which case I will go to a charging reconciliation screen to determine what the charges are that the defendant should face.

In the new scheme, the workflow between police officers and duty prosecutors has shifted from sequential to reciprocal and iterative exchanges. In the past, police officers could send charges to the CPS at their discretion. Now, instead, they need to submit a request for a pre-charging decision to the duty prosecutor with the relevant evidential material. Based on this evidence, the duty prosecutor will decide whether to charge the suspect, request further evidential material or declare no further action. If the full evidential material is not yet available when Police-CPS consultations take place, the duty prosecutor can apply the "threshold test" to detain a suspect in custody. Should duty prosecutors apply the "threshold test", they can "charge a suspect who may justifiably be detained in custody to allow evidence to be gathered to meet the full code test realistic prospect of conviction evidential standard" (Director's Guidance, 4<sup>th</sup> edition, 2011). Thus, the workflow between police and CPS has become bi-directional due to their reciprocal interdependence. Duty prosecutors' charging decisions depend on the police officers' evidential material but the latter's investigative activity depends on the former's decisions. Further to the request for additional investigation going back to police officers, they will gather supplementary evidential material to meet the full code tests. This information will be sent back to duty prosecutors who will "undertake a full code test review prior to any trial hearings" (Director's Guidance, 4<sup>th</sup> edition, 2011). As remarked by a duty prosecutor:

The threshold test is when the suspect is not suitable for bail. If at the charge the suspect wouldn't be released on bail because he is a too-high risk suspect who can commit more offences or fail to turn up to court or interfere with witnesses or whatever, but all the evidence that you ultimately want to satisfy the full code (for crown prosecutors) is not yet available, you can apply a lower test (the threshold test) purely for the purposes of going before the court and asking for remand in custody. If you apply the lower/threshold test and the suspect gets remanded to custody, there must be an action plan agreed with the police about when the extra

evidence needed will become available. Then the prosecutor reviews the evidence when it comes through. If the promised evidence does not come through, then we might have to drop the case. But if it does come through then we can apply the full code test.

Though the reciprocal interdependencies between police officers and duty prosecutors are managed through mutually-tailored interactions, Police and CPS are deploying a two-way interface between their systems to support this bi-lateral exchange of information in near-real time. More specifically, the two-way interface executes the actions undertaken on one end point and automatically updates the systems at the other end point. As noted by a police project manager:

The interface is designed to send this information (Manual of Guidance-MG- series) as structured data. Although we are managing a case at the police end and a case at the CPS end, the interface allows the systems to create the cases without user interaction. As a new pre-charge decision request comes in, that creates the case on the CPS. New defendants or updated defendants (details) get (automatically) added to the CPS. New and updated witnesses' and victims' details get exchanged backwards and forwards. So though we are maintaining two separate cases, the interface is firing at such a rate to keep those two cases up-to-date.

Therefore, the two-way interface has raised the level of automation in the information acquisition process as some Police-CPS areas no longer need to exchange emails and manually store them in their respective Case Management Systems (CMSs). As remarked by a prosecutor working in the CMS Design Authority Team:

Our links with the police have recently been extended to enable a pre-charge information exchange between Police and CPS in a two-way fashion. On a non-two-way interface police force, pre-charge information will go back to the police on a document (either a paper MG3 or a soft copy MG3) and then a person will have to input that information into the police system and give the various tasks to police officers... Instead all of this now goes back to the police as structured information and populates their system automatically with the action plan.

Thus, in those areas where the two-way interface has not yet been deployed, the exchange of evidential material mimics the “charging by post” process envisaged by the first edition of the Director’s Guidance. Rather than exchanging paper files, police officers and duty prosecutors exchange email attachments. However, in the two-way interface areas, Police-CPS systems automatically exchange Manual-of-Guidance (MG) information as structured data. As noted by a business consultant working in the CMS Team:

Now it is not just the (MG3) form that is sent back electronically. It is the charge decision that is sent back to the police system (i.e., structured data). The MG3 is a written document that is human readable. The structured data goes back to the police system using the two-way interface so that it is readable by the police system. And the police system can then start to allocate tasks and do whatever else might be necessary.

To automate the information acquisition process, Police and CPS have designed three new messages called “charging messages” which mirror the Police-CPS routines revolving around the MG3 forms. As explained by a prosecutor working in the CMS Design Authority Team:

The first charging message, called “Charging Message 1” (or CM1), is the request from the police to the CPS for a charging decision. When the CPS duty prosecutor receives the request for a charging decision, he/she has to respond back to the police, with a “charging message 2” (or CM2). This message might say “charge the defendant or the suspect with the following offence”, “no further action”, or “further investigation needed”. If the CPS response is a call for “further investigation”, an action plan has to be arranged between the officer in the case and the duty prosecutor. At the end of the investigation, the police will come back to the CPS with a new CM1. Once again the CPS has to produce a CM2 to make a decision on charging. If the CPS decision is to charge the suspect, the police will send to the CPS a “charging message 3” (or CM3) which confirms the details of who the suspect is, what the offences the suspect has been charged with are and when the first hearing will take place.

Not only has the two-way interface bypassed the use of email attachments by enabling the exchange of structured data (i.e., CM1, CM2, CM3) that are automatically re-assembled at the other end point as MG3 forms. It has also changed prosecutors' work routines so much so that a new set of technology-embedded procedures has emerged. As noted by a prosecutor working in the CMS Design Authority Team:

In a non-two-way interface area, the way the police initiate the consultation is by phoning the CPS. But they would also send to a group email inbox their version of the MG3. What the duty prosecutor has done in this case is having produced the Word documents out of the Case Management System (CMS) he has also copied and pasted into this document the information that was sent (to him) by the police. Thus, he has copied and pasted from the police MG3 into this document (i.e., his MG3 form) what the police has set out in their MG3. That has produced a single composite document for this particular case. Therefore, in a non-two-way interface area, the duty prosecutor has to manage a telephone consultation with the (police) officer and look at CMS and look at his email inbox.

However, in other areas where the two-way interface has been fully deployed, duty prosecutors are no longer manually copying and pasting information. This, in turn, enables them to spend more time reviewing individual cases. As noted by the same prosecutor:

Imagine I was the duty prosecutor today and I had just received a phone call from the police. They told (me) the Unique Reference Number (of the case) and I typed it into the Case Management System (CMS). I hit the "find" button and it brings the case up to me. We have received a request for a pre-charge decision! In this instance, first, the duty prosecutor will not need to register the case himself because that is achieved electronically. Secondly, the MG3 will be in the system rather than having to look for it in an email inbox... Because we have not received a document from the police, the information that would have been recorded in the MG3 is now displayed in a different way. I would navigate recording the consultation in the same way I did before but this time I would also navigate into the tab that says "case request"

where I see here part of the information that would have been displayed on a paper or a soft copy MG3... “Case request” pulls up a case screen. Then I select the “consultation menu” which gives me access to the consultation screen which tells me whether it is an early consultation or not. When the duty prosecutor does make a charge decision, he will do so in the same way he did before except that now he does not have to manually enter the MG3 information... He can then send the “Pre-Charge Decision” (PCD) response back to the police electronically. In this case he has set out an action plan that says to the police the things that need to be done (to gather further evidence).

Thanks to the two-way interface, the Case Management Systems (CMSs) have eliminated the need for re-keying information by automatically populating and updating police and CPS electronic case files. Since the two-way interface makes use of two-way links whereby evidential material and charge decisions are broken into chunks of structured data that travel from one end point to the other end point where they are re-assembled in their original messages, human intervention has become redundant. Thus, it can be argued that the logical architecture of the two-way interface has raised the level of information automation inscribed in Police-CPS IT artefacts as the CMSs at hand populate and update the Manual of Guidance (MG) 3 forms in near-real time. As noted by a duty prosecutor:

We only need to enter the information once in the connected systems (Police-CPS systems). Anything else that is then being done is effectively adding value. The police start in the outset with their investigation. They then arrest the suspect, compile the evidential material. Recognise that they need a charge decision from the CPS. Everything is automatically populated into the CMS. Nobody has spent any effort manually recording that information. CPS has then added value to the process by reviewing the case and making a decision and determining what the charges should be and sending that back to the police. The police do not have to enter that information in their system because that information has automatically been added to the police systems.



The table below outlines the main themes extracted from the empirical data and their theoretical categorisation formulated at increasing levels of abstraction.

**[Insert Table I here]**

## **DISCUSSION**

The picture that emerges from the fieldwork is a complex one as the same Case Management System (CMS) has been adopted by different CPS areas in a different fashion. Whilst some areas use the CMS to avoid data re-keying by exchanging evidential material through direct inputs in their systems, the more laggard areas have not yet reached this level of automation as they mostly make use of secure emails and, occasionally, faxes. Regardless of the nuances associated with the unfolding of situated practices, the main features of the case can be captured as follows.

**[Insert Figure IV here]**

Starting from 2004 in which a new set of internal and necessary relations between Police and CPS was enshrined in the first edition of the Director's Guidance on Statutory Charging, one witnessed the formal emergence of the duty prosecutor and a shift from sequential to reciprocal interdependencies as the Police started to engage in early consultations with the CPS based on face-to-face meetings complemented by out-of-hours telephone calls. The grafting of these consultations in the Case Management Systems (CMSs) enabled the exchange of secure email attachments as a substitute for paper files. This, in turn, marked a gradual change in Police-CPS consultations from face-to-face meetings to telephone consultations corroborated by email exchanges. As telephone consultations across the CMSs gained momentum and as early adopter sites started testing aspects of digital working with the two-way interface, one observed the re-writing of the Director's Guidance to account for, and to a degree legitimise, the use of electronic case files. A new guidance was therefore issued in 2011 that specifically accounts for the electronic exchange of case files whether in terms of direct inputs in the systems at hand or secure emails.

The gradual shift from paper to electronic case files, however, has opened up the space of possibilities by removing the constraints of physical media (Kallinikos 2006). Since the digitisation of information is characterised by no qualitative difference between transportation and content standards (Evans and Wurster 2000; Kallinikos 2006; Iannacci 2010; Yoo *et al.* 2010; Kallinikos *et al.* 2013a; Henfridsson *et al.* 2014), between the medium and the message (Ibid), the traditional link between the flow of information (i.e., electronic MG3 forms) and the flow of physical things (i.e., paper files) has gradually unravelled. The staged deployment of the two-way interface between Police and CPS systems has made the dissociation between form (i.e., internally-related structured data) and matter (i.e., paper files) even more pronounced so much so that bundles of structured data consisting of “charging messages” are being exchanged and automatically re-assembled from one end point to the other end point in an interactive fashion. Thus, human-to-human routines have been embedded within IT artefact-to-IT artefact routines by creating complex ensembles of synchronic (i.e., vertical interactions emerging at “a given moment *in time*”; cf. Elder-Vass 2010: 67; my italics) and diachronic interactions (i.e., horizontal interactions unfolding *through time*; cf. Hartwig 2007: 129; my italics)<sup>2</sup>. Both synchronic (i.e., IT artefact-to-IT artefact routines) and diachronic interactions (i.e., human-to-human routines) mirror each other in an isomorphic fashion. They both have the same (i.e., *iso*) shape (i.e., *morpho*) because each interaction has been coded into a specific “charging message” so as to generate a two-way technological structure that morphologically maps onto the two-way interactions between police and prosecutors. For example, the police request for a pre-charging decision has been coded into Charging Message 1, the duty prosecutor’s response has been coded into Charging Message 2 and the police subsequent confirmation has been coded into Charging Message 3.

As the two-way interface has become more widespread across Police-CPS areas, IT artefacts have started triggering new legislative changes. For example, the revised Statutory Charging scheme (i.e., Director’s Guidance, 5<sup>th</sup> edition) has specifically prescribed a more distributed workflow characterising the interactions between Police and CPS because it has explicitly mandated that “referral arrangements for all but the most serious and complex cases will be to CPS Direct”.

Furthermore, the revised Statutory Charging scheme now maintains that “the police will submit pre-

charge reports and key evidence across the electronic exchange”. Therefore, the recursive and mutual adaptation between legislative and IT artefacts is characterised by cycles of legislation-induced technological change (e.g., the grafting of “consultations” in the CMSs) followed by technology-driven legislative changes (e.g., the shift from the 1<sup>st</sup> edition of the Director’s Guidance prescribing face-to-face consultations to the 4<sup>th</sup> and, more recently, the 5<sup>th</sup> edition mandating telephone consultations complemented by direct electronic inputs). Though these cycles are characterised by a gradual shift towards more remote interactions between Police and CPS, it is worth stressing that, at the structural level, the relations between police and prosecutors tend to persist over time, thus leading to a structural reproduction. Why is this so?

I submit that this is the case because the relation between legislation and duty prosecutor is internal and necessary while the relation between IT artefacts and duty prosecutor is external and contingent as the very existence of the duty prosecutor presupposes the Statutory Charging scheme but not the IT artefacts at hand. In other words, the causal power of legislative artefacts is based on collective acceptance and recognition rather than being intrinsic to their physical or material properties. As the police-prosecutor interactions shift from face-to-face to more distributed interactions, the new set of relations between police and duty prosecutors tends to be relatively enduring because it is embedded into an elaborate system of legislative rights and duties that have been collectively accepted and recognised (Searle 1995). On the contrary, IT artefacts are endowed with a power which is intrinsic to their form or structure (Kallinikos *et al.* 2013b). Thus, once re-designed into a set of two-way links, the interface acquires a new power that enables it to reshape work practices into standardised procedures that are grafted in the CMSs (e.g., “case request”, “consultation”, “pre-charging decision”) and, at a deeper level, are encoded into structured data (i.e., CM1= request for a pre-charge decision; CM2= pre-charge decision response; etc.). The upshot of this process being that, while legislation plays a constitutive role in the emergence of a new position-practice system, IT artefacts play a regulative role that enforces a newly-programmed sequence of steps onto pre-existing work practices. Therefore, routines are what they are by virtue of the internal and necessary relations between legislative or, more broadly, social artefacts and (formal) positions (Iannacci and Hatzaras 2012).

Viewed as information flows, routines consist of three sets of interaction patterns that are nested within each other across several levels, namely, the micro, meso and macro level with the micro and macro levels being defined in relation to strata immediately above and below them (Cf. Archer 1995: 325) and the meso level being concerned with the relations between different roles (Cf. Bhaskar and Danermark 2006: 289) such as police and prosecutors' roles. Thus, the synchronic exchanges of "charging messages" between CMSs are nested within the interaction patterns between police officers and duty prosecutors which, in turn, are nested within the diachronic process of mutual adaptation between legislative and IT artefacts. Whether unfolding in seconds (i.e., IT artefact-to-IT artefact interactions), hours (i.e., human-to-human interactions) or years (i.e., legislative and technological interactions), routines have a multi-layered, stratified and relational ontology that consists of nested interaction patterns which are underpinned by internal and external relations between and among their parts (Becker 2005; Hodgson 2012; Iannacci and Hatzaras 2012). The table below captures the main findings of this study.

**[Insert Table II here]**

## **CONCLUSION**

Triggered by a new wave of routines studies emphasising the importance of artefacts in the unfolding of routines (Volkoff *et al.* 2007; Lyytinen *et al.* 2009; Runde *et al.* 2009; D'Adderio 2011; Leonardi 2011; Cacciatori 2012; Pentland *et al.* 2012), I have showed that legislative and IT artefacts are implicated in the transformation of police-prosecutor work routines in profoundly different ways. While legislative artefacts play a constitutive role, IT artefacts serve a regulative function which enforces a newly-programmed sequence of steps and isomorphically maps onto the reciprocal interdependencies between police and prosecutors albeit in a more simplified manner. In addition, the regulative function encompasses both structuring and agentic properties, the former standardising human interactions across highly selective procedures (e.g., "case request", "consultation", "pre-charging decision"), the latter automating the information acquisition process across the police-prosecutor interface. I submit that it is beneficial to unpack the structuring and agentic properties

which IT artefacts embody to broaden our understanding of technology beyond the user interface. Since the agentic properties of technology entail a one-to-one mapping with the underlying interface protocols, a more pronounced level of information (or technological) automation is bound to emerge from the design of dynamic interfaces that synchronise the information flows between loosely-coupled systems. Thus, IT artefacts have emergent properties of their own as a result of their designed structure.

In this paper, I have studied an instance of structural transformation in the making that breaks up the diachronic process of legislation-induced technological change and technology-driven legislative change into three analytical stages, namely, emergence-interplay-outcome (Cf. Archer 1995: 168). By charting how legislative and IT artefacts develop and change over time, I have endeavoured to unpack the linkages between the two and study the way both types of artefacts are implicated in the transformation of work routines. My findings have two core theoretical implications. First, they show that routines have a multi-layered, stratified and relational ontology. Though routines scholars have finally converged on the idea that routines exist at multiple levels of analysis (Salvato and Rerup 2011; Pentland *et al.* 2012), they have not yet explained the relational character of organisational routines (Cf. Feldman and Rafaeli 2002; Pentland and Feldman 2005: 804; Turner and Rindova 2012: 35). My findings show that routines consist of bundles of relations between (formal) positions and artefacts that generate recognisable interaction patterns and regulate them accordingly. Furthermore, routines encompass two distinct layers, namely the deep and surface layer. The deep layer is the bundle of internal and external relations between artefacts and (formal) positions. The surface layer is the nested interaction pattern. Even though the surface layer is constantly changing, the deep layer is characterised by more stable bundles of relations. Second, my findings show that the emergent position-practice system does not presuppose the existence of IT artefacts, namely interfaces, CMSs, emails and structured data. Nevertheless, IT artefacts play a pivotal role because, once re-designed, they enforce a new sequence of steps onto pre-existing work practices (e.g., case request, consultation, pre-charge decision) by synchronising the information flows between the Police and the CPS systems. Therefore, IT artefacts play a dual role because they standardise prosecutors' work routines by

automatically transforming the outputs of the Police into the inputs of the CPS (and vice versa).

Rather than being static objects (Ulrich 1995; Baldwin and Clark 2000), IT artefacts in general and the Police-CPS interface in particular are dynamic objects (Hanseth and Lyytinen 2010; Yoo *et al.* 2010; Kallinikos *et al.* 2013a) that enable the synchronic communication between CMSs.

Since my study relies on zooming out on work routines for the sake of capturing patterns in variety, my study is not without limitations. Specifically, it disregards the overall plasticity of routines because it does not capture the nuances associated with the unfolding of daily practices. Thus, etic (or external) approaches fare comparatively worse than emic (or internal) approaches when it comes to unpacking the complexity of routines as situated practices. Zooming in on situated practices enables one to capture the variety, plasticity and complexity of routines which are otherwise lost when one embarks on an etic approach. For example, my etic approach has sacrificed an enormous amount of detail pertaining to workarounds, the way consultations are timetabled across different police forces, the tensions characterising the implementation of Statutory Charging, etc. Rather than adding yet another study that unravels the intricacies of micro processes from a social practice perspective, my study attempts to capture patterns in variety which admittedly are more difficult to seize if one adopts an approach based on situated practices. By foregrounding technological interactions across several sites, my study responds to calls for further research that contextualises the IT artefact outside a single setting (Cf. Currie 2012: 240; Akhlaghpour *et al.* 2013). Given that the agentic and structuring properties of IT artefacts do not capture the universe of structural properties emerging across sites (Runde 1988) and considering that, at the very bottom, IT artefacts are bundles of internally-related structured data that expand the space of possibilities (Kallinikos 2006; Aaltonen and Tempini 2014), future research should endeavour to unpack their structural emergent properties. For example, through higher-levels of connectivity, IT artefacts can interpenetrate, criss-cross and overlap each other. They can even proliferate and become larger “data pools” that acquire new and unprecedented properties (Kallinikos *et al.* 2013a; Aaltonen and Tempini 2014).

As well as theoretical implications, my study has implications for practice. The introduction of the two-way interface and the ensuing higher levels of automation have opened up the space of

possibilities by making prosecutor and police work more distributed and no longer geographically-tied to a specific location as digital technologies pierce deep down into “the invisible, microscopic texture of things” (Kallinikos 2006: 6), thus transcending space-time constraints. Yet, ensuring that data travels across disparate criminal justice organisations in near-real time has turned out to be a challenging endeavour not least because it requires shared data standards and higher-levels of interoperability. This, in turn, explains why automating criminal justice is a complex and time-consuming undertaking that calls for cross-party organisations that oversee the design and implementation of data standards in a joined-up fashion. Not only does the full-blown automation of police-prosecutor systems call for joined-up collaboration. It also requires designers who are fluent in the language of legislation and able to grasp the logics underpinning legislative transformations.

## **NOTES**

1. Please note that my empirical unit of analysis is the Statutory Charging scheme while my theoretical unit of analysis is the transformation of police-prosecutor relations. The distinction between data and theoretical categories informing Table I mirrors this dual conception of unit of analysis and shows how I moved from empirical data to higher levels of conceptual abstraction. I wish to thank an anonymous reviewer for drawing my attention to this issue.
2. I wish to thank an anonymous reviewer for drawing my attention to the critical realist literature on diachrony and synchrony.

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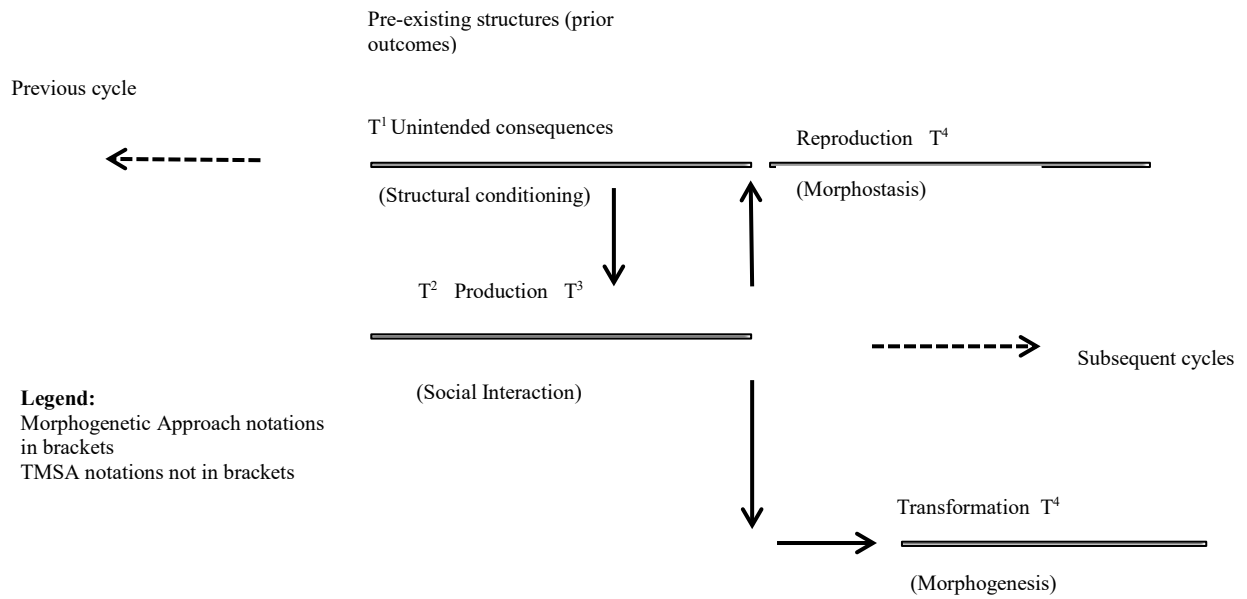
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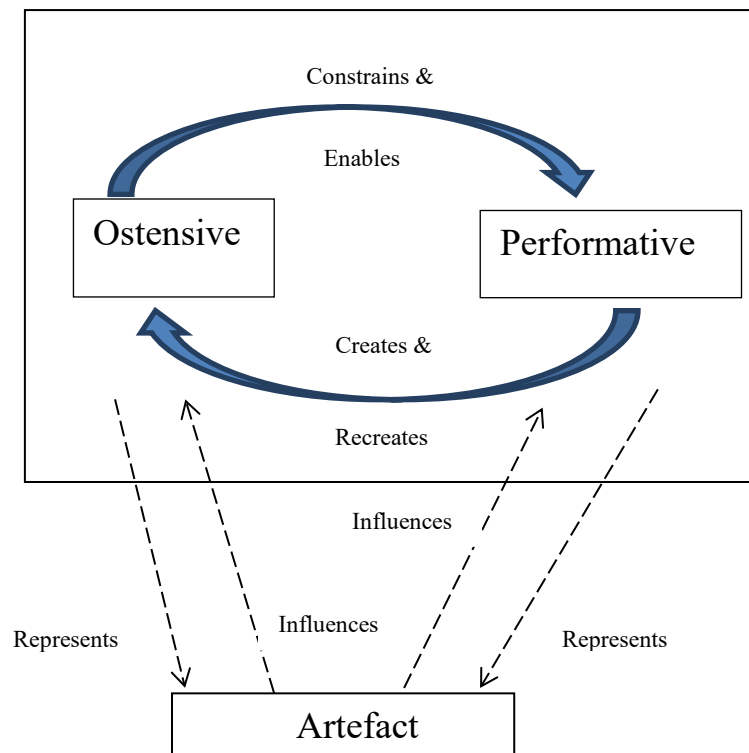
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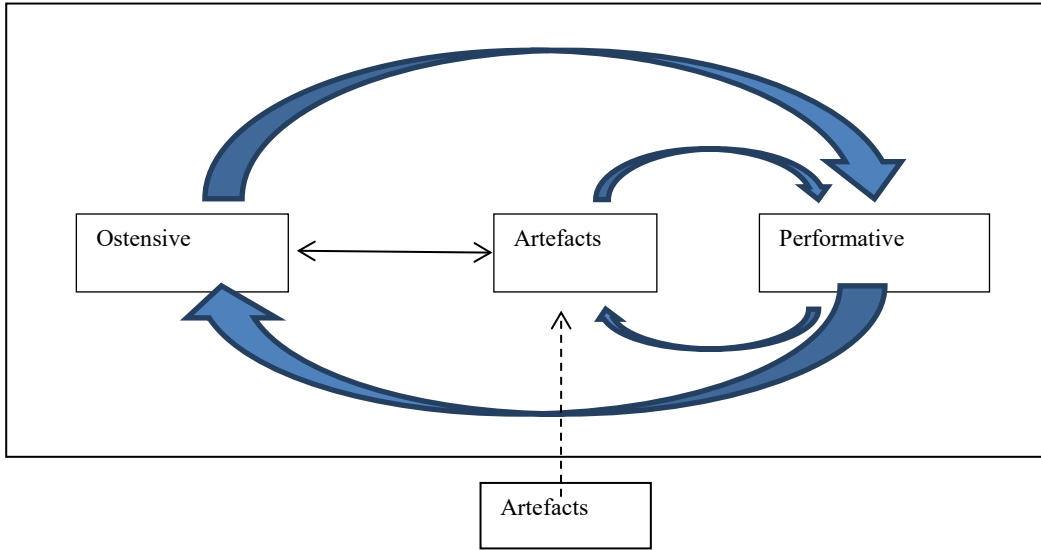


**Figure I:** The Transformational Model of Social Activity (Adapted from Bhaskar 1989 and Archer 1995)

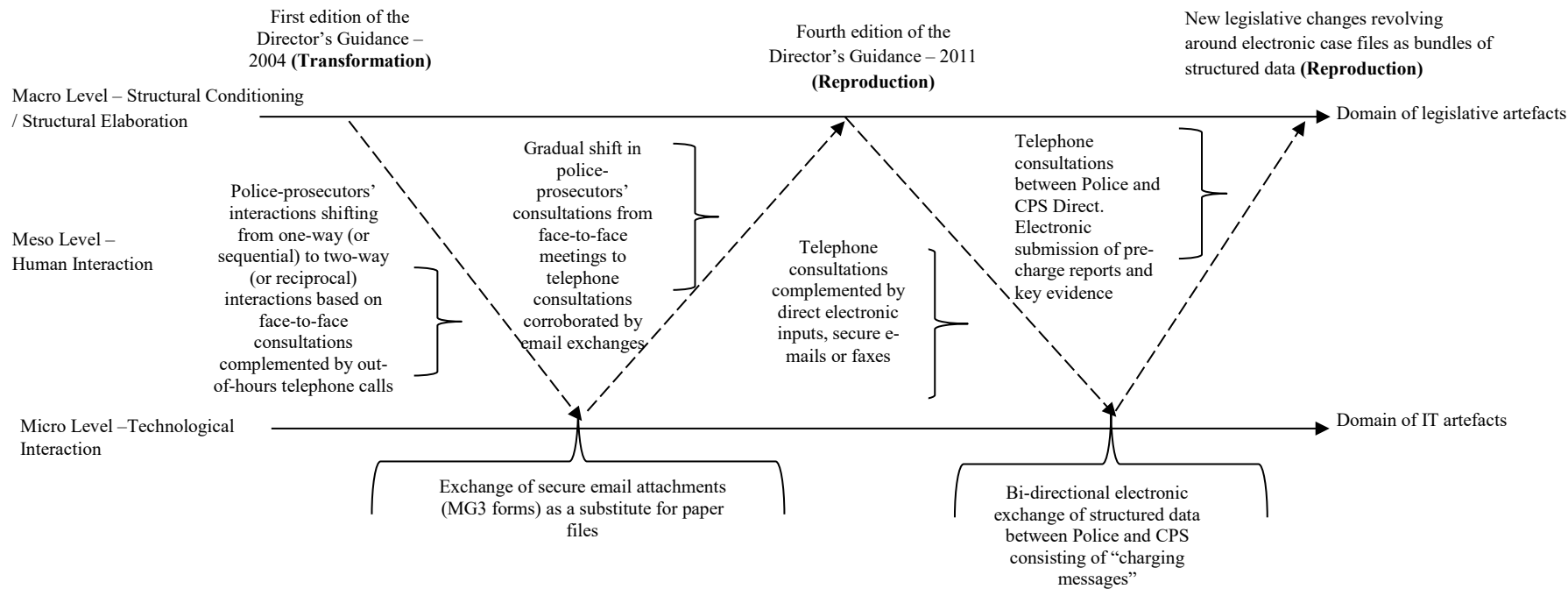


**Figure II:** Organisational routines and artefacts (Adapted from Pentland and Feldman 2005; 2008)





**Figure III:** Artefacts at the centre of routines (Adapted from D'Adderio 2008; 2011)



**Figure IV:** The interplay between legislative and IT artefacts (Adapted from Bhaskar 1989 - Archer 1995)

## LIST OF TABLES

Data categories (empirical material)	Theoretical categories	Aggregate theoretical categories
<p><u>Deployment of duty prosecutors</u>            Chief Crown Prosecutors will make arrangements for the deployment of Crown Prosecutors to act as Duty Prosecutors in locally agreed locations having regard to the local business and wherever possible on a <i>face-to-face basis</i>, or to be otherwise available for the purposes of fulfilling the CPS statutory duty. Duty Prosecutors will be available for <i>consultation</i> and will render such early legal advice and guidance, including where appropriate the making of charging decisions as will facilitate the efficient and effective preparation and disposal of criminal prosecutions (<i>DPP Guidance, 1<sup>st</sup> Edition</i>).</p> <p><u>MG3 form</u>            Where Crown Prosecutors receive a ‘<i>Report to Crown Prosecutor for a Charging Decision</i>’ (<i>MG3</i>)... it is the duty of the Crown Prosecutor to review the evidence as soon as is practicable and decide whether it is appropriate or not, at that stage, to charge the person with an offence or divert them from prosecution. Once a charging decision has been made, Crown Prosecutors will give written notice of the decision by completing the second part of the <i>Report to Crown Prosecutor for a Charging Decision (MG3)</i> which will be provided to an officer involved in the investigation of the offence. A copy will be retained by the Crown Prosecutor (<i>DPP Guidance, 1<sup>st</sup> Edition</i>)</p>	<p>Emergence of locally-deployed duty prosecutors to engage in <i>face-to-face consultations</i> with police officers with the use of <i>Manual of Guidance 3 (MG3) forms</i>. (theme a)</p>	<p><i>Emergence</i> of a new position-practice system revolving around <i>reciprocal interdependencies</i> between Police and CPS. Legislation as <i>constitutive</i> of a new and relatively-enduring structural order (this aggregate category encompasses themes a, b, c)</p>

<p><u>CPS Direct</u>  CPS lawyers only effectively work 9 to 5 <i>so out of those office hours we now provide a 24-hour coverage</i>; we have an organisation called CPS Direct which involves CPS lawyers working from home covering the <i>out of hours-time</i>. So CPS lawyers would work for example from 6 in the evening ‘till 9 in the morning to provide that cover. So when they have arrested a suspect and want a charge decision, police forces <i>call</i> a central telephone number and some IT support routes the <i>call</i> to the CPS Direct lawyer who is available to take the <i>call</i> and the police would consult the CPS Direct lawyer and the CPS Direct lawyer makes the decision as to the charge. <i>(District Crown Prosecutor)</i></p> <p><u>Threshold Test</u>  Where the required evidential material is not available, the Crown Prosecutor will assess the case against the <i>Threshold Test</i> set out below. This should be noted on the MG3 and a review date for a Full Code Test agreed as part of the <i>action plan</i>. Subsequently, upon receipt of a <i>Report to Crown Prosecutor for a Charging Decision (MG3)</i> accompanied by the information required in accordance with this Guidance, the Crown Prosecutor will review the case in accordance with the Full Test under the Code for Crown Prosecutors before deciding whether it is appropriate or not to continue with the offences charged or prefer additional or alternative charges. <i>(DPP Guidance, 1<sup>st</sup> Edition)</i></p>	<p>Face-to-face consultations to be complemented by <i>out-of-hours telephone calls</i> (theme b)</p> <p><i>Threshold test</i> as the context for further rounds of interactions between duty prosecutors and police officers based on the formulation of an <i>action plan</i> noted on the <i>MG3</i> (theme c)</p>	
<p><u>Police-CPS interactions in the areas using the one-way interface</u>  The charging process has shifted from pre-statutory charging to statutory charging. Now, it is a duty for the police to request a <i>consultation</i> which is binding. When</p>		

<p>statutory charging was first instituted it was by and large face-to-face with the exception of CPS Direct out-of-hours service. Now, the consultation gets initiated by a <i>phone call</i> which is routed by our call routing system. The big difference is that now we have the ability to manage a pool of prosecutors who are working remotely rather than being located on a specific site. (<i>Business Consultant</i>)</p> <p>I receive the police MG3 with the summary of their events. The MG3 has the basic details of the suspect (surname, forename, date of birth, ethnicity, proposed charges). And then on page two a brief summary of the circumstances of the case. If it is a <i>very serious case</i>, I schedule a <i>face-to-face appointment (or consultation)</i>. Basically what happens is that once the police booked an appointment, we have an <i>email inbox</i> where the <i>email of this MG3 is sent through</i>. On the day of the appointment, I will put the MG3 on the CMS system which allows the Duty Prosecutor to read it before the Officer In the Case (OIC) comes in. We <i>electronically transfer</i> the document (MG3) from the <i>email inbox</i> into the CMS to allow the duty prosecutor to take a proactive approach. (<i>Administrator</i>)</p> <p><u>Police-CPS interactions in the areas using the two-way interface</u></p> <p>We have designed a two-way link to be able to fully support the statutory charging process. It basically reflects the procedure using the MG3 and what we have done we have designed three new messages... On a two-way-interface site, the police send us the information electronically and that prompts the registration of the case. They then telephone the CPS duty prosecutor on site to start the <i>consultation</i> process.</p>	<p><i>Telephone or face-to-face consultations</i> between police and duty prosecutors corroborated by <i>secure e-mails</i> (theme d)</p>	<p>Technology as <i>regulating</i> a pre-existing interaction order based on face-to-face or remote consultations. Technology as <i>structuring</i> this pre-existing interaction order by enforcing a newly-programmed sequence of steps (i.e., case request, consultation, pre-charge decision) on prosecutors. Technology as <i>automating</i> police-prosecutor routines by embedding an <i>interactive loop</i> that generates actions with little or no human intervention. <i>Structuring</i> properties and <i>automating/agentive</i> properties as part of the <i>regulative</i> function that technology serves (this aggregate category encompasses themes d, e)</p>
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<p>The duty prosecutor goes through the case and makes a <i>decision</i> which is sent back to the police systems. The CPS response goes back to the police systems as <i>structured information</i> and populates their systems <i>automatically</i> with the action plan. That gives the police the ability from within their systems to immediately start to manage the actions that have been given to them and, depending on those actions, gives the police system the opportunity to start <i>automating</i> their tasks (CMS Design Authority Team Member)</p> <p><i>Structured data</i> are well-defined inputs and outputs across systems. They do not have free-form text and unstructured images, objects, etc. So you start with the Pre-Charge Decision Request (CM1) when the case is <i>automatically</i> registered in the system. Then the CMS prompts a <i>Case Request</i> to pull up the case. Then it prompts a <i>Consultation</i> when the Duty Prosecutor must consult Police Officers. Then it prompts the <i>Pre-Charge Decision (CM2) response</i> which means that the Duty Prosecutor has to do a full file review and decide what the charge is (<i>Business Consultant</i>)</p> <p>Creating files and transmitting them back and forth is very simple from an IT perspective. But there is more than that. Whilst there is information being transmitted back and forth, the information is fed directly into the CMS by an <i>ending loop</i> and the actual feeding of that information implicates that the system is generating actions that create an <i>interactive loop</i> through the agencies and the communication between them. For example, PCD (Pre-Charge Decision Request) coming from the police to the CPS actually creates the case in the CPS system. Going the other way, where the decision made by the CPS to charge an alternative offence creates that offence in the police CMS and no</p>	<p><i>Proceduralisation</i> of prosecutors' work across highly-selective tasks (i.e., <i>case request, consultation, pre-charge decision</i>). <i>Automated</i> exchanges of <i>structured data</i> (i.e., CM1, CM2, etc.) between Police-CPS systems with little or no human intervention. IT artefacts (e.g., interface, CMSs, etc.) embedding an <i>interactive loop</i> (theme e)</p>	
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further action of the previous offence ( <i>Business Consultant</i> )		
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**Table I:** Summary of key themes

		<b>Agent (or Actor) 2</b>	
		<b>Human</b>	<b>Artefact</b>
<b>Agent (or Actor) 1</b>	<b>Human</b>	Police officer to duty prosecutor interaction: shifts from sequential to reciprocal interdependence thanks to Statutory Charging	Human to legislative artefact relations: internal and necessary relations Human to IT artefact relations: external and contingent relations
	<b>Artefact</b>	Legislative artefact to human relation: constitutive of a new structural order IT artefact to human relation: regulative of pre-existing interactions	Legislative to IT artefact interactions (and vice versa): diachronic interactions mediated by formal positions IT artefact to IT artefact interactions: synchronic interactions embedding and embedded within work practices through increasing levels of information automation

**Table II:** Summary of key findings

**APPENDIX**

<b>Role</b>	<b>Date</b>	<b>Duration (hours)</b>	<b>Location</b>
CMS Design Authority Team Member (CPS)	24/05/2006	4	CPS Headquarters, London
Business Consultant, CMS Team (CPS)	24/05/2006	2	CPS Headquarters, London
Duty Prosecutor	03/07/2006	2	Croydon Police Station, London
2 Duty Prosecutors/1 Administrator	10/10/2006	4	Charing Cross Police Station, London
CMS Design Authority Team Member (CPS)	10/10/2006	2	Charing Cross Police Station, London
DC (Detective Constable)	24/10/2006	2	Sutton Police Station, London
Duty Prosecutor	24/10/2006	2	Sutton Police Station, London



CJIT Benefits Manager	08/12/2006	2	CPS Headquarters, London
Business Architect	13/12/2006	2	Police Information Technology Organisation, London
Head of Business Change (NSPIS Custody and Case Preparation)	14/12/2006	2	Police Information Technology Organisation, London
Detective Inspector, Case Worker Manager, NSPIS Administrator and Head of Information Systems (Focus Group)	22/01/2007	3	Scunthorpe (Yorkshire and Humberside)
District Crown Prosecutor, CPS Performance Manager, Detective Inspectors (Focus Group)	22/01/2007	3	Scunthorpe (Yorkshire and Humberside)
CMS Design Authority Team Members, Business Consultants (Focus Group)	26/03/2007	4	CPS Headquarters, London
CMS Design Authority Team Member (CPS)	13/04/2007	2	Bologna
Business Consultant, CMS Team (CPS)	13/04/2007	2	Bologna
Duty Prosecutor	14/04/2007	2	Bologna

CMS Design Authority Team Member (CPS)	12/10/2007	2	Bologna
Duty Prosecutor	12/10/2007	2	Bologna
Business Consultant, CMS Team (CPS)	13/10/2007	2	Bologna
Duty Prosecutor	09/07/2009	2	Croydon Police Station, London
Business Consultant, CMS Team (CPS)	21/07/2009	2	London
Business Consultant, CMS Team (CPS)	07/08/2009	2	London
Business Consultant, CMS Team (CPS)	02/09/2009	2	London
CMS Design Authority Team Members, Business Consultants (Focus Group)	28/10/2009	3	CPS Headquarters, London
CMS Design Authority Team Members, Business Consultants (Focus Group)	23/04/2010	3	CPS Headquarters, London
CMS Design Authority Team Member (CPS)	14/12/2010	2	CPS Headquarters, London
Assistant Chief Constable, Chief Superintended, Business Consultants (Focus Group)	28/02/2011	2	West Midlands Police, Birmingham
Business Consultant, CMS Team (CPS)	06/05/2011	2	London

CJS Efficiency Programme Manager, Head of Crime (HMCS), Deputy Chief Constable, Business Consultant (Focus Group)	16/12/2011	3	CPS Headquarters, London
CMS Design Authority Team Members, Business Consultants (Focus Group)	13/01/2012	4	CPS Headquarters, London

**Appendix I:** List of informants and fieldwork activities