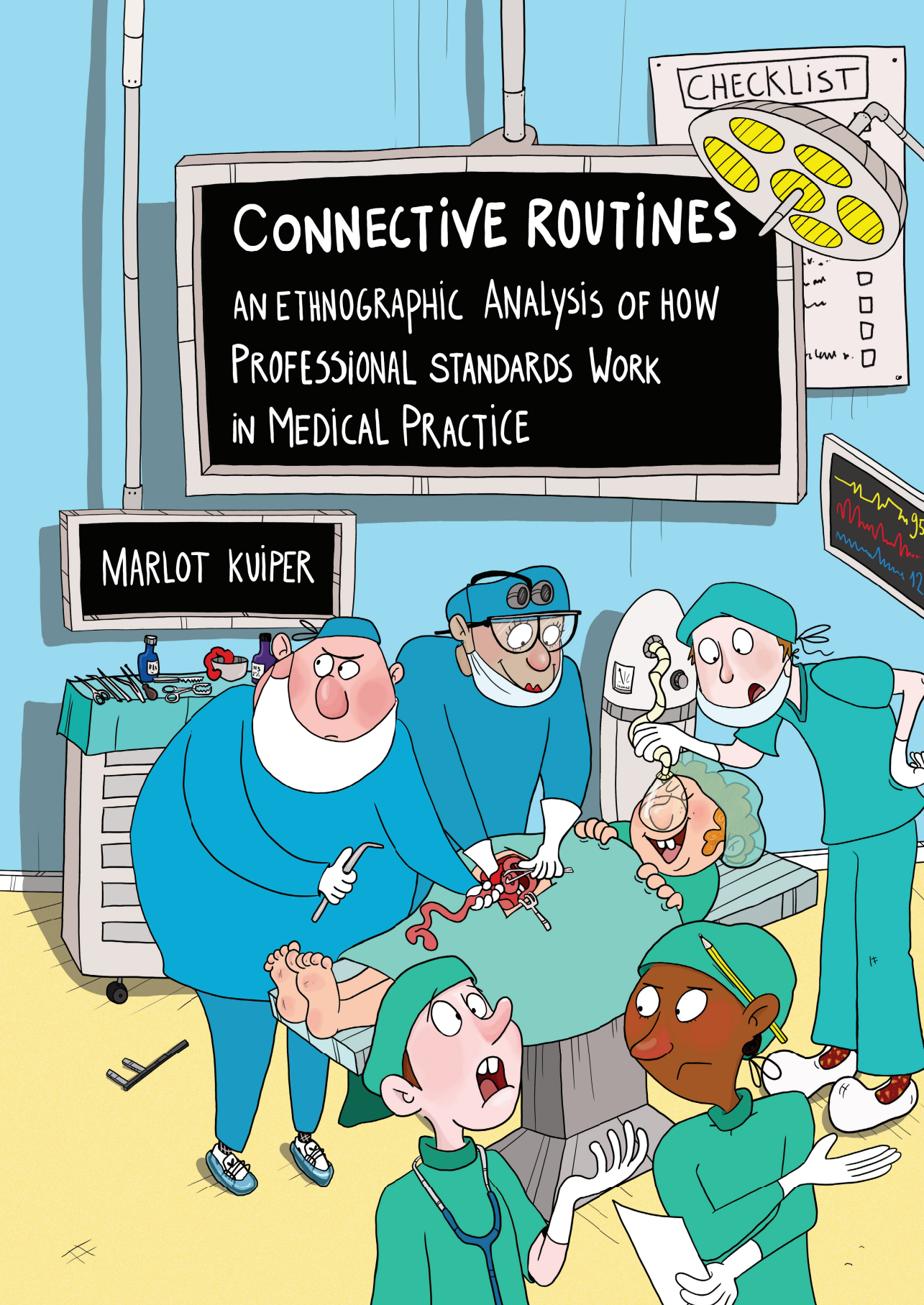
CHECKLIST
CONNECTIVE ROUTINES
AN ETHNOGRAPHIC ANALYSIS OF HOW PROFESSIONAL STANDARDS WORK IN MEDICAL PRACTICE
MARLOT KUIPER

Connective Routines:
An Ethnographic Analysis of how Professional Standards Work in Medical Practice

Marlot Kuiper

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Connective Routines

An Ethnographic Analysis of how Professional Standards Work in Medical Practice

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(met een samenvatting in het Nederlands)

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“Wijsheid begint met verwondering” - Socrates

voor opa Van Dooijeweert

Preface

It is 27 December 2018. As I am eager to finish my dissertation, knowing that some courses I have to teach will start soon, I find myself frantically working on its final chapters the day after Christmas. Combining teaching and finishing a PhD thesis is quite a 'thing', I must say. I didn't have such a good night sleep as my stomach was aching, but as I woke up feeling a bit better, I sat myself behind my laptop. Then out of nowhere, a fierce pain runs through my stomach. I didn't eat *that* much with Christmas, did I?! As the pain quickly intensifies, I decide to lay down on the couch.

It is 6pm. I enter the general practice centre next to St. Sebastian's hospital[1]. As the pain had become almost unbearable, I had started to throw up, upon which the medical staff invited me to come in immediately when I called in. The GP examines my stomach, and after only a few minutes he says: "I'm going to move you one door further" [St. Sebastian's emergency department] "I think you have an appendicitis."

After almost five hours of incredible pain, various examinations like blood tests, an ultrasound scan, a CT scan, and a lot of waiting, I enter St. Sebastian's surgery department around 11.00pm. This time not by walking, but in a hospital bed. I never meant to take 'participant observation' this far…

When I enter the operating theatre, I immediately recognize the anaesthesiologist and nurse anaesthetist from my fieldwork. As my ethnographic fieldwork has been a while ago, and I look rather different in a patient's suit with a pale face, I quickly tell them who I am and about the research I've been conducting. Immediately they joke that they "have to do the checklist very thorough then!" And that's what they do. The whole team gathers around the surgical table, with the anaesthesiologist holding the checklist in his hands. They cover all items one by one, and immediately tick them off on the piece of paper. From there, I only remember that I tried to count until ten.

About two hours later, I wake up. Without appendix. I remember the first feeling was 'relief' as the unbearable pain was gone. Yet, this pain was replaced by pain caused by the surgery, and recovery would take time.

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1 All names in this dissertation are fictive. For more information about the research sites and their fictive names, see chapter 4

With hindsight, although it is an experience I would have loved to miss, I do think this 'patient's perspective' has been a valuable addition to my research experience. Being a patient myself brought me valuable insights into what it is like to undergo surgery, and more specifically, how safety procedures are experienced by patients. You literally give yourself and your body over to the surgical team. The way they approach you, and the way they go about safety procedures really matters for trusting the team.

With this dissertation, I hope to take the readers to the surgical department themselves, to 'see' how checklists work in medical practice. However, I also aim to offer more than that. The empirical accounts described in this PhD thesis do not stand on their own. At various moments, I zoom out to analyse these accounts and to make sense of the findings in terms of current academic debates from different fields. I aim to explain what we can learn practically and theoretically from 'checklists in surgical care' about 'standardization in professional services'.

In the first chapter of this dissertation, I will identify the research problem and explain why I emerged myself into surgery as a field of study. In chapter 2, I will discuss current academic debates about (the reconfiguration of) professional work and standardization. I will shed light upon different approaches to 'implementing' standards – and professionals' responses to such standards. In chapter 3, I work towards a research perspective to study how standards 'work'. Inspired by Routine Theory, I built an analytical framework that guides the three empirical chapters. The fourth chapter is about the design; I write about ethnography*ing*, and how I went about headwork, fieldwork, and textwork. Chapters 5,6 and 7 are the empirical chapters in which I present and interpret the findings. The final chapter 8 provides overarching conclusions, discussions and reflections. The various intermezzos throughout the dissertation provide additional reflections on the fieldwork, and my role as a researcher.

Marlot Kuiper,

January 2020

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Chapter 1

The challenge of working with checklists

In 2014, three-year-old toddler Carson Ayre made headlines in UK national newspapers because he survived a 'miracle operation'. Carson was born with an extremely rare condition in which his heart's chambers, veins and arteries which carry the blood were the wrong way around. A team of experts worked for about ten hours to perform the complex surgery in which all the veins and arteries were 're-routed'. After this radical intervention, the young boy's heart was exposed through a hole in his chest for five days to reduce the swelling. After two weeks of recovery, Carson went home with his mum and dad with a bright future ahead of him.

In 2007, a neurosurgeon with more than twenty years of experience performed an emergency operation on an eighty-six-year-old patient to treat the bleeding in his brain. The hospital where the surgery took place, a teaching hospital in Rhode Island USA, was considered the best hospital of the state. The surgeon did not check which side of the patient's brain was to be operated in the medical form, assuring he would remember it. Unfortunately, he did not. The patient died a week later. The incident marked the third wrong-side surgery error in the hospital's neurosurgery unit in six years.[2]

The stories above paint two completely contradictory pictures of surgical care. The first is a very optimistic one; it tells about continuous developments in surgical care that lead to ground-breaking surgeries. However, astonishment with so called 'miracle operations' like Carson Ayre's is often overshadowed by surgical mistakes. The second story is just one of many: "Surgeon accused of removing kidney from wrong patient" (Cohen, 2016, August 11),"Oops, wrong patient, wrong operation, missing clamp" (Montgomery, 2016, May 6), "Surgeon: 'I amputated the wrong leg'" (Schalkwijk, 2014, April 4). These illustrative headlines from respectively the US, Canada and the Netherlands all reflect failures that had severe consequences. Failures that are often meaningfully labelled 'preventable medical errors' (Kohn, Corrigan, & Donaldson, 1999; McConnell, Fargen, & Mocco, 2012). A field that is capable of performing innovative, complex, and life-saving surgeries, paradoxically enough damages its own reputation by making preventable mistakes like wrong-side surgery.

The past few years, there have been many attempts to do something about failures in care delivery. The American Institute of Medicine's (IOM) report *To Err is human* (Kohn, Corrigan, & Donaldson, 1999) instigated a worldwide

2 These introductory stories are based on Pleasance (2014) and NBC News (2007) respectively.

debate on patient safety and quality of service delivery. In the aftermath of its publication, standardization of practices was seen as one of the solutions (e.g. Rozich et al., 2004; Wachter, 2004). Standards were introduced throughout the healthcare domain to reduce unwanted variation in care delivery, and to make services more evidence based, safe, and efficient (Timmermans & Berg, 1997, 2003). Nowadays, there are many checklists, algorithms and guidelines that steer professional behaviour. Some scholars even speak of a 'proliferation' of standards (Parker & Lawton, 2000; Rycroft-Malone et al., 2008).

1.1 Reforming professional services

The attempts to reform care delivery do not stand on their own. They are directly linked to broader trends in which public professional organisations find themselves confronted with various pressures that force them to adapt and improve their services.

First of all, service delivery has become more complex. In dealing with compound multifaceted cases, the need for far-reaching specialization goes hand in hand with the need for multidisciplinary action (Meads et al., 2008; Noordegraaf, 2016). Complex multi-problem cases in law for example, increasingly require judges to possess specialized knowledge about both the law and new types of complex cases like cybercrime, and seek collaboration with probation services, ICT specialists and so on.

Secondly, new technologies create new possibilities, but also pose new challenges. Technology is rapidly transforming professional work, for example with regard to accessibility and registration of information. ICT technologies enable practitioners to share client information, but this poses challenges for their privacy. ICT also allows for continues monitoring and assessment of practices at an organisation level (Broadbent & Laughlin, 2005; Eriksson-Zetterquist et al., 2009).

Thirdly, clients and patients have become more knowledgeable and critical and claim so called 'co-production' of treatment. They are becoming 'customers' rather than passive recipients (Evetts, 2011; Lachman, 2009). Before visiting the GP, patients already 'Googled' their symptoms, and based on the information that is 'out there' they have specific requests for their doctor, for example concerning the prescription of antibiotics.

Fourthly, publicly exposed risks and incidents prompted both a political and public demand for more transparency and accountability (Millenson, 2002; Weick & Sutcliffe, 2003). Hospitals have to publicly account for mistakes that were made during hospitalization. Recently, this became reality in the form of a 'public lecture' in which both the responsible doctor and a terminally ill patient told their side of the story about what went wrong (Van den Brink, 2018, April 13).

Last but not least, these increasingly complex cases have to be treated in an environment characterised by budgetary restraint. The steadily mounting costs of public service delivery – led by the healthcare sector – caused an untenable situation. Changing government policies, fuelled by the realm of the New Public Management, aimed at reforming the public sector of Western countries into a more business-like, efficient system from the 1990s onwards (Ferlie, Lynn, & Pollitt, 2009; Hood, 1991; Pollitt & Bouckaert, 2011). For example, the introduction of regulated market competition in the Dutch health care sector in 2006 put more emphasis on competition among care providers and customer choice (B. van den Berg et al., 2008), and schools and universities are increasingly funded by governments based on their performance (Versleijen et al., 2007).

In short, in public professional service delivery there is an urgent call for quality, efficiency and collaboration, due to external pressures such as cost constraints, client demands and risks. These forces urge organisations to deliver innovative services. With the introduction of a business-like logic in public domains, the standardization of practices to make them more objective, rational, and uniform became an influential mechanism to reform professional service delivery (Timmermans & Almeling, 2009; Timmermans & Berg, 1997, 2003; Zuiderent-Jerak, 2007).

This study specifically focuses on the standardization of practices in surgical care for two main reasons. Firstly, professionals working in surgical care are considered the 'archetypical' professionals (see e.g. Etzioni, 1969; Fox, 1992; Freidson, 1988). Characteristic professional values like autonomy and empathy are argued to be most institutionalized in this specific domain (e.g. Jacob, 2017; more in-depth notes on professionalism can be found in chapter 2). Secondly, the healthcare domain is considered the precursor in standardizing professional work. The tendency to implement more and more standards in healthcare that are based on scientific evidence is firmly grounded in the scholarly literature (Grimshaw et al., 1995; Oertle & Bal, 2010; Parker & Lawton, 2000; Rycroft-

Malone et al., 2008; Timmermans & Berg, 2003). For critical care delivery – like surgery – standards like checklists are considered particularly relevant, as the complexity of medical conditions has significantly increased in this environment (Hales & Pronovost, 2006). The specific standard that is the main focus of this dissertation, the Surgical Safety Checklist, is considered the most widely used and cited checklist worldwide (Clay-Williams & Colligan, 2015; Sivathasan et al., 2010).

Therefore, it is expected that in this specific domain, the dynamics between a professional logic encompassing notions like autonomy, partnership, and trust, and an organisational logic encompassing notions like managerialism, standardization, and performance assessment become most visible (Evetts, 2011). Given that medicine is widely recognized as a profession with distinctive characteristics, the changes that have occurred in this domain are likely to be indicative of what is also happening in professional organisations in other fields like law and education. Hence, as a researcher interested in standardization of professional work, I selected surgical care as a key case through which such processes could be viewed and explicated best (Patton, 2002).

1.2 Standardization in surgical care as case

In surgical care delivery, there has been an explicit shift towards standardization, since the authors of the IOM (1999) report *To Err is Human* claimed that the number of adverse events[3] was especially high around surgical procedures. In recent years, different groups have therefore investigated and implemented new procedures, specifically aimed at preventing mistakes and improving services in surgical care. The World Health Organisation for example launched its 'Safe Surgery Saves Lives' campaign in January 2007. The main goal of the campaign was to improve the safety of surgical care around the world, by finding ways to decrease unwanted variety in surgical care and improve adherence to safety practices (Seme et al., 2010; WHO, 2008). One of the final outcomes of this program, was the Surgical Safety Checklist (SSC). This checklist consists of a series checks that have to be performed right before the delivery of anaesthesia, before incision, and before the patient leaves the operating theatre.

3 An event, preventable or non-preventable, that caused harm to a patient as a result of medical care.

The promises of introducing a checklist in surgical care attracted global interest for multiple reasons. First of all, a pilot study performed in eight different hospitals worldwide had demonstrated that use of the checklist had significantly dropped mortality and complication rates – the checklist would thus improve safety and outcomes (Haynes et al., 2009) Secondly, the checklist was presented as a simple and cheap intervention. Surgeon Atul Gawande even heralded checklists to be "the biggest clinical invention in thirty years" in his best-selling book *the Checklist Manifesto* (2009). Thirdly, implementing a checklist would generate substantial cost savings (Seme et al., 2010). And last but not least, a checklist would improve teamwork and communication in multidisciplinary surgical teams (Bliss et al., 2012). Recent numbers show that this simple but ground-breaking solution to solve surgical problems and improve care delivery over the years has been implemented in more than 4000 institutions around the globe (Aveling et al., 2015; Pugel et al., 2015; Sendlhofer et al., 2015).

I.3 The implementation problem

However, about a decade after the first introduction of safety checklists in the surgical domain, this idea of standardization has been pigeonholed the "Saga of high hopes followed by dashed expectations" and even the "Boulevard of broken dreams" (Urbach, 2015). Disappointing implementation rates have again prompted headlines that emphasize failure: "Not all surgeons follow checklists that prevent bad mistakes" (Wilson, 2016, May 26). Despite all good intentions, the surgical domain seems to be stuck with what is often called an 'implementation problem': "Eminently sensible quality and safety interventions—promoted by opinion leaders, endorsed by health quality organisations, and supported by impressive results in promising early studies—too frequently fail to perform as expected when they are introduced into routine care" (Urbach, 2015, p. 215).

The next phase in the patient safety debate thus moved from solving mistakes *as such* towards 'solving implementation problems'. From the idea that checklists are simple and cheap solutions to transform professional practice, flowed instrumental implementation strategies that focus on optimizing the implementation process. In implementing 'simple' checklists in health care, the comparison with implementing standards in product manufacturing sectors like the food and automobile industry is no exception (Gawande, 2007, 2009; Nicolay et al., 2012). However, there is a world of difference between manufacturing

the newest Audi or Mercedes and operating patients, not in the least because of varying patient conditions (Hales & Pronovost, 2006).

In spite of that, the dominant conviction in the health care domain, has been – and partly still is – that "effective implementation"; an adequate preparation and comprehensible information provision to its intentional users, will lead to the envisioned results: rule compliant behaviour (Bliss et al., 2012; Conley et al., 2011; Haynes et al., 2009; McLachlan, 2019). Consequently, if implementation does not lead to compliant behaviour, the explanation is searched for in either the characteristics of the tool itself – for example a lack of efficiency or evidence, or in the process of implementation – for example a lack of preparation, training or information dissemination. Or as Gawande puts it: "The checklist works – as long as it is implemented well" (Gawande quoted by Anthes, 2015, p. 517).

The past decade, a new booming field of implementation science has emerged.[4] Many implementation theories and frameworks have been published to help promote effective implementation. These theories overlap considerably, while terminology and definitions are not consistent (Zuiderent-Jerak, 2007). There have been multiple attempts to put all the implementation theories together and construct one comprehensive integrated framework (see e.g. Damschroder et al., 2009; Francke, Smit, de Veer, & Mistiaen, 2008). Still, these attempts remain exhaustive lists of 'determinants', 'factors', and 'variables' influencing implementation. Implementation is assumed to progress in a linear way (Melo & Bishop, 2020; Bauer, Damschroder, Hagedorn, Smith, & Kilbourne, 2015) . Moreover, these factors are seen as equations; the sum of all the 'facilitators' minus the 'barriers' should lead to successful implementation (Zuiderent-Jerak, 2007).

Increasingly, scholars who have identified barriers and facilitators for implementation develop 'lessons for implementers' that should make the implementation process more effective and successful. Identified lessons for example suggest that; "Management should be seen to be involved and supportive" and "A system that holds people accountable for improper behaviour or use of the initiative should be considered" (Russ et al., 2015, p.89). These ambitious lessons however, with all their good intentions, leave professionals in the field with vital

4 In 2006, the first issue of *Implementation Science* was published, a journal with the specific aim "to publish research relevant to the scientific study of methods to promote the uptake of research findings into routine healthcare in clinical, organizational or policy contexts." (Implementation Science, 2019, n.d.)

questions. These lessons do not provide 'implementers', professionals, (or actors who consider themselves as both), with any knowledge on how to do this; *how* to involve supportive key actors, or *how* to develop workable accountability regimes, and even *who* then should be responsible for developing such accountability regimes. The issue with the "simple checklist" story is the assumption that a technical solution (a checklist) can solve a social and relational problem (see also Bosk, Dixon-Woods, Goeschel, & Pronovost, 2009; Mahajan, 2011). Solving this 'implementation problem' appears – ironically stated – a bit more complicated.

1.4 The professional as victim or strategic operator?

The implementation of new standards has not only been thoroughly studied in the field of implementation science that originates in the health care domain. The implementation of new standards has also gained considerable attention from scholars in the fields of organisation science and sociology that study professional occupations. In contrast with implementation scientists that heralded checklists to be a simple intervention, sociologists studying the professions and professional work have mostly emphasized that standards are complex social interventions. Standardization prompts fundamental transitions that affect the very nature, not only of professional work itself, but also of professional knowledge, identity, the way professionals are organised, and the ways in which they are held accountable (Evetts, 2011; Freidson, 2001; Noordegraaf, Schaufeli, & Schneider, 2015; Noordegraaf, 2016).

Initially, from a sociological perspective implementing formal standards was seen as a means to further professionalise. Standards drawn from scientific evidence would advance the overall professional authority of medicine. Besides, standards like guidelines and protocols are developed by professionals themselves. The assumption therefore was that with the implementation of new standards, professional values and privileges would be maintained, since physicians are in charge of deciding what counts as scientific evidence (Hafferty & Light, 1995; Timmermans & Kolker, 2004). However, where standards used to assist professionals in their decision making, standards got more and more prescriptive over time explicating how professionals should act. The literature on professional work subsequently illustrated how these standards are seized by external parties for the purposes of accountability and control (Timmermans, 2005). From this point on, studies evolved in two separate ways (Numerato et al., 2012).

On the one hand, there are claims of 'de-professionalisation'. Formal standards, as being the ultimate bureaucratic instrument; explicating what to do when and in what ways (Berg, Horstman, Plass, & Van Heusden, 2000), are considered an assault on professional power. Freidson for example stressed that values prominent in an ideal typical 'professional logic' are increasingly oppressed by a 'managerial logic' encompassing organisational values. He argued that the profession "is seriously weakened in the name of competition and efficiency" (Freidson, 2001, p.3; see also; Reay & Hinings, 2009). Others added to this by stating how the effects of the New Public Management turned professionals into 'occupational professionals' that face organisational control, as they are being held accountable to their self-developed 'bureaucratic' standards (Exworthy & Halford, 1999). In short, far-reaching standardization and hence outside control of such professional standards is considered challenging for professional autonomy and power.

On the other hand, there are claims that standards are not so much challenging professional autonomy – on the contrary, they are said to generate *possibilities* to further strengthen the position of professionals. From this perspective, a growing body of empirical research has focused on what professionals actively do to maintain or re-establish their obtained position. Actively resisting or reforming business-like standards to further professionals' interests is part of that (Borkowski & Allen, 2003; Currie et al., 2012; Ferlie et al., 2005; Micelotta & Washington, 2013). In short, outside control of professionals is considered an opportunity to advance professional autonomy and power.

Different research outlooks thus present professionals as either 'de-professionalised victims' that become suppressed by external control 'or strategic operators' that (re)take control over professional work (see also Gleeson & Knights, 2006).

1.5 Research perspective: Routines

Although these explanations from both implementation science and the sociology of organisations and professions are relevant to consider, there is something missing in these analyses. There is something more to it than "the tool was not good enough", "it's implementation was not good enough" (implementation science) or "professionals are helpless victims" or, the opposite "professionals

actively capture or resist standards to protect their position" (sociology of professions and organisations).

All the aforementioned perspectives depart from certain dichotomies, that naturally also result in dichotomous explanations. Although research projects conducted in the field of implementation science led to the identification of multiple valuable barriers and facilitators, there is a lack of understanding how these factors actually interrelate in practice. Scholars increasingly differentiate between 'individual' and 'system barriers' when it comes to standard implementation (see e.g. the overview of Grol & Wensing, 2004). It remains largely unknown however, how the dynamics between individual and system levels plays out in professional practice.

In Sociology of Professionalism literature, the contrast between occupations and organisations, and managers and professionals has sustained for a very long time (Noordegraaf, 2011). Conceptual dualisms between 'structure' and 'agency' are therefore firmly embedded (Gleeson & Knights, 2006, p.277-278). The professional as victim mainly reflects explanations that focus on structure, in terms of how the professional got subjected to governmental and organisational structures typified by 'managerialism' (Exworthy & Halford, 1999; Freidson, 2001). By contrast, the professional as 'strategic operator' emphasizes agency, in terms of how professionals construct meaning and identity through everyday practices (e.g. resisting or complying with standards), neglecting the institutional environments that form and constrain their work.

Yet, each of these analyses reduces analysis to one side of the coin, without explicitly bearing in mind the coin as a whole and considering the relationship between individuals and systems, or between structure and agency. Increasingly, professional services are studied by more dynamic and relational approaches that do not isolate one particular aspect, but analyse how aspects are interrelated (Noordegraaf, 2011). Contemporary research efforts aim to overcome the divide between 'organisations' and 'professionals', reflected in work on 'hybrid' and 'organised' professionalism (Evetts, 2016; Hendrikx & van Gestel, 2017; Kirkpatrick, 2016; McGivern, Currie, Ferlie, Fitzgerald, & Waring, 2015; Noordegraaf, 2011). Still, there is an urgent call to study on micro-level how professionals *within* organisational environments actually give shape to new standards in the everyday course of their work (Denis et al., 2015; Wallenburg et al., 2016; Waring & Bishop, 2013).

It is therefore important to rethink the implementation rhetoric and professional as victim or strategic agent antithesis, and search for new ways to conceptualize processes of standardization in healthcare. In this dissertation, I provide such a conceptualization by looking at professional routines.

Routines

Over several decades, a considerable body of research has been built up around the idea that routines are a crucial part of how organisations accomplish their tasks (Cohen et al., 1996; Cyert & March, 1963; March & Simon, 1958; Nelson & Winter, 1982). Routines were mostly associated with stability and inertia (Cyert & March, 1963; March & Simon, 1958; Nelson & Winter, Sidney, 1982), but a more recent and well-established perspective in the literature is based on the idea that routines are practices with internal dynamics that contribute to both stability *and* change in organisations (Feldman, 2000; Feldman & Pentland, 2003; Feldman, Pentland, D'Adderio, & Lazaric, 2016). From this perspective, routines are defined as "recognizable, repetitive patterns of interdependent action carried out by multiple actors" that structure work in organisations (Feldman et al., 2016, p. 505).

This 'routine dynamics' perspective is broadly grounded in the ideas of for example practice theory, situated action, Actor-Network Theory and sociomateriality (Parmigiani & Howard-Grenville, 2011). A practice lens is adopted by some organisational theorists to study "the everyday activity of organising" (Feldman & Orlikowski, 2011, p.1). Practice theory draws from the work of a number of social theorists (Bourdieu, 1990; Giddens, 1984), each of whom describes how everyday practices are accomplished, reinforced, or changed (Feldman & Orlikowski, 2011). The emphasis of a practice perspective on routines is therefore on the internal workings of specific routines in specific organisational contexts.

On the one hand, routines consist of abstract, generalized ideas of the routine, used to refer to a certain activity or justify what people do. These are the ostensive aspects.[5] On the other hand, routines consist of "actual performances by specific people, at specific times, in specific places" (Feldman & Pentland, 2003, p.94). These are the performative aspects. In other words, the ostensive dimension is the idea, the performative dimension is the behaviour. Further, artefacts are the

5 Because there can be multiple, varying versions of the ostensive dimension, I refer to these in the plural

material aspects that enable or constrain elements of routines. Artefacts can take on various different forms, such as written text, software systems, furniture or the physical setting. Many artefacts though, are material representations of a certain rule to steer a routine.

Taking the example of the Surgical Safety Checklist, the ostensive aspects are how people talk about it, and what they think the checklist routine is or should be. The performative aspect is the actual performance of the checklist by the routine participants; it is what they do. The artefactual representation is the material form of the checklist rule, for example on paper, in poster format, or embedded in a software system.

This conceptualization of routines as dynamic systems – rather than static entities – also implies that artefacts (no matter how carefully designed) not automatically generate the prescribed patterns of action (Pentland and Feldman 2008). For example, with the introduction of new standards the 'implementers' design the artefact to model the ostensive aspect of the routine, and shape the performances in a for them desirable way. Still, when routine participants actually start working with the artefact, the performances are not necessarily what the implementers had in mind (ibid). One of the key ideas of routine dynamics is that routines emerge through their own enactment and in relation to other practices.

A perspective of professional routines thus provides a more relational and contextual understanding of what actually happens when new standards are introduced in professional working contexts. Looking at professional routines provides valuable opportunities to go beyond the so called 'implementation problem'. It allows for examining actual patterns of action and understandings – not just the proposed patterns reflected in artefacts.

Since the concept of routines is the most micro-level concept among the collective level concepts (Becker, 2008), it enables to capture the dynamics *in-between* the individual and the system level. Routines encompass both structure *and* agency. This dissertation therefore departs from the assumption that the creation of new routines – e.g. the routine-uptake of a checklist – is a constant, relational, and dynamic process.

Altogether, in this dissertation the point of departure is not "making standards work" nor "working against standards". Rather, a routine perspective allows for an understanding of "how standards actually work."

1.6 Research aim and questions

With this case study conducted in surgical care, I aim to better understand how and why standards work in highly professional contexts, and thus how they become a (routinized) part of professional work. This thesis focuses on the routines that are (re)formed after a formal standard is introduced in professional practice, and what actors do to maintain or change them. Further, I specifically look at how routines influence each other. The aim of this dissertation is to study the dynamics within and across routines as they are enacted in practice. Other than studies that focus on organisational control and adopt conceptualizations like 'compliance' and 'adherence' to standards, in this dissertation I explicitly study how professionals *work* with standards *in situ*, by tracing ostensive ideas and patterns of action. In doing so, I aim to provide a more in-depth and contextualized analysis that provides insights into the dynamic interrelation between 'barriers' and 'facilitators', and 'individuals' and 'systems'.

As the title of the book indicates, with a focus on professional routines I explicitly look for *connections*. One of the main arguments of this dissertation is that 'working with standards' is all about creating connections. Professionalism is in transition. This introductory chapter showed how developments internal and external to the professions push towards a (re)organisation of professional work. Complex cases require collaboration beyond firmly grounded professional borders. Trust in the professions and their services is not guaranteed. On the one hand, this leads to an emphasis on 'better performance', with well-managed, measurable and transparent performances. On the other hand, this leads to a stress upon 'stronger professionalism', with high-quality professional work and organised responses, not only to provide high quality, effective services, but also to legitimize professional work (Noordegraaf, 2016; Sanders & Harrison, 2008). Standards such as checklists might be seen as managerial tools, but also as professional interventions. In fact, they might be used to establish 'connective routines' in performance-oriented environments. How and whether this happens requires empirical analysis. Hence, connections are crucial and can take on different forms and appear at different layers.

First of all, I study standards as a relational matter. The performance of a checklist routine is a collective effort and is thus all about how individuals come together, thus connect, in the performance of a checklist routine. I take a different approach than newspaper headlines that claim that "Not all surgeons [thus, individuals, Ed.] follow checklists that prevent bad mistakes."

Next, routines never stand on their own. When you study a certain routine in isolation, you never truly get to see and understand why certain patterns (do not) emerge or change. Routines are inherently connected to each other, and to create a new routine, it has to 'fit' with existing patterns of action.

Third, I search for explanations why discrepancies between artefacts and actual patterns of action emerge, to subsequently look for ways to better connect the envisioned routine, the artefact, with the actual behaviour. Paragraph 3.3 provides more detailed information about connections in the research perspective I developed.

The purpose of this dissertation is threefold. First of all, I aim to provide rich and detailed *descriptions* of how professionals work with formal standards. Next, from a routine perspective, I aim to unravel patterns of action, ostensive dimensions and artefacts, and link them to each other, in order to *explain* why actants do what they do. Thirdly, the purpose is to identify *implications* for both theory and practice – with the ultimate goal to formulate lessons on how to develop routines that connect professionals, practices and artefacts.

The research question central to this dissertation is:

"How and why do professional standards work in performance-oriented medical practices?"

The overarching question is split up into several sub questions. First, in the theoretical chapter (chapter 2) the core concepts of this study (professionals and standards) and their relation will be discussed. Thereafter, Routine Theory is used to develop a research perspective (chapter 3). After a discussion of the methods of this study (chapter 4), the empirical chapters (5, 6 and 7) each 'zoom in' at a specific part of the analytical framework (internal routine dynamics, routine interactions, and artefacts), as is visualized in figure 1. The sub questions are:

What are professionals and what is professional work, and what transitions can be identified? (chapter 2)

The first theoretical question concentrates on the specific nature of professional work. I will discuss how professional work is organised and legitimized, what professional norms and values guide professional work, and how 'appropriate behaviours' are taught during professional socialization. Thereafter, I will identify important transitions in professional work, and consequences for conceptualizations of 'professionalism'.

What are standards and medical checklists, and what is their purpose and (intentional) professional usage? (chapter 2)

With this question I aim to demarcate the concepts 'standard' and 'checklist'. By drawing from different bodies of literature, I will define the concepts and gain knowledge of current academic debates about the nature and purpose of checklists, and their intentional use by surgical teams.

How can we conceptualize linkages between professionals and standards? (chapter 2)

The final theoretical question covers the relation between the core concepts. In the final part of the theoretical chapter, I will shed light on the different perspectives towards standards, and their hypothesized effects on professional work. I will explain how we can consider standardization of professional work procedures (by means of a checklist) as a mingling of professional and organisational logics. Various pressures in- and external to the professions have led to new conceptualizations like 'hybrid' or 'organised' professionalism. In the final section of the theoretical chapter I will explain how a safety team checklist can be considered an organised response to pressures on professional work. This mingling of professional and organisational logics will be the focus of the empirical study.

What are organisational routines and how can they be used to study (professional) work and its standardization (chapter 3)

With this question I work towards a research perspective that fits the research question. By combining Routine Theory with insights from for example the

Sociology of Professions and Science and Technology Studies, I develop a framework that guides the empirical part of the research.

How can professional standards in performance-oriented medical practice be studied? (chapter 4)

This question is about the research design. In chapter 4, I will explain how contextualized practices were studied and why an ethnographic approach best fits the research question. I will detail about methods for data collection and analysis, and also discuss the position of the researcher and ethical concerns.

"How do standards work out in medical teams?" (chapter 5)

This sub question focuses on the first part of the framework; the internal routine dynamics. By tracing the ostensive and performative aspects of a safety checklist routine by surgical teams, I show how team members are connected (or not) in a checklist routine, and how these connections influence the ostensive-performative dynamics. I show how different abstract understandings of the checklist enable different activity patterns.

How does a (new) checklist routine relate to existing routines? (chapter 6)

This sub question focuses on the interactions between the envisioned checklist routine and the already existing routines that constitute professional work in surgical care; the second part of the framework. By zooming in on the interaction of various routines, this question covers the complex professional context in which new standards are introduced.

How do artefacts affect how standards work in medical teams? (chapter 7)

The final empirical question explicitly focuses on artefacts; the third part in the analytical frame. The focal point of this chapter are the material and digital representations the checklist, and how these different representations of the routine affect routine dynamics. Further, other artefacts that might affect routine dynamics, such as the physical environment, are included in the analysis.

Lastly, a final question was formulated that focuses on the implications of this study:

How can connective routines be established? (chapter 8)

In the conclusion of this dissertation I put the threads together. The insights of the three different parts of the analytical framework will be integrated to draw overarching conclusions and implications. By analysing what routines look like, and explaining how the various connections emerge and change at the different levels, I ultimately aim to describe ways in which more connective routines can be established.

1.7 Structure of the book

This dissertation is composed of three empirical chapters, preceded by a theoretical chapter, a chapter on the research perspective, and a methodological chapter. The empirical chapters 5 and 6 have been published as journal article and book chapter in an adapted and compromised version. Figure 1 provides the structure for the chapters of this dissertation. The framework that I used for this study is based on the initial model of Feldman and Pentland (2005) that conceptualizes routines as dynamic systems with internal structures (chapter 5). In the succeeding chapters, I expand this model by shifting the analytic focus to the *interaction* with other routines (chapter 6) and *artefacts* (chapter 7).

The core concepts of this study will be extensively discussed in chapter two. In this chapter I will describe changing models of 'professionalism' and critically review literature on standards and standardization. In chapter 3 I will link insights on professional work and standards to the literature on organisational routines, to develop an analytical framework. Chapter three concludes with a framework that guides the empirical work, which consists of figure 1, supplemented with sensitizing concepts emerging from the literature review (Blumer, 1954; Glaser, 1978; Patton, 2002).

The initial conceptual model that sets out the structure for this study (as presented in figure 1) will return several times throughout the book. After a discussion of relevant theoretical insights (chapter 2) and the research perspective I developed, chapter three concludes with a complemented model which includes sensitizing concepts that emerged from the theoretical review. At the end of each empirical

chapter, the part of the analytical framework that was central to that chapter (dynamics, interactions, artefacts) will be supplemented with the empirical findings of that particular chapter. In the concluding chapter of the book, an expanded and integrated model for routines in professional contexts will be presented.

Although the framework provides analytical guidance, It must be noted that both the distinction between for example the envisioned routine and existing routines, and the different aspects of a routine serve an analytical purpose. In the complex reality of professional work, these 'boundaries' between abstract ideas and behaviour are more blurred, and their representation therefore to a certain extent always involves categorizations by the researcher. More reflections on the routine perspective can be found in the chapters three and four.

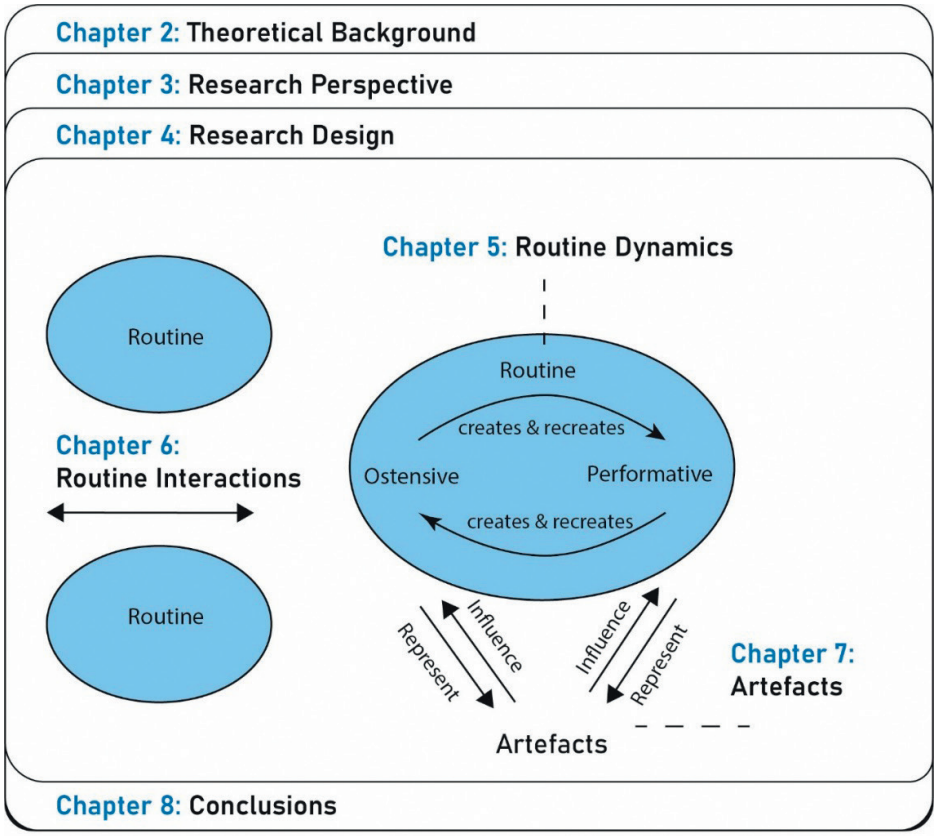


Figure 1: Structure of the chapters

I.8 Contributions of this study

With this dissertation, I contribute to theoretical, methodological and practical debates.

Theoretical contributions

First of all, with this study I contribute to current debates about developments in and around professional work. Trends like multi-problem cases, increasing specialization, technological advancement and budgetary restraint, call for new forms or organisation, coordination and collaboration within and between professional domains (Evetts, 2011; Noordegraaf, 2007, 2011, 2016). As argued, Sociology of Professions literature mostly concentrates around the 'big' stories of how professionals oppose to, or are circumscribed by, external pressures. This tendency leads to an impasse and a disregard of analyses of the more gradual changes. With an in-depth analysis of how professionals work with a specific standard, I make visible how professional and organisational logics are increasingly connected in the actual execution of professional work. By adopting a micro-level perspective, I provide insights into how professionals within organisational environments actually give shape to new standards in the everyday course of their work. In doing so, I provide more nuanced explanations than macro-oriented studies that compare bigger discourses like 'professions' and 'organisations' that mostly emphasize conflict.

Secondly, drawing from Routine Theory to build an analytical framework also allows me to further the literature on routines in various ways. The initial model of Pentland and Feldman (2005) that meant a breakthrough in thinking about routines as dynamic systems, has attracted considerable attention from various researchers. The past few years, many studies have therefore been conducted on internal routine dynamics (Feldman et al., 2016). With this new focus on routines as dynamic systems though, routine interactions and the role of artefacts in (re)creating routines have remained understudied (Feldman et al., 2016; see D'Adderio (2011), Sele & Grand (2016) and Spee et al., (2016) for a few insightful exceptions). In this dissertation I expand the analytical framework, to explicitly consider these relations. I provide rich empirical illustrations of how routines interact (chapter 6) and how artefacts influence the (re)creation of routines (chapter 7). This case study in a highly professionalised domain that was informed by literature form the Sociology of Professions, is helpful in elucidating explanatory mechanisms for (not) changing routines.

In chapter 8, I will provide more detailed explanations about the cross-fertilization of theoretical contributions, as this thesis shows how different bodies of literature can inform and strengthen one another.

Methodological contributions

Secondly, by ethnographically studying professional standards in surgical care, this study makes some methodological contributions. Many studies on 'patient safety' and 'implementation of standards' have been conducted. However, research so far largely focused on quantifying and classifying compliance, mistakes and outcomes, rather than providing detailed understanding of the actual routines in operating theatres and the perceptions of those involved.

Studies using ethnographic methods in operating theatres are scarce (see McDonald et al., (2005) for an insightful exception). I gained access to a field – medicine - that is referred to as 'non-public space'. Operating theatres in particular, are labelled the 'backrooms of medicine' (Goffman, 1959; Pope, 2005). I feel fortunate that I have been able to access the 'closed world' of surgery to study daily practices.

Moreover, the few studies using ethnographic methods that exist, mostly concentrate around big concepts like 'safety culture', that are – as self-confessedly stated by the authors, not unproblematic (McDonald et al., 2005). By studying specific, demarcated practices in an ethnographic study, I got to see the many processes and interactions that constitute professional work 'from the inside out', and provide rich contextualized narratives.

In a time in which experimental designs have gained considerable attention in the field of Public Administration (Bouwman & Grimmelikhuijsen, 2016; Grimmelikhuijsen et al., 2017), this thesis underlines the sustained importance of ethnographic approaches in Public Administration. There is little ethnography in the study of Public Administration and Public Management (Rhodes, 2014). This is remarkable, since Public Administration strives to be an applied discipline that deals with practical problems (ibid). As Ybema, Yanow, Wels, & Kamsteeg (2009) state in the introduction of their book on organisational ethnography: "[There is] a gulf between the lived experience of organising and being organised by others, with its uncertainty and confusion, and the tidy, rather sanitized, texts on organisational behaviour" (Ybema et al., 2009, p.2) quoting Fineman, Sims and Gabriel (2005, p. ix). Here is where this book studying how standards work in a professional setting in an ethnographic tradition makes a contribution.

Practical contributions

Lastly, this dissertation has a practical relevance for those involved in standardization processes in professional organisations. In the exploratory phase of this research, I had a conversation with a very experienced head of the anaesthesia division of one of the hospitals under study. He was very passionate about implementing the Surgical Safety Checklist in the surgery department. He sat in front of me with an implementation booklet in his hands and said; "We read all the evidence, we have extensively prepared this procedure, we have this document… but now what?" This situation proved illustrative for the ways in which people talk and go about implementation within this professional domain. By providing an in-depth empirical analysis, I hope to create more awareness of the micro-processes that influence the creation of routines in professional care, and instigate a change in the current implementation discourse *and* practices.

Chapter 8 discusses the practical implications of this study for professionals, hospital boards (i.e. 'implementers'), supervisory boards, educators and other professional domains

1.9 Conclusion

In this chapter, I have introduced the research problem and setting of this study. From a routine perspective, this dissertation aims to gain an improved understanding of how professionals in surgical care give shape to new standards in the course of their everyday work. In chapter 2 and 3, I will successively provide the theoretical insights backgrounding this study and the research perspective that was used. Chapter 4 provides details on the design. Chapters 5, 6 and 7 present the research findings. In chapter 8, I will draw conclusions and critically discuss (the findings of) this study. The intermezzos between the chapters provide additional reflections and illustrations.

Intermezzo

Intermezzo: The news media

It is a rainy November day, early in the morning. As I have scheduled exploratory conversations in the operating theatre, I woke up early to prepare breakfast. When I crash at my couch with a cup of yoghurt and sugary granola, I put on the early news. This morning, the news opens with an item about incidents in hospitals, or "major incidents" to use the exact framing.

The news that is brought to us is that, although making mistakes is an "occupational hazard", the incidents that occur in hospitals in the Netherlands are not reported but kept silent. As a result, there is no proper evaluation of practices so that professionals cannot learn from the mistakes made. The news item closes with the announcement that later that day, more details will be provided in a documentary by Zembla.[6]

Later that night, overly tired after all new impressions, I crash on my couch again to watch the Zembla documentary. Although the news is brought about as a general fact; "hospitals do not report incidents" the specific focus is on one of the academic hospitals in the Netherlands. More specific, there are stories about one specific department where there is a "culture of fear". The head of the department is cropped out as "tyrant". These claims are all based on 'independent research' conducted by journalists, though it remains largely unknown how this research was conducted.

By now, we arrived at "Hospital Calamities Part IV" (Zembla, n.d.). A cycle of media events has occurred, in which each new episode of the documentary seems to result in many additional news items and newspaper headings. Because of this severe media attention for safety risks in hospitals in general, that was already at stake but intensified over the course of my research, I feel I should say a few words about my research and how it should be read.

First of all, as an academic researcher, my aim is to enhance knowledge. With this dissertation, I aim to enhance our understanding of organisational processes, by tracing how actors in interaction – also with artefacts – create and modify their ways of working. An analysis of how surgical teams work with a Surgical Safety

6 Zembla is self-entitled as 'independent journalistic section' that investigates and monitors the ways of acting of powerful actors in society. These actors might be governments, organizations, or individuals.

Checklist fits these purposes. I therefore want to emphasize that this book is by no means judgmental.

Next, when in the field, I encountered different responses to severe media attention. In arranging access to the field, I have had several conversations with both managerial actors and professionals in the operating theatre (see also chapter 4). It occurred to me that individuals working in the Quality and Safety departments, Research departments, and Executive Boards were more than curious to know what I planned to do, and particularly, what I subsequently planned to write down. It is not that I felt restricted as a researcher, rather, I recognized these individuals' efforts to protect their institute and the professionals working in it. The professionals working in the surgery department whom I shadowed on the other hand, were very open. Moreover, several times I had the impression that they were willing to show me what they were doing under the veil of "we have nothing to hide". None of the professionals put any restrictions on what I would write or asked critical questions about how the research findings would be published.

Indeed, all the professionals who have been part of this research seemed comfortable letting me into their worlds. I suspect this also has to do with the novelty of having an outsider profess fascination with the particulars of your everyday work.

Nonetheless, during the empirical work, I did see professionals struggle with media attention. On the one hand, some of them felt like it was not about them; not their hospital, or not their department. The fact that professionals made this explicit; "it is not our department" made me all the more aware that professionals tend to identify themselves with their own professional segment, more than the hospital they are working in. (See also the paragraph 'becoming a professional' in chapter 2). This made them continue doing what they always had been done. On the other hand, media attention led to tensions in reporting calamities. Debates in the coffee room, fuelled by actual cases at hand, embodied an experienced tension between reporting for the sake of learning versus reporting for the sake of public scrutiny.

In the various intermezzos and in chapter four 'On Ethnograph*ing*' I will further elaborate on contextual developments, my role as researcher, and my experiences, and how these might have influenced the findings of this study.

Chapter 2

Standardization in professional settings

2.1 Introduction

The implementation of standards in professional work settings is a popular research topic that has been studied from the perspective of different disciplines. Scholars in the field of for example Public Administration, Organisation Science, Sociology, Science and Technology Studies, and Health Care Management all turned their attention to the question how new standards (can) work out in practice. Each of these disciplines however, has its own perspective, terminology and approach. In the field of health care for example, 'implementation' is a popular term – though with different denotations - and scholars often adopt a rather technical view to study implementation, while sociologists emphasize the constructed social nature of professional work and mostly talk about 'working with' standards as a complex matter.

In this chapter, I will critically review different theoretical contributions to draw inspiration from different disciplines and research strands. This chapter is structured along three theoretical questions. These questions are:

"What are professionals and professional work, and what transitions can be identified? "What are standards and medical checklists, and what is their purpose and (intentional) professional usage?" and *"How can we conceptualize linkages between professionals and standards?"*

First, I will set the contours of this study by discussing the specific nature of professional work. I will describe developments in professional work and theorizing 'professionalism', drawing from the Sociology of Professions literature. After that, a discussion of standards and standardization will follow, drawing from the fields of science and technology studies and sociology. By combining these insights, I will shed light on the dynamics between standardization and professional work and argue how we can understand standardization as organised professional response to new service realities.

2.2 Professionals and professional work

"First do no harm"

The popular saying "first do no harm" derives from the Latin phrase "primum non nocere." It is commonly believed to be taken from the Hippocratic Oath.

Although the sentence does not appear in Hippocratic texts verbatim, it can be argued that it does come from it at least in essence (Gill, 2018). 'Doing no harm' could naturally be understood as 'do not make mistakes' such as wrong site surgery, or administering wrong medication. The takeaway point of "first do no harm" however, is that in some cases, it may be better to do nothing rather than intervening and potentially causing more harm than good (ibid). Making decisions about complex, unique cases, requires professionals to 'know' when to treat, when not to treat, and if to treat, how to treat.

In making these decisions, medical doctors rely on attributes like specialized knowledge and skills gained through enduring training, a rudimentary awareness of ethics to act for the sake of the public good, and the freedom to act on their judgment. Attributes that are argued to make up 'professionalism'. The first section of this chapter aims to answer the question: *"What are professionals and professional work, and what transitions can be identified?*

2.2.1 Classic notions of 'professionalism'

Throughout the years, many scholars turned their attention to 'professionalism' and tried to disentangle what it entails. Larson (1977) argues that in most cases, social scientists come up with an unambiguous answer: professions are occupations with special power and prestige. For a long time, sociologists of professional occupations even differentiated professionalism as a special means to organise and control work (Evetts, 2011). Freidson (2001) for example identified professionalism as a 'third logic'; the third principle of the division of labour, next to the market and the organisation. Classic examples of these powerful professions are lawyers, engineers and university professors (Krause, 1996). Medicine though, is often considered the 'archetypal' professional occupation (Fox, 1992; Freidson, 1988).

Although the specific attributes that are argued to compose the ideal typical profession may vary, there is some substantial scholarly agreement on the general dimensions. Despite some vocabulary discrepancy, scholars generally refer to three dimensions, or three 'sets of attributes' that distinct professional's work from other occupations. By combining these insights about the ideal type of professionalism (e.g. Evetts, 2003; Freidson, 1970; Starr, 1982; Wilensky, 1964), I frame the dimensions as follows;

The *cognitive* dimension (following e.g. Larson, 1977; Starr, 1982) refers to the body of knowledge and techniques that is required to perform complex work.

Knowledge that is 'esoteric', because it is specialized and takes time and effort to acquire. It requires long-lasting, specialized training to gain such a 'technical base' (Freidson, 1970; Wilensky, 1964). In the case of medical doctors, these skills enable them for example to diagnose and treat (Starr, 1982).

These bodies of knowledge are linked to central needs and values of the social system. The *ethical* dimension (cf. Starr (1982) who calls this the 'moral' dimension and Wilensky (1964) who speaks of a 'service ideal') refers to the devotion of the professions to the service of the public, above and beyond material or financial incentives (Evetts, 2002). Physicians for example, have to be devoted to the medical service and put the interests of their patients above their own (Starr, 1982). This ethical basis creates trust in the profession, which is crucial to the physicians' status in society (Mechanic, 1996).

Trust in the profession relates to the third dimension; the *regulatory* dimension (cf. Starr (1982) who refers to the 'collegial' dimension and Larsson (1977) who refers to an 'evaluative' dimension). Traditionally, professions can be seen as groups of workers who control themselves (Evetts, 2003b, 2011; Freidson, 1994, 2001). Professions themselves determine who may legitimately become 'member' of the profession, and they regulate their own professional behaviour, for example by means of their own disciplinary jurisdiction (Wilensky, 1964). They determine professional qualifications, set up training and education programs, and develop codes of conduct. By investing in education, associations and codes of conduct, professions secure both the 'technical base' of their profession a as well as its 'service ethic' (Wilensky, 1964). By investing in jurisdictions, backed by state regulations, they secure professional autonomies (e.g. Abbott, 1988).

On the one hand, professionals are granted *collective* autonomy over the processes, procedures and content of their work. The more standards are set by occupational fields, the stronger these professionals are in terms of their autonomies and power (Noordegraaf & Steijn, 2014). On the other hand, professionals have *individual* autonomy in the application of their profession's body of knowledge; their professional judgment. Because of the firm belief that individuals outside the profession do not possess the specialized knowledge required to evaluate the practices of professions, professionals proclaim that they are in the best position to operate, control, and regulate their own practices (Freidson, 1988).

Most of this ideal typical professional public service delivery in Western welfare states (such as the Netherlands) occurred within large bureaucratic organisations. Clarke and Newman (1997) speak of bureau-professional regimes. Within these regimes, *trust* marks the relationship between the various actors. First of all, autonomy was granted to the professions by the state. Secondly, the assumption that professionals can be trusted to perform in the best interest of their clients, and thus of the organisation, makes that there are not well-developed systems of bureaucratic control within organisations (Brock, 2006), nor is there much interference from colleagues. The relationship between professionals, employers and peers is thus characterised by trust and confidence (Evetts, 2011). The professional bureaucracy, then, does not rely on the formalisation of work processes or bureaucratic controls to ensure high quality of service delivery. Rather, it depends of the standardization of skills, internalized values and what Ouchi (1980) called 'clan control' (Brock, 2006).

Table 1: The classic model of professionalism

Dimension	**Description**
Cognitive	Technical base; 'esoteric' knowledge acquired through enduring specialized training.
Ethical	Service ideal; devotion to serving the public good.
Regulatory	Self-controlling; control over content of work, processes, and procedures, as well as autonomy in the application of specialized knowledge.
Bureau-professional regimes	
Bureau-professional organisations. Relationship between state and occupation based on trust. Autonomy granted to occupation. Trust and confidence characterising the relations between professional/employer, professional/client, and among peers ('clan control')	

2.2.2 Becoming a professional

In treating complex, unique cases, professionals thus rely on a cognitive base, an ethical base and the regulatory space to make decisions based on their professional judgment. As argued, these 'skills' are acquainted through enduring training. It is important to look at the ways that professionals are trained to work (together), since this forms an essential step towards an in-depth discussion of professional work in relation to working with standards later in this chapter. I provide such a description, confined to the medical profession, by subsequently discussing socialization, specialization and segmentation.

Professionalisation starts during medical education, when students get *socialized* into their professional domain. In medical school, technical skills are learned in an educational context that involves other, experienced, professionals. Although it was traditionally thought that the transmission of technical skills was at the heart of the medical education system, today it is widely acknowledged that medical training is "a process of moral enculturation" (Hafferty & Franks, 1994, p. 861). Novices learn what to observe, how to interpret these observations, and what words and actions to use when assigning these both to clients and colleagues. This learning environment is also labelled a 'community of practice' (Maudsley & Strivens, 2000).

This learning environment is of crucial importance, as professional learning depends heavily on role models where students, residents, and practicing clinicians pattern their behaviour on "individuals admired for their ways of being and acting as professionals" (Cruess et al., 2009, p. 7; Witman, 2008). Therefore, medical education not only comprises of what is taught in the formal curriculum, but all the more of what is taught in the 'hidden curriculum': "We [faculty] are teaching far more than we know. Every word we speak, every action we perform, every time we choose not to speak or act, every smile, every curse, every sigh is a lesson in the hidden curriculum" (Gofton & Regehr, 2006, p. 21). Furthermore, the duration of this socialization process and the long working hours in which 'new professionals' are separated from 'the real world' and get acquainted with the medical culture is often emphasized as a powerful mechanism (Freidson, 1988; Pratt et al., 2006).

As training endures, medical professionals devote their attention to understanding more and more about narrower topic areas during their *specialization*. Today, most doctors are trained and qualified to provide only some kinds of care. Even within specialties like surgery and internal medicine, there are multiple subspecialties like vascular and abdominal surgery or haematology and nephrology. Thus, the physician workforce has differentiated into a heterogeneous group of professionals (Baker et al., 2011; Cameron, 2011; Freidson, 1994; Hall, 2005). Consequently, many different professional subdomains exist within 'the' medical culture, each with their own culture. Through their involvement in the practice of a sub discipline, novices construct a sense of *their* profession which includes its duties, its boundaries, its values and its aspirations (Lave & Wenger, 1991). Socialization within these sub specialties leads to social similarity which facilitates communication, "since socially similar actors are more likely to speak

the same language and share the same knowledge and assumptions" (Rogers, 2003 as cited in Adler & Kwon, 2013, p. 939).

Far-reaching specialization could ultimately lead to *segmentation* between the various professional groups. The cultural differences between groups can impede collaboration, since the different subcultures with their internalized norms, values, and diverging jargon, make the creation of mutual understandings problematic (Abbott, 1988; Hall, 2005; Lingard et al., 2004). Besides, as students learn the knowledge and skills of medical practice, they also recognize and internalize social divisions of power and authority in medical work (Abbott, 1988; Diefenbach & Sillince, 2011; Freidson, 2001). Institutionalized hierarchical structures within medical institutions might lead to both vertical and horizontal segmentation. Vertical divisions of hierarchy place medical doctors in a superior position to other medical workers, such as nurse anaesthetists and nurse practitioners. Timmons and Tanner (2004, 2005) for instance suggest that a crucial feature of a scrub nurse is to 'keep the surgeon happy', and to take on what they refer to as a 'hostess role'. Such a hierarchy thus "concentrates power in the hands of a [few] while relying on the obedient service of a vast body of subordinate nonprofessional support staff' (Wolf, 1996, p. 55). Medical doctors differentiate themselves from medical supporting staff, on the basis of their responsibility for patient care. Horizontal segmentation concerns for example the more generalized versus the specialized disciplines (Witman, 2008), or the separation between 'diagnostic' (e.g. internal medicine) and 'surgical' occupations, or between 'surgical' and supportive (e.g. anaesthesiology) specialties.

Lengthy socialization, thorough specialization and strong segmentation thus facilitate and ensure that young medical professionals grow into their specific professional subdomain with its own norms and values.

2.2.3 Developments in professional work and professionalism

Increasingly, the archetypical model of 'professionalism', with its characteristics and ways of training, has come under pressure (Denis et al., 2015; Evetts, 2003b, 2009; Noordegraaf & Steijn, 2014). Brock, Powell, & Hinings (1999), Brock (2006) and Greenwood & Lachman (1996) all pointed to several external and environmental factors that have affected professional work, such as the deregulation of professional markets, financial constraints and cost pressures, complex care demands, technological change and changes in the demands of increasingly knowledgeable clients.

Firm welfare state arrangements, based on a relationship of trust between established professions, the state, and clients started to erode from the 1980s and 1990s onwards. The rising costs of the welfare state had become untenable over the years, not in the least because of the steadily mounting costs of the health care system. In the Netherlands, like in other Western countries, the organisation of health care gradually shifted towards a more market-oriented system (Clarke & Newman, 1997; Harrison et al., 1994; Helderman et al., 2005; Kitchener & Gask, 2003; Reay & Hinings, 2009). Due to these massive managerial reform programs, Western welfare regimes got restructured. Reforms included for example the rationalization of service organisations and the improvement of service performance.

Government transformed its role into 'governing at a distance' (Lipsky & Smith, 1993). The dual structure of bureau-professional systems herewith transformed into a 'hybrid' structure (Noordegraaf, 2007). Managerial control started to dominate, relying on external forms of regulation and accountability measures. Rather than self-control, professional occupations got increasingly subjected to cost control, target-setting, and performance indicators.

Another challenge imposed on professionals in the welfare state, in particular by reforms in accordance with New Public Governance, is the demand for collaboration and integration of services (Denis et al., 2016). Increasing prosperity has led to an increasing life expectation, but consequently also to compound multifaceted cases. For example, patients with severe medical conditions are undergoing surgery. Patient variables can thus make even 'simple' surgical procedures complex tasks that require high levels of specialization, but also of communication and coordination (Øvretveit, 2000).

The call for collaboration and more integrated services is at odds with the long term tendency to specialize professional work (Rosen et al., 2018). Specialization has been criticised for its lack of flexibility in response to the varying needs of clients, especially regarding the increasing amount of multi-problem cases that require a more holistic approach (Kodner & Spreeuwenberg, 2002; Noordegraaf, 2016). In short, in dealing with complex, multi-problem cases, the need for far-reaching specialization goes hand in hand with the need for multidisciplinary action (Meads et al., 2008; Noordegraaf, 2016; Rosen et al., 2018).

Professional education is in transition however. Various initiatives aim to make professionals (in training) more resilient and capable of dealing with today's care

demands – also with regard to collaboration. Examples are the introduction of competency based learning (e.g. the CANMeds framework where 'collaboration' is deemed an important skill (Davidoff, 2010; Frank & Danoff, 2007)), Entrustable Professional Activities (ten Cate, 2005, 2013) and Medical Leadership (Voogt, 2019; Voogt, van Rensen, van der Schaaf, Noordegraaf, & Schneider, 2016). Nonetheless, professional education is still organised into divisions by common practice area. This implies that despite of an increased attention for professional collaboration, medical doctors in training are still socialized into their specialized subdomain with its 'ways of acting' and supervised on their individual performance, in a time where crossing professional boundaries becomes ever more important.

Besides changes in governing and collaboration structures, some other developments influence the ways in which professional work can be conducted. First, ICT developments and new technologies for example create new possibilities, but also pose new challenges. New ICT systems allow for quick exchanges of information, but herewith also pose challenges, for example with regards to client's privacy. Besides, accessibility and registration of information also allows for continues monitoring and assessment at an organisation level (Broadbent & Laughlin, 2005; Eriksson-Zetterquist et al., 2009)

Next, patients and clients have become more knowledgeable and critical and claim so called 'co-production' of treatment. They are becoming 'customers' rather than passive recipients (Evetts, 2011; Lachman, 2009). The changing role of patients in the care process becomes visible through developments like 'patient centred care' (e.g. Epstein & Street, 2011), for example concretized by the encouragement to work with Patient Reported Outcome Measures (PROMs) in which the experience of the patient, for example concerning pain, gains a central role in clinical decision making (Black, 2013; Dawson et al., 2010).

Further, and importantly, the performance of professionals seems to be scrutinized ever more, with severe consequences for them and the organisations they work in. Journalists are on the outlook; articles and documentaries that tell about medical mistakes generate good audience ratings and publicity, which make that professionals increasingly act in a 'glass house'. This 'personalized' scrutiny becomes reality in public lectures, in which responsible doctors have to account for their mistakes (Van den Brink, 2018). These publicly exposed risks and incidents prompted both a political and public demand for more transparency and accountability (Weick and Sutcliffe 2003; Millenson 2002),

and it is argued that such media incidence caused an erosion of trust in public professionals (Millenson, 2002; Evetts, 2002).

Because of market-driven managerialism, the demand for multidisciplinary action, the changing role of patients, severe media attention and so on – it is argued that a growing role of employing organisations like hospitals, and external forces like media, healthcare inspectorates and accreditation boards, increasingly subject medical doctors to financial incentives, fierce market competition and the erosion of trust. The classic model of professionalism is therefore no longer tenable in describing contemporary practices (Evetts, 2011).

2.3.4 New models of professionalism

The outlined developments have consequences for professional work itself, professional-employer relations, professional-client relations, and for the control of work priorities and processes (Evetts, 2011; Noordegraaf et al., 2015). These accounts of change describe a shift from long time notions like partnership, autonomy and trust to notions of managerialism, standardization, assessment and performance review (Evetts, 2011). This shift challenges Freidson's defining characteristic of a 'third logic' as a means of controlling professional work, as professionalism no longer seems a distinctive third logic, but increasingly includes logics of the organisation and the market such as managerialism and consumerism (ibid). A lively theoretical debate ensued, in which scholars identified different directions for 'professionalism'.

'De-professionalisation'

First of all, there are claims of 'de-professionalisation'. Managerial performance assessment and target-setting are considered an assault on professional power. Freidson (2001) for example stressed that values prominent in an ideal typical 'professional logic' are increasingly oppressed by a 'managerial logic' encompassing organisational values (see also Reay & Hinings, 2009). He argued that the profession "is seriously weakened in the name of competition and efficiency" (Freidson, 2001, p.3). Others added to this by stating how the effects of the New Public Management turned professionals into 'occupational professionals' that face organisational control (Exworthy & Halford, 1999). From this perspective professionals are theorized as being severely challenged and even threatened by organisations. Professionals are regarded as passive 'victims' who are relatively powerless against demands for more transparency and accountability (Evetts, 2011). In short, outside control of professional standards is considered challenging for professional autonomy and power. The

description of professionals as powerless victims consequently results in claims of de-professionalisation (Reed, 2007; Vogd, 2006).

Increasingly however, it is acknowledged that this rather cynical idea about changes in professionalism do not accurately describe reality. In her publication in *Current Sociology* (2011, p.405) Julia Evetts reflects on her own earlier work and self-confessedly states: "This rather pessimistic interpretation has been prominent in my own recent writing (Evetts, 2009) where I have characterized recent changes as a threat to the third logic of professionalism as an occupational value and expert judgment, and professional discretion as something worth protecting and preserving." From a pessimistic view in which standardization and performance measurement are seen as mere threats, follows the identification of professional responses that are merely resistant and defensive (e.g. Abel, 2003; Ackroyd & Muzio, 2007; Reed, 2007). The identification of opportunities however, next to these 'threats', has led to the theorizing of a 'new professionalism'.

'New professionalism'

Rather than 'passive victims', scholars have illustrated how professionals are capable of living up to new expectations of accountability and transparency without compromising on their own professional values (Davies, 2006; Evetts, 2006; Kuhlmann, 2006; Noordegraaf, 2011). There are claims that standards are not so much challenging professional autonomy – on the contrary, they are said to generate possibilities to further strengthen the position of professionals. Thus, reforms also pose opportunities for professionalism.

From this perspective, a growing body of research has focused on what professionals actively do to maintain or re-establish their obtained position. Actively resisting or reforming business-like standards to further professionals' interests is part of that (e.g. Borkowski & Allen, 2003; Currie, Lockett, Finn, Martin, & Waring, 2012; Ferlie, Fitzgerald, Wood, & Hawkins, 2005; Kerpershoek, Groenleer, & De Bruijn, 2016; Micelotta & Washington, 2013). In short, outside control of professionals is considered an opportunity to advance professional autonomy and power.

In these accounts of a 'new professionalism', most emphasis is on how professionals use managerial reforms to further their own professional interests. From this perspective, they might therefore be seen as 'strategic operators' (Gleeson & Knights, 2006).

Hybridization (and beyond?)

A third and more recent theorization does not view managerial logics (with standardization and performance measurement) as opposed to professionalism, but considers professionalism as a mingling of the two logics. The notion of 'hybridity' was introduced (Denis et al., 2015; Faulconbridge & Muzio, 2008; Kirkpatrick, 2016; Noordegraaf, 2016) to describe a development in which notions of professionalism and managerialism coexist and co-penetrate each other (see also Evetts, 2011). This implies that Freidson's description of professionalism as a third, separate logic, is no longer perishable. The logic of professionalism interferes with the logics of the market and the organisation.

Hybridity then, can be understood as 'meaningful practices' in which treatment of individual cases co-exists with organisational goals like efficiency (Noordegraaf & Siderius, 2016). Classic professional values like personal case treatment and solidarity are maintained, while new demands like effectiveness and efficiency are simultaneously taken into consideration. This is what De Bruijn (2002) calls the 'multi-value' character of professional service delivery.

A slightly different framing of 'hybridity' was introduced by Hendrikx en van Gestel (2017). Where the term hybrid professionalism originally has been used to describe a combination of professional work and management (Evetts, 2011; Kirkpatrick, 2016; Noordegraaf, 2016), Hendrikx and van Gestel (2017) see hybridity as 'piling up'; as a result of a range of reforms, more and more professional roles have to be executed in the same occupation. They emphasize that new demands emerge on top of – and never in spite of - existing demands, and these might conflict as well. A general practitioner for example, is still expected to deliver tailored and personalized treatment, but it also has to be timely and effective.

In recent work, Mirko Noordegraaf (2015) brings this theorization to a level *beyond* hybridity. He stresses hybridity is unavoidable and might be considered a valuable development, rather than a threat. Organisational and professional logics should no longer be considered *opposed* to each other, but naturally interwoven. In moving from hybrid professionalism towards 'organising professionalism', organising roles and capacities become embedded within professional action.

A combination of different logics emerging within the same occupation is thus increasingly backed in the academic literature. Scholars move beyond notions of professionals as mere victims or strategic operators aiming to secure their

own position. Rather, contemporary research efforts aim to overcome the divide between 'organisations' and 'professionals' (McGivern et al., 2015; Noordegraaf, 2011) even with theorizations 'beyond hybridity' in which such a mingling of logics becomes 'natural' (Noordegraaf, 2015; Postma, Oldenhof, & Putters, 2015). From this perspective, 'organising' becomes part of professionalism, so professionals can deal with contemporary demands and legitimize performances in demanding environments. Nonetheless, this rather new theorization needs more development, backed by empirical evidence. There is an urgent call to study on a micro-level how professionals within organisational environments actually give shape to new standards and arrangements in the everyday course of their work (e.g. Wallenburg et al., 2016; Waring & Bishop 2013).

The question thus remains: as we theorize professionalism as a mingling of different logics, what does it look like in practice? In order to provide detailed accounts of the mingling of these logics, I will closely look at how one of the specifics associated with an organisation logic - standardization – mingles with a professional logic. In the next paragraph, I'll introduce standards, and safety checklists in particular, as organised response to deal with complexities in demanding environments.

2.3 Standards and standardization

> *"Checklists are not Harry Potter's wand"*- Pronovost quoted by Laurance (2009)

Over the last decades, standardization really did take off in professional work settings, especially within the medical domain. This section concentrates on the question: *"What are standards and medical checklists, and what is their purpose and (intentional) professional usage?"*

The underlying reasons for standardization are multiple, though the most reported impetus for standardization is 'quality improvement', which is usually referred to as making practices more efficient, reducing variability in service delivery, and dealing with increasing complexity and uncertainty (Timmermans and Berg, 2003). Timmermans and Epstein (2010, p. 70) state that "it is easy to observe how life increasingly depends on the creation, institutionalization, use and dissemination of diverse kinds of standards." The idea of standardization as a mechanism to improve efficiency is nothing new though. Probably the most

well-known and influential example of standardization is Frederik Taylor's 'scientific management', in which fabric workers were trained to use standardized methods as to achieve optimal efficiency (Daft, 2006; Timmermans & Berg, 2003) Although Taylor's ideas might be among the most criticised and might have lost their appeal over the years (Locke, 1982), similar ideas of standardized processes and uniformity – for example labelled 'the Macdonaldization of society' – are popular mechanisms in current-day society (Ritzer, 2000; Timmermans & Almeling, 2009; Van Loon, 2015; Waring & Bishop, 2013).

In the context of healthcare, probably the most well-known association with standardization is the implementation of Evidence Based Medicine (EBM). EBM was introduced as "the conscious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" (Haynes, Sackett, Gray, Cook, & Guyatt, 1996, p. 71). Scientific evidence, for example gathered in controlled clinical trials, is backed in Clinical Practice Guidelines that assist clinicians in their decision making. In detailing on the definition, Haynes et al. (1996, p. 196) emphasize the words *conscientious* and *judicious*. "Conscientious means that evidence is applied consistently to each patient for *whom it is relevant"* [emphasis added]. "Judicious use calls for the incorporation of clinical expertise that balances the risks and benefits of diagnostic tests and alternative treatments for each patient and takes into account his or her unique clinical circumstances, including baseline risk and comorbid conditions, and preferences."

Standardization was chosen as a strategy to implement EBM. Efforts to standardize clinical practice on the basis of scientific evidence are justified by a growing body of research that shows that "when patterns of care are widely divergent, clinical outcomes suffer and, as a result, safety may be comprised" (Rozich et al., 2004, p. 5). Standardization is seen as a means to limit the potential of medical mistakes which will result in safer health care systems. Nonetheless, standardized protocols easily go by on the uniqueness of cases. Those who decry Evidence Based Medicine as 'cookbook medicine' ignore the conscious and judicious part of the definition of EBM (Haynes et al., 1996).

Still, an increasing amount of such guidelines is published. Ironically, the ever growing amount of scientific evidence – and thus guidelines - made that professionals got lost in what is 'the best' scientific evidence. The establishment of a Conference on Guideline Standardization illustrates the emergence of 'meta-

standardization'; the aim of this conference was to set a standard for standards (Shiffman et al., 2003)

So far, I have discussed the far-reaching tendency to standardize professional medical work, resulting in many guidelines, protocols, checklists, and ultimately; meta-standardization. Some scholars even speak of a proliferation of standards (cf. Rycroft-Malone et al. 2008; Parker & Lawton, 2000). Though the term 'standard' is widely used, and generally associated with values like objectivity, rationality and uniformity (Timmermans & Almeling, 2009; Timmermans & Berg, 2003; Zuiderent-Jerak, 2007), it remains disputed if and how they can be personalized at the same time. On top of that, definitions of standards and standardization differ, and different concepts are often used interchangeably. Despite it could generally be argued that standards 'aim to improve quality of health care delivery' there is a wide divergence in *what* they aim to standardize and the means to accomplish this. 'Standard' can thus mean various different things. Therefore, some conceptual clarification and downsizing is needed.

2.3.1 A taxonomy of standards

Evidence Based Medicine is just one example of how standardization is introduced in healthcare, and even EBM is not a uniform concept referring to one and the same thing. As Timmermans and Berg (2003, p.24) argue; "Standards and standardization are broad terms, differently defined, covering many entities, even when confined to the medical context." Many studies however, lack a clear definition and thus demarcation of the concept and scholars quickly go over to a discussion of the effects of standardization.

First of all, there seems to be a difference in the *neutrality* of the definitions provided. Timmermans and Berg (2003:24) for example refer to standardization as the process of "rendering things uniform". In this definition, standards are considered "the outcome" of such processes. Bowker and Star (1999) offer a definition that resembles this neutral description of uniformity. They state that standardization is "a process of constructing uniformities across time and space, through the generation of agreed upon rules". Where in this notion of standards the basic thought is "agreed upon rules", Brunsson and Jacobsson (2002, p. 2) include firm claims of *power* in their definition of standards. According to them, standards constitute "rules about that those who adopt them should do". With emphasizing power relations, it is thus argued that standardization enables 'control at a distance' (see also Yates (1989)). Although I do acknowledge that standards are 'deeply political' since they transform the ways people work

together (also Timmermans & Berg, 1997) I purposely adopt the widely cited definition of Bowker and Star. This broad and neutral definition of standards fits the content of this dissertation best, since I argue that the crux is in different *types* of standards, since different types of standards differ in both *what* they aim to render uniform, and they ways in which they (can) transform professional work.

To create an overview of all these different kinds of standards, Timmermans and Berg ought "to create some uniformity in the many entities that fall under the standards heading." Somewhat ironically, this thus implies that they ought to create uniformity in that what [standards] strives for uniformity. They do so by distinguishing for ideal typical categories of standards; design standards, terminological standards, performance standards and procedural standards. *Design standards* strive for uniformity in systems, for example technical specifications that allow for a smooth transmission of medical and administrative data between systems, or even the size of hospital beds. *Terminological standards* try to ensure stability of meaning of concepts over different sites and times, for example regarding consistency of terms in Diagnose Related Groups (DRGs). In contradiction to design and terminological standards, *procedural standards* interfere with work practices by standardizing work processes. Whereas design and terminological standards determine the contours of professional work, procedural standards thus intervene with practices *as such*. Procedural standards herewith provide a window of opportunity to restructure how work is conducted. An example of a procedural standard is a risk screening protocol for decubitus or a Surgical Safety Checklist. The fourth category of standards consists of *performance standards*. By setting performance standards, such as the amount of surgeries to be performed, the rate of in-hospital mortalities, or adherence to guidelines, professional work becomes measurable and thus comparable (De Bruijn, 2002).

In this dissertation, the focus is on what Timmermans and Berg (2003) defined as 'procedural standards'. However, in table 2 I indicated a thin line between procedural standards and performance standards. Although on the one hand they can be distinguished as two separate categories, it is argued that procedural standards increasingly become performance standards (see e.g. Timmermans, 2005). If for example adherence to a risk screening protocol for decubitus is used by external actors for the sake of performance measurement or reimbursement, procedural standards thus actually become performance standards. This dynamic relationship between procedural standards and performance standards

and their implications for professional practice will be further explored in paragraph 2.4 on 'Professionals and standards'. First, some further clarification of procedural standards is necessary.

Table 2: Definitions and taxonomy of standards[7]	
Standardization	"A process of constructing uniformities across time and space, through the generation of agreed upon rules"
Standard	"The outcome of standardization"
Procedural standards	Procedural and performance standards aim to intervene in healthcare practices by defining processes or outcomes.
Performance standards	Example procedural standard: decubitus screening protocol, Surgical Safety Checklist Example performance standard: Amount of surgeries to be performed, adherence to guidelines and checklists

2.3.2 The 'jungle' of procedural standards

Now that I have narrowed down the scope of standards, what is left is a 'jungle' of procedural standards. The category of procedural standards – standards that define work processes – inhabits a whole wide range of standards in itself. Procedural standards are argued to have in common that they are evidence based, can facilitate measurable improvements in quality of care and aid timely diagnosis and treatment to prevent or limit the severity of morbidity (e.g. Arora et al., 2016). The terms 'guideline', 'protocol' 'checklist', and 'algorithm' are often used interchangeably. These types of procedural standards however, differ for example in their scope, the sort of practice they aim to standardize, and consequently, the 'rigidity' of their prescription.

Medical guidelines for example, aim to "*assist* practitioners in their decision making" (Institute of Medicine (U.S.). Committee on Clinical Practice Guidelines, 1992, p. 27, emphasis added). Evidence Based Medicine (EBM) aims to assist practitioners in translating an overwhelming bulk of scientific evidence into practice and standardize decisions medical doctors have to make regarding clinical intervention. These guidelines are a help to professionals and literally 'guide' them through clinical decision making. Since guidelines 'assist' and not so much prescribe, they can be identified as 'loose standards' (Davidoff, 2010).

7 Informed by Timmermans and Berg (2003:24-26), Bowker and Starr (1999)

Another category of procedural standards contain those that sharply define action items (Davidoff, 2010). A medical algorithm for example mostly refers to a decision tree; if symptoms A, B, and C are evident, then use treatment X (Johnson, 2002). The terms 'protocol' and 'checklist' are often used interchangeably, since they both help to remind clinicians of details that form baseline expectations of actions even when the care pathway is complex (Arora et al., 2016). Still, exact definitions of protocols and checklists differ, but as this dissertation focuses on the Surgical Safety *Checklist*, I will adopt this term, and concentrate the conceptual debate around this concept.

(Safety) checklists

There is no uniform definition of 'checklists' in health care. The most common general understanding is that a checklist is a cognitive tool that can help us to remember and perform tasks. These checklists can vary from as simple as not forgetting buying milk at the grocery, to commanding an aircraft carrier (Winters et al., 2009). Although checklists are generally understood as 'memory aid', the description of Winters et al. (2009, p.2010) reveals that there is something more to it: "A checklist standardizes the process to ensure that all elements or actions are addressed in a certain manner and order." The phrasing 'to ensure' implies that 'it has to be done like this'. A checklist thus consists of "sharply defined action items" (Davidoff, 2010, p.206) that prescribe how actions should be performed. Checklists are therefore much stricter procedural standards than guidelines that give some kind of 'recipe' (Hales and Pronovost, 2006).

The kind of procedural standard depends on the complexity and contingency of the task to be performed. In 'fuzzy' situations, when situations are partly knowable, actions are contingent on others, and there are multiple decision points, loose standards such as guidelines and algorithms are suitable. In 'clear cut' situations, a steps-to-take-list - checklist - is often provided. (Davidoff, 2010). It is thus generally understood that checklists fit clear cut work circumstances.

Checklists come in different types and can structure different phases of the work process. Some checklists are performed as background checks when planning an activity, other checks are performed immediately before a procedure is about to start, like the pilot's before-take-off checklist (Shillito et al., 2010; Thomassen, 2012). The latter checks allow errors occurring at an earlier stage in the 'causation chain' to be detected. Such checklists are commonly called safety checks. Even safety checklists come in different formats. The most well-known and used example are 'static sequential' checklists that require verification

and confirmation (Romig et al., 2016; Winters et al., 2009). Such checklists are generally used in team-based settings where the various tasks are done by various team members. A designated actor reads out the items on the checklist, and each responsible party verifies completion of this specific task.

The Surgical Safety Checklist is an example of such a static sequential checklist. For example, the surgeon verifies the patient's identity, the procedure and surgical site and asks about availability of equipment – to which the nurse assisting the operation would confirm the information. Subsequently, the surgeon will ask about the patient's medical condition and the availability of blood – to which the anaesthesiologist would respond. So although checklists are mostly identified as 'memory aid', authors have considered the multiple interactions that are required to complete the checklist. Therefore, various other objectives of checklists like 'improving collaboration' and 'improving commination' have been identified (e.g. Winters et al., 2009).

To summarize, a multitude of standards has entered the medical domain to improve professional performance; to make services more safe, efficient, and legitimate. As cases become increasingly complex, procedural standards are introduced to simplify and (re)structure work processes. A Surgical Safety Checklist is an example of a static sequential checklist that consists of sharply defined action patterns that structures work in team settings. Hence, wider purposes than mere 'error reduction' have been recognized, checklists should also improve collaboration. Despite checklists can be identified as procedural standard, their mandatory character (e.g. Hospital Boards, Inspectorates and accreditation organisations) makes that they can equally be considered performance standard. Box 1 in chapter 4 provides more details and background information about the Surgical Safety Checklist, which is the focal standard of this dissertation. The next section integrates the insights on professionals and standards and explores their relation.

2.4 Professionals and standards

Now that I've discussed the main concepts of this study, it is worthwhile to take a closer look at their interrelation. The final theoretical question is: *"How can we conceptualize linkages between professionals and standards?"*

There is scholarly agreement *that* checklists (can) transform professional work. However, there is a sharp contrast in how different disciplines view checklists as 'entity', let alone in how they consequently reason how such standards transform professional practice. From the different bodies of literature we can identify four different perspectives on checklists as entity; as (1) technical instrument, as (2) legitimizing tool, (3) as performance facilitator and/or indicator, and (4) as organised response, and their (hypothesized) effects on professional work and professionalism. I will describe each line of reasoning.

2.4.1 Checklist as technical instrument

In the field of healthcare and implementation science, scholars mostly approach checklists as 'technical instrument'. Most focus is therefore on its outcomes, that will follow automatically after introduction (De Vries et al., 2010). Standards can "reduce errors and make healthcare services safer" is the assumption (Sunyaev et al., 2008, p. 813). Besides, from this perspective, the information exchange between the various actors is presented an inextricably linked outcome of the checklist. Bliss et al. (2012, p.766, emphasis added) for example state that: "A surgical checklist is an inexpensive tool that *will* facilitate effective communication and teamwork." Firm connections between professionals will thus automatically result from implementing a checklist. Moreover, this idea of checklists as simple tools also suggests that they are easily adopted and transferrable to other domains. It is assumed that the experiences of other high-risk industries like aviation, which use checklists to direct behaviour in risky situations, can be transferred to health settings (Clay-Williams & Colligan, 2015; Reason & Hobbs, 2003).

Davidoff (2010) referred to this type of thinking as "magic bullet thinking"; the expectation that using a checklist alone can, somehow, 'automatically' solve a problem. However, checklists do not perform surgical operations, nor can checklists make anyone follow them. The issue with the "simple checklist" story thus is the assumption that a technical solution (a checklist) can solve a social and relational problem (see also Bosk et al., (2009).

2.4.2 Checklist as legitimizing tool

Scholars that study professional occupations have mostly adopted quite the opposite perspective. In Sociology of Professions literature, there are predominantly accounts of procedural standards as complex social interventions, rather than simple technical interventions. From this perspective developed different theories on how professional work evolves through standardization.

First of all, there are accounts of professionalisation. In the 1990s clinicians and sociologists argued that through using standards the 'recognizability', 'status' and 'self-esteem' of professions would increase (e.g. Sachs, 2003; Woolf, Grol, Hutchinson, Eccles, & Grimshaw, 1999). Various authors felt that the explicit use of scientific evidence, backed in checklists, would be beneficial for the status of the profession (Eddy, 1992; Institute of Medicine (U.S.). Committee on Clinical Practice Guidelines, 1990). From this perspective, checklists are seen as tool to gain legitimacy and further professionalise.

2.4.3 Checklist as performance facilitator and/or indicator

Yet, the same checklists that are argued to increase the status of the medical profession and considered a helpful tool in increasing the overall legitimacy and position of the professions, also make the care process more vulnerable to meddling by outsiders (Timmermans, 2005). Checklists, as sharply defined action patterns, are quickly seen as the ultimate bureaucratic instrument, prescribing what to do when and in what ways (Berg, Horstman, Plass, & Van Heusden, 2000). This is considered an assault on professional powers, for at least two reasons.

Firstly, the standardization of medical work interferes with professional judgment. Professional autonomy enables workers to assess and evaluate cases and conditions and to make judgments regarding advice, performance, and treatment (Evetts, 2002). Checklists that prescribe how we should (re)configure professional work interfere with longstanding professional arrangements and is seen and felt as "intrusion" (Evetts, 2011; Kirkpatrick & Noordegraaf, 2015; Levay & Waks, 2009). Secondly, the performance of professionals and 'outputs' of their work are not easily standardized and measurable. This is why professionals consider themselves as the only actor capable of evaluating and controlling professional work (Freidson, 1970). The creation of checklists creates a window of opportunity to assess professional practice, as outsiders can monitor adherence to checklists and compare performance.

2.4.4 Checklist as organised response

A fourth conceptualization stems from recent developments in theorizing 'professionalism'. Authors felt a clear distinction between organisations and professions and their accompanying values was no longer feasible in describing current-day professionalism (Evetts, 2011; Gleeson & Knights, 2006; Noordegraaf, 2015, 2016). Rather than an assault on professionalism or a tool to reinforce professional legitimacy, standards are increasingly considered an

organised professional response to various pressures. Hence, checklists are 'inescapable' as professions need to take organising patient safety seriously. Safety is no longer about taking care of individual patients, but about responding to increasing complexity and information, risks, and demanding clients and society at large. As argued earlier, theorizations of 'hybrid professionalism' and 'organised professionalism' move beyond the idea that formal standards focusing on efficiency and accountability are unnatural for professionalism. From this perspective, safety checklists are inherent part of professional work. Classic professional values like personal case treatment and solidarity are maintained, while new demands like effectiveness and efficiency are simultaneously taken into consideration (Noordegraaf, 2015, 2016; Postma, Oldenhof & Putters, 2014). From this perspective, checklists can be considered the embodiment of mingled logics.

The introductory quote of this paragraph on standards by Peter Pronovost, "Checklists are not Harry Potter's wand", illustrates frontrunning 'hybridity'. Pronovost, trained as frontline intensive care specialist, delivers critical care to patients on a daily basis. Besides, he is Professor of Healthcare Management at the Carey Business School, Professor of Health Policy and Management at the Johns Hopkins Bloomberg School of Public Health, and Medical Director for the Centre for Innovation in Quality Patient Care (University Hospitals, 2018). Pronovost moves beyond the assumption that checklists are technical instruments that once 'out there' will work out. On the contrary, he recognizes that implementing the checklist is not a simple matter of handing it out and asking medical staff to follow it: "It is not Harry Potter's wand. Checklists might seem deceptively simple, but the effective use of them is a complex issue that encompasses different groups within the health care system and organisational change [...]. My vision is that the science of how to do checklists is in its infancy." (Pronovost, quoted by Laurance, 2009, p. 443).

In the specific example of Pronovost, we see hybridization of *roles*, being both a frontline professional and a healthcare manager. From the perspective of organised professionalism flows the idea that professional *and* organisational values become naturally enacted within the same role. Hence, frontline professionalism becomes a matter of personal care treatment within organised professional processes in which checklists take part. Still, so called 'checklist champions' like Pronovost underline that the routine-uptake of a checklist is not self-evident and requires 'organisational change.'

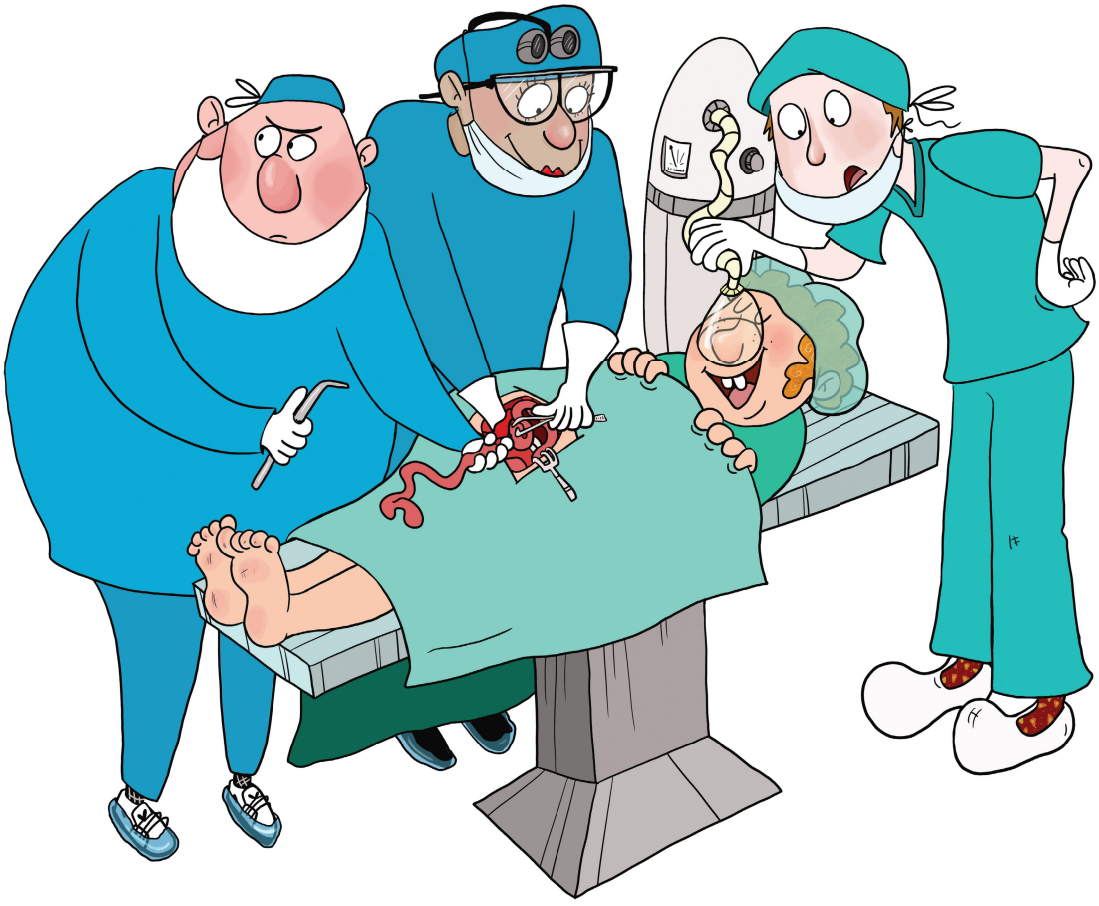
2.5 Conclusion

The effects of checklists on professional care are highly debated. They are seen as either a technical intervention or a social intervention that could be seen encompassing different logics and direct to further professionalisation *and/or* control, or, more recently, as form of organised professionalism.

From this literature review, I consider checklists pre-eminently as the embodiment of a mingling of professional and organisational logics. Professional standards like checklists encompass ideologies of empowerment, innovation and autonomy. Professional fields themselves are at the base of their development. They are also vehicles for bringing organisational logics and opportunities for control into professional work. Formal standards cannot and will not be used 'automatically', and they will neither be completely ignored or resisted. They will start to work and become part of work when professionals work with them - but how, when and why? Checklist are therefore suitable for an analysis of how hybridity 'works'. To understand how checklists (re)structure professional work *in practice,* Routine Theory provides valuable analytic tools. In the next chapter, a research perspective will be developed.

Chapter 3

Research Perspective: Professional routines



3.1 Introduction

"The key is recognizing that changing practice is not a technical problem that can be solved by ticking off boxes on a checklist but a social problem of human behaviour and interaction" – Leape (2014)

In the previous chapter, we have seen that present conceptualizations belonging to a popular 'implementation discourse' with a focus on how health care practices can be made to 'adhere' with the forefront of medical knowledge and how 'simple checklists' can be implemented (Wensing et al., 2006) seem to only reproduce the experienced problems of an 'implementation gap'. Just like Peter Pronovost, Lucien Leape, professor at Harvard University and often cited scholar when it comes to patient safety and checklist implementation. Leape (2014), Leape and Berwick (2005), and Leape, Berwick, and Bates (2002) therefore underlined that 'making a checklist work' is not a technical matter, but a matter of human behaviour and interaction. In order to study checklist as a matter of behaviour and interaction, I need a 'toolbox' that fits such an approach. Routine Theory offers a useful lens with which to examine how teams work with checklists in daily practice. The question central to this chapter is: "*"What are organisational routines and how can they be used to study (professional) work and its standardization?*"

3.2 Foundations of Routine Theory

Over several decades, a considerable body of research has been built up around the idea that routines are a crucial part of how organisations accomplish their tasks (March and Simon 1958; Cyert and March 1963; Nelson and Winter 1982; Cohen et al. 1996). Routines are a way to structure work in organisations, by enabling and constraining interactions among organisational members. Routines contribute to stability across time in organisational work, help to socialize new organisational members, and reduce conflict about how work gets done and who has responsibility for what (Cohen & Bacdayan, 1994; Feldman, 2000; Feldman & Pentland, 2003). Organisational routines are a key component of everyday life in organisations, though often taken-for-granted.

Also in professional domains like healthcare, routines are at the core of daily activities and play a fundamental role in determining the organisation of professional service delivery (Goh et al., 2011; Greenhalgh, 2008). Examples

of routines in surgery are for example patient discussions, patient handovers, multidisciplinary team meetings and radiology meetings. These routines structure work and inhibit norms and values about how work should be conducted.

Routine Theory has its roots in economics, and this 'capabilities perspective' is still prominent in strategy research. From this view routines are typically examined as whole entities. Consequently, this 'capabilities perspective' has mostly emphasized stability and inertia of routines (March and Simon 1958; Cyert and March 1963; Nelson and Winter 1982). A more recent and well-established perspective in the literature is based on the idea that routines are *practices* with internal dynamics that contribute to both stability and change in organisations (Feldman et al. 2016; Feldman and Pentland 2003). By contrast, the practice perspective focuses on the internal structure of routines, draws from sociology, and is evident in organisational theory research. This perspective thus focuses on change and generates opportunities to open up the 'black box' of routines.

3.2.1 Routine Dynamics

Routine dynamics research emphasizes the processual nature of routines and the dynamics of stability and change within them (Feldman, 2016; Feldman & Pentland, 2003). The key assumption is that change in organisations does, or does not, happen in and through daily work practice. In theory on organisational practice the term is framed in a variety of ways. Many studies equate practice with the actions of individual members (Sherer & Spillane, 2011). Still, actors do not act in isolation; a person acts, someone reacts, and it is in their interactions that practice takes shape (Bourdieu, 1990; Weick, 1979). People act in organisations, but do so in relation to others. Practice, then, is fundamentally about interactions. Because multiple people enact routines, my research focuses specifically on interactions.

Besides relationality, focusing on routines enables me to attend the duality of structure and agency, examining how structure and agency work together. Drawing from Latour's analysis of power (1986), Feldman and Pentland (2003) argue that organisational routines exist in principle as well as in practice. On the one hand, routines consist of abstract, generalized ideas of the routine, used to refer to a certain activity of justify what people do. These are the ostensive aspects. On the other hand, routines consists of "actual performances by specific people, at specific times, in specific places" (Feldman and Pentland 2003, p.94).

These are the performative aspects. In other words, the ostensive dimension is the idea, the performative dimension is the behaviour.

I refer to ostensive aspects and performances in the plural, since multiplicity in the performative aspects refers to the variation in enactment of the routine, thus differences in the specific performances of the routine (Cohen, 2007; Feldman & Pentland, 2003; Pentland & Feldman, 2005), while multiplicity in the ostensive aspects refers to differences in the abstract ideas that guide actions (Feldman, 2015; Turner & Rindova, 2012). These differences can for example arise from differences in roles (D'Adderio, 2011; Pentland & Feldman, 2005), points of view (Dionysiou & Tsoukas, 2013; Feldman, 2003), or tasks (Salvato, 2009). Participants can thus hold different ostensive understandings.

Besides ostensive and performative aspects, Feldman and Pentland (2003) identified artefacts as the visible, tangible aspects that enable or constrain elements of routines. Artefacts can take on various different forms, such as written text, furniture or the physical setting. Many artefacts though, are physical representations of a certain rule - such as a checklist - to steer a routine.

Defining routines as "recognizable, repetitive patterns of interdependent action carried out by multiple actors" meant a breakthrough in thinking about routines since it inhibits the key idea that routines emerge through their own enactment and in relation to other practices. The idea is that because people repetitively perform routines, these performances inevitably produce new performances, and from time to time also new patterns of performances (Feldman & Orlikowski, 2011; Feldman et al., 2016). For example, patient discussions or radiology meetings structure interactions among professionals, often in ways that are taken-for-granted. At the same time, it is in these interactions – thus practice – that the patient discussions or radiology meetings are reproduced and potentially changed over time. This duality of structure and agency refers to the fact that while structure shapes people's interactions —practice— in organisations, these structures are produced and reproduced in the same everyday interactions between organisational members (Sherer & Spillane, 2011).

This conceptualization of routines as dynamic systems – rather than static entities – also implies that artefacts (no matter how carefully designed) not automatically generate the prescribed patterns of action (Pentland and Feldman 2008). For example, with the introduction of new standards the 'implementers' design the artefact to model the ostensive aspect of the routine, and shape the

performances in a for them desirable way. Still, when routine participants actually start working with the artefact, the performances are not necessarily what the implementers had in mind (ibid). Earlier in this chapter, I described how various pressures force professional organisations like hospitals to adapt their ways of working, for example to increase (multidisciplinary) collaboration, to decrease costs, and to improve patient safety. From a routine dynamics perspective, it is thus argued that new patterns of action not automatically come about after implementing a checklist (artefact). Taking on routines as a unit of analysis provides valuable opportunities to go beyond the so called 'implementation problem'. It allows for examining actual patterns of action that emerge – not just the proposed patterns reflected in artefacts.

3.2.2 Routine Interactions

Since the recognition of internal routines dynamics, scholars have attempted to unravel internal routine dynamics to analyse how routines evolve over time. Though the basic idea that routines occur in 'bundles' has been recognized for many years (e.g. Nelson and Winter, 1982). This idea indicates the need to consider the *multiplicity* of routines. However, "we have studied stability and change in individual routines, but there has been less focus on how routines *affect one another* and how they work together to support stability and change" (Feldman et al., 2016,p. 509, emphasis added).

To move beyond a consideration of 'isolated' routines, I explicitly conceptualize routines as practices that are shaped by interactions with other routines through their continuous performance (Schatzki, 2011). To understand such generative 'bundles of routines' I thus need to analytically trace the connections between the routines. It is therefore necessary to consider how different actors are involved in the performance of various routines, so I can identify what roles the different actors play in creating, maintaining or modifying routine connections (Nicolini, 2013). I therefore expand the analytical framework that was initially developed by Feldman and Pentland (2003), by including an analytical focus on routine interactions (figure 1, 2). In chapter 4 I will consider the methodological implications of this approach.

I consider a focus on routine interactions especially relevant for a study in a high-risk environment like surgical care for two main reasons. First of all, very little is known about the interaction of routines, especially those in high-complex professional domains. Most studies conducted on checklist use - that are, as argued earlier, conducted from a health care management perspective - analysed

the specific checklist routine in isolation from its context among other routines. For example, studies only report numbers on the self-registration of checklist use, and the few observational studies that have been conducted merely observed the performance of the specific checklist without taking other routines into consideration (e.g. Levy et al., 2012; Pickering et al., 2013; Rydenfält, Johansson, Odenrick, Åkerman, & Larsson, 2013). In this way, we only get to see if a specific checklist has been used, but not how other routines affected its performance.

Secondly and adding to this, especially in complex professional healthcare settings, care delivery consists of a multiplicity of interdependent professional routines (e.g. patient handovers, anaesthetic routines, radiology meetings) that need to come together in the multidisciplinary team checklist routine. Put differently, surgical care is not only about coordinating a series of related routines within a subdiscipline, it is also about ongoing coordination with professional routines that shape the work in other subdisciplines such as anaesthesia. During the surgical routine, the surgeon draws on professional knowledge to continuously assess what has been done and what still needs to be performed, which involves ongoing coordination with other routines such as those in anaesthesia. The performance of such professional routines is thus highly interdependent and entails coordinating a series of connections with related routines (Hilligoss & Cohen, 2011).

3.2.3 Artefacts

The third and final analytical focus is on the role of artefacts. In a recent special issue on routines in *Organisation Studies*, renewed attention was paid to the role of materiality in enacting routines (see Feldman et al. 2016). It has been widely acknowledged that artefacts – both as enablers or constrainers - play a key role in routines (Nelson and Winter 1982; Cohen et al. 1996; Becker et al. 2005; Feldman et al. 2016; D'Adderio 2008; 2011). Though, it remains largely unknown how these dynamics play out in practice (D'Adderio 2011). In recent years, emphasis in research on routines has been on agency. Now that researchers made significant progress by opening up the 'black box' of routines and unravelling the dynamics between ostensive and performative aspects, it is time to renew attention for the important role that artefacts play in shaping routines (ibid).

The concept 'artefact' has been widely used in studies on routines and in Organisation Studies in a broader sense, but mostly with (slightly) different meanings and foci. I do not aim to provide an exhaustive typology here of what artefacts are. Rather, I focus on the different things that artefacts (can) do in

shaping organisational routines to guide the empirical analysis. But to prevent from misunderstandings, it is important to note that where in the broader field of organisation science, artefacts are mostly referred to as "objects, language and acts" (see e.g. the influential work of Yanow, (1996), in the literature on organisational routines, artefacts refer to the *material* objects (Feldman and Pentland, 2005). 'Materiality' here shouldn't be confused with physicality. Nowadays, organising is increasingly accomplished with the use of software-based digital artefacts. A digital artefact usually cannot be touched and has no physical properties. Still, many researchers suggest that software, intangible though it may be, can be described in terms of its materiality (Hutchby, 2001; Jackson, 1996; Leonardi, 2007; Orlikowski, 2007) because it provides affordances in much the same way as physical artefacts do. When talking about artefacts in this dissertation, I thus mean objects that are either physical or digital, and visible and/or tangible.

Most focus in studies on artefacts has been on those artefacts that directly intend to steer behaviour. These are often called 'artefactual representations' of routines (see e.g. D'Adderio 2011) or 'rule-embedded artefacts'. Examples are Standard Operating Procedures (SOPs) and checklists. These artefacts thus embed the formal rule and function as a model for the actual routine (D'Adderio, 2008, 2011; Pentland & Feldman, 2008). Artefactual representations intend to operate an activity or solve a problem. These artefacts can be used as instruments to communicate, collaborate, negotiate or coordinate activities (Greenhalgh et al., 2010). They control actions since they signal to routine participants what they should pay attention to, and where they should focus their concentration. These artefactual representations of routines can take on different forms, such as printed posters, memory boards or modules in the software system.

Checklists can be considered 'cognitive artefacts' as they intend to aid, enhance, or improve cognition (D'Adderio, 2011). These artefacts, some of which may be subsequently embedded in a software artefact, are mostly introduced to design or redesign work processes (Feldman and Pentland, 2005; Pentland and Feldman, 2008).

Besides the rule-embedded artefacts, I mention other material aspects here, that not directly intend to create a specific routine, but nevertheless might influence the creation of a routine. These include other objects, such as furniture, equipment and devices, clothing and the like that can intermediate between artefactual representations of a rule and behaviour patterns. In the context

of surgical care, one can for example think of the sterile gloves (materials) that actors wear, which might hinder them from taking up a paper checklist (artefactual representation of the rule). These materials can thus all be placed under the artefact heading. The question at hand is how we can understand how the different artefacts affect routines.

Artefacts as 'Actants'

In analysing the role that artefacts play in shaping routines, I draw from Actor-Network Theory (ANT). One of the focal questions ANT addresses is how artefacts are integral to the social world (Latour, 2005; John Law, 1992) An important concept is the 'symmetry of actants' (Callon, 1986; Latour, 2005). From this perspective, there is no distinction between human and non-human actors, therefore the term 'actant' was introduced. Naturally, human actors and objects are not seen as 'the same'. Latour (2005) states that an important difference is that humans are empowered with intentionality, while objects are not. Still, both can modify a state of affairs. In explaining this he puts the example of a TV remote control that makes the TV watcher a couch potato. The basic assumption is that all actants have an active role to play in social dynamics. Non-human 'actants', thus artefacts, play a role in structuring the social world. They only do so however, when "enrolled" and "translated" into the social world (Latour, 2005). This idea perfectly fits the assumption of Routine Theory that despite of what designers intend, the fate of an artefact like a checklist is "in the hands of others" (Pentland and Feldman, 2008).

An additional insight from ANT that is congruent with ideas from Routine Theory, is that actor-networks are "stable for now". Just like routines, these networks have a temporal dimension since the patterns of associations between the actants can change (Czarniawska, 2004; Pentland & Feldman, 2008). What we observe is therefore not permanent.

While ANT thus provides valuable insights for the study of routines, there is a vital difference here. As said, ANT describes the patterns of *associations* among a set of actants. As routines refer to patterns of *actions,* actor-network is not a sufficient conceptual tool to study the role of artefacts in routines. Feldman and Pentland (2007) ought to solve this problem by including the notion of 'functional events'. A functional event is the building block of a narrative; it is a fragment that advances the story. A functional event consists of two actants connected by some action. Functional events thus allow for a description of both patterns of

actions and actants – and they can thus include human-human and non-human-human interactions.

Such functional events in the context of a Surgical Safety Checklist would include: The surgeon takes on the written checklists and reads out the items. The scrub nurse checks and verifies the availability of equipment. The anaesthesiologist confirms the availability of blood and verifies the patient's condition by checking the parameters on the screen. Functional events thus provide units of action, and from these we can ultimately recognize patterns of action that make up the routine. In this conceptualization, each part of the routine thus is a functional event (Pentland and Feldman, 2008).

Artefacts and their affordances

Building on the idea of functional events – actant interactions - that make up patterns of actions, I consider the notion of 'affordances' useful. The concept of 'affordance' originally stems from psychology (Gibson, 1977, 1979), the psychology of perception more precisely. Gibson claimed that humans, along with animals, insects and birds, orient to the world in terms of the opportunities they offer for action. "For a reptile for example, a rock might offer the possibility of shade from the sun, or for an insect, concealment from a hunter. A tree may offer a cat a scratching pole and a bird, a place to build a nest. Affordances differ from species to species and from context to context. However, they cannot vary completely. While a tree offers a range of affordances for a vast variety of species, there are things a tree can afford that a river cannot"(Allen, 2013, p. 463). Gibson therefore put the role of perception central; he believed that the possibilities of what can be done with something, or someone, are unique to each individual and their situation.

This idea of affordances was introduced into science and technology studies by Hutchby (2001). He claimed that we can think about artefacts in the same way as humans and animals in Gibson's understanding. Artefacts possess different affordances that constrain how they can be written, read and used. When people work with artefacts, it is necessary for them to deal with the possibilities and constraints that result from the artefact's affordances. According to Hutchby, acknowledging the affordances that shape both the possible meanings and uses of an artefact, allows us to study the effects of artefacts more precisely. In this way, artefacts can be understood as both shaped by and shaping of the practices other actants use in interaction with, around and trough them.

The concept of affordances is nowadays backed in psychology, human–computer interaction, sociology, information systems and organisation practice literatures. In studies on organisational practice the matter of 'materiality' gains increasing attention. Barrett et al., (2012), Fayard & Weeks, (2007) and Orlikowski (2000) have all emphasized that practice is always situated in socio-material environments. If we want to understand such organizational processes, we need to consider how organisational structure, social practice, material context, and physical artefacts are intertwined. This adds to the assumption of Berg (1997) that artefacts can transform workplaces in important ways, but that their generative power can neither be attributed to the tool or its users but arises from their interrelationship in action.

In this thesis, I distinguish between material and spatial affordances of artefacts. With material affordances, I mean the material properties of the artefact itself. The design of an artefact affords different action possibilities. A digitalized checklists, on an Ipad for example, is assumed to afford quick information exchange. With a checklist printed on paper that needs to filled out by hand, this is less the case. In short, material properties generate different utilities.

With spatial affordances, I refer to the possibilities to use an artefact in its physical context. Giddens nicely puts the influence of the environment on possible action patterns in his structuration theory. Although Giddens considers agency restricted to humans (cf. Latour's notion of 'actants'), he states "people do what they do [...] in physical contexts, which are highly relevant to the possibilities and constraints facing any individual or group [...] We live in a physical world that has causal effects in the sense that you can't walk through a wall" (Giddens & Pierson, 1998, p. 821).

Previous research has demonstrated that the physical environment is important for understanding behaviour patterns. Wineman & Peponis (2010) for example conducted a study in the cultural sector, in which they explored the role of spatial layout in shaping the ways in which visitors explore, engage and understand museums and museum exhibitions. I consider the spatial affordance of artefacts – thus their possible uses – of great importance since in hospital settings, "jobs by nurses, physicians, and others often require a complex choreography of direct patient care, critical communications, charting, filling meds, access to technology and information, and other tasks" (Ulrich et al., 2004, p. 5). Professional work in these settings thus encompasses high levels of mobility, in which transfer and accessibility of artefacts is of crucial importance. Analyses of the number

and location of hand dispensers and sinks for example, suggest that providing numerous, conveniently located alcohol dispensers can increase the performance of a hand disinfection routine (Boog et al., 2013; Somner et al., 2007). The availability and location of these object thus affects possible action patterns.

Drawing on the above, I assume that the performance of a routine is guided and constrained by the routine as prescribed in the artefact in relation to its situational context. So, materiality and space afford different action possibilities. Getting back to the example of hand dispensers; both the design of hand dispensers (material) and the way in which dispensers are located in the environment (spatial) have consequences for its affordances; the perceived possible ways in which the dispenser can be used. Thus, if we want to advance our understanding of how rule-embedded artefacts function as intermediaries of routines, we have to take into account not only the characteristics of the artefactual representation (the checklist) itself, but explicitly link it to its spatial affordances.

3.3 Connections and connectivity

As the title of this book indicates, connections and connectivity are central concepts in this study. Different expressions of 'connectivity' have emerged in various bodies of literature in recent years, for instance in media studies (e.g. Haythornthwaite, 2005), gender studies (Hawthorne & Klein, 1999), metaphysics (Laszlo, 2004), social network studies (Björk & Magnusson, 2009; McDonald, 2007) and more recently also in studies on the reconfiguration of professionalism (Noordegraaf, 2016; Noordegraaf, Van der Steen, & Van Twist, 2014).

The introductory chapter showed how developments internal and external to the professions push towards a (re)organisation of professional work. Complex cases require collaboration beyond professional borders. Workflows need to be reorganised to treat multi-problem cases. Trust in the professions and their services is not guaranteed, but performances have to be transparent and proved constantly. Standards (backed in artefacts) are deployed as vehicles to organise 'connective routines' in performance-oriented environments. Hence, connections are crucial and can take on different forms and appear at different layers.

A 'connection' refers to an interaction or a structural tie, which can lead to a status of 'connectivity' or 'connectedness'. I will elaborate on three types of connections that I deem particularly relevant for the purposes of this study;

(1) social connections, in terms of connections between people (2) connections between routines, and (3) connections between routines and artefacts.

A first important type of connection are those between people. Various scholars have underscored that relational connections between people can have a powerful impact on their engagement and behaviour in organisational processes (Carmeli et al., 2013; Kahn, 2001, 2007). Furthermore, connections are associated with effective teamwork (e.g. Gittell et al., 2000). In describing new forms of professionalism, Noordegraaf and Steijn (2014, p.34) point towards 'connective professionalism' as a possible productive way to overcome boundaries: "Dealing with variety inside work and professional fields, as well as dependencies between professional and organisational fields, might become a crucial aspect of professional work instead of an obstacle for further professionalisation." Hence, 'connective professionalism' emphasizes the relational side of professional behaviour, and focuses on mechanisms influencing relational dynamics.

Literature on organisational routines pays explicit attention to connections. Feldman and Rafaeli (2002) state that routines inherently are about connections, because the connections between people that are formed as they jointly participate in organisational routines allow them to create shared understandings. In the first place, such connections will allow participants to create shared understandings about the specific task to be performed (that is, a shared ostensive pattern). In the second place, connections through routine performances will allow participants to develop shared understandings about the wider goals of the organisation. Specified to the case of this thesis, the presumption becomes that through the joined performance of the Surgical Safety Checklist, routine participants can generate firm shared understandings about what the checklist is and how it should be performed, as well as understandings about patient safety in general.

In this study, I thus approach standards (as routines) as an inherently relational matter. The performance of a checklist routine is a collective effort and is about how people connect in the performance of a checklist routine. It is the interaction between people that matters, rather than what people think or do on their own. The frequency of interactions for instance, might enhance the strength of connections; when people frequently interact in the performance of a checklist routine, they will most likely share information and develop shared understandings (connectivity).

A second important type of connection are those between routines. I expand the routine framework from mere internal dynamics to routine interactions, as routines never stand on their own. When you study a routine in isolation you never truly get to see and understand why certain patterns (do not) emerge or change. Routines are connected to each other. To create a new routine it has to fit with existing patterns of action. This also means that people engage in different routines and have to balance and prioritize routines. Here we can make links with the concept of 'hybrid professionalism' that has gained prominence in public management literature. Whereas in 'classic professionalism' individual case treatment is at the core, hybrid professionalism is about new connections between professional and organisational principles (Noordegraaf, 2015). Noordegraaf (2015: 12) argues that for professionals to deal with new and complex realities, organising work should become part of professional action. From a routine perspective I would phrase that to routinize a new standard, professionals should (re)organise interacting routines. Studying how a new standard becomes routinized therefore necessarily implies tracing the interaction of multiple professional routines.

A third important type of connection are those between routines - the dynamic of ostensive aspects and behaviours - and artefacts as 'model' for routines. Insights from Routine Theory revealed that 'implementers' usually design artefacts that do not result in the intended behaviours (Pentland and Feldman, 2008). Organising connections thus also means not merely implementing artefacts but connecting artefacts and practices (see also Noordegraaf 2015). 'Materiality' is increasingly considered to play as decisive role in organising (e.g. Orlikowski, 2001), but attention for artefacts in empirical studies has remained limited (D'Adderio, 2011; Feldman et al., 2016). By looking at this type of connection, I not only search for explanations why discrepancies between artefacts and actual patterns of action emerge, but also look for ways to better connect the artefact with the actual behaviour.

3.4 Research perspective: professional routines

In this chapter, I have developed a toolkit to study checklists as a relational and situated matter. A routine perspective, which incorporates three important types of connections (between people, between routines, and between routines and artefacts), provides a useful lens to examine the mechanisms that influence

inter(action) in healthcare settings, and thus "how standards work" in surgical teams. Figure 2 presents the analytical framework.

As introduced in chapter 1, the framework of Feldman and Pentland (2005) that conceptualizes routines as dynamic practices forms the starting point of the analysis. Based on the theoretical review, I adapted and expanded this conceptual model, to make it a useful and convenient tool for studying standards in professional settings. The literature review led to the identification of various 'sensitizing' concepts (Blumer, 1954; Glaser, 1978; Patton, 2002), that I subsequently positioned in the framework to guide and inform the fieldwork. Although the various theories provided relevant background knowledge, the framework explicitly allows for an open outlook. Theoretical considerations of how professionals encounter standards include for example notions of both resistance and acceptance. Although the framework includes sensitizing concepts that form the starting point for the empirical work, I thus explicitly remained open to all kinds of empirical findings (see also chapter 4).

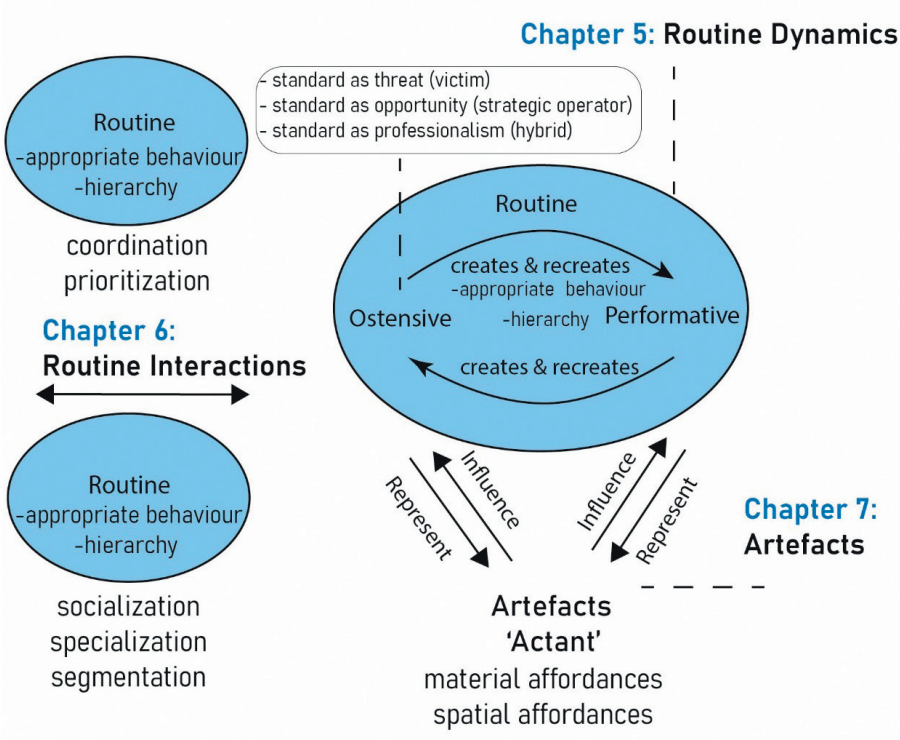


Figure 2: Theory informed analytical framework

First of all, theories on professional work and standardization led to the identification of three main ostensive ideas. First, there might be ostensive ideas in which professionals consider checklists a threat, for example a threat to professional judgment, or a threat because of the possibilities for external control. These abstract patterns would direct to resistant performances. On the contrary, professionals might consider checklists a means to professionalise, innovate and secure their status as 'legitimate' professional. This idea directly links to the broader dominant discourse of 'Evidence Based Practice' as a mechanism to improve quality of care. From these ostensive ideas might flow performances in which standards are actually used by professionals. From insights on hybrid professionalism, one would hypothesize standards as inherent aspect of professional work, in which professionals actively and naturally organise workflows. Based on the literature on professional education and socialization, I derived hierarchy and power as possible mechanisms that might mediate between ostensive- and behavioural patterns, in which professionals with a high rank and status (like surgeons or anaesthesiologists) would have more possibilities to match performances with their ostensive ideas, than those lower in hierarchy (like scrub nurses or nurse anaesthetists). Chapter 5 empirically studies how ostensive and performative aspects of the Surgical Safety Checklist routine interact in daily practice.

Next, for this study in surgical care, I expanded the conceptual model by explicitly adding other routines that constitute work in this domain. Based on theoretical insights, coordination and collaboration are identified as important but difficult tasks. Connections between routines are thus expected to not emerge self-evidently. The performance of the checklist routine is highly dependent on other routines and entails coordinating a series of connections with other routines. This probably means that the interaction with existing routines will affect internal dynamics of the new routine. Further, Sociology of Professions literature provides useful insights into how professionals are trained to work (together). Because of strong socialization processes within subdisciplines, the 'appropriate ways of behaviour', jargon and hierarchy patterns are institutionalized in the various routines and are therefore important to take into consideration when studying a new, envisioned checklist routine that aims for connections. It is expected that when in existing routines patterns of communication (e.g. hierarchical) are different from what is expected in a new routine (e.g. speak up), it will be difficult to create this new routine. The focus in chapter 6 is on how the envisioned checklist routine interacts with existing routines.

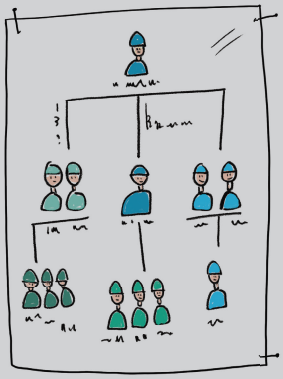
Thirdly, based on the theoretical review I further disentangled the concept 'artefact'. I identified artefacts as actants that play an active role in shaping the social world. Artefacts do not have the same agency and 'intentionality' as human actants, but they afford different possibilities for use. By introducing the notion of spatial and material affordances I explicitly include the possibilities for use in the analysis, as different representations of the 'rule' afford different action patterns. From a routine perspective, I do not consider artefacts 'technical' entities that will facilitate connections and behaviour as prescribed in it. The focus in chapter 7 is on how artefacts affect routines.

3.5 Conclusion

In this chapter I combined insights about professionalism and standardization with literature on organisational routines to work towards a convenient research perspective. The sub question central to this chapter was: "*What are organisational routines and how can they be used to study (professional) work and its standardization?*"

Organisational routines can be conceptualized as practices with internal dynamics. A routine perspective is a convenient lens to study how standards work, since this perspective allows for a micro-level view on how routines evolve and change through daily interactions. The developed routine perspective explicitly focuses on internal routine dynamics, routine interactions, and the role artefacts play. Different types of connections are considered important for understanding and establishing routines, especially in highly professional domains like surgical care. The perspective is informed by literature from the Sociology of Professions and Science and Technology Studies to take account of the specific nature of professional work and identify possible outcomes of the empirical research. These insights provide guidance, but allow for an open outlook. Theoretical insights suggest different ostensive aspects regarding the checklist and hint towards different performances, for instance rejection or incorporation. After a discussion of the research design, the empirical chapters 5, 6, and 7 will each focus on a part of the framework, and thus different type of connection.

Intermezzo



Intermezzo: The gate-keeper

The first couple of months of my PhD project I spent on exploration. Starting from a fascination for contradictory news reports about surgical care delivery - as mirrored in the introductory chapter of this dissertation - I delved into the literature about the reconfiguration of professional work and standardization. I learned about routines as an interesting lens to study these processes. After a while, I had some initial ideas on the design, that covered 'surgical work' and 'standardization'. Just when I was starting to worry a little about 'how to put these exciting plans into practice', my first supervisor put me in touch with who turned out to become 'the gate-keeper' (Though 'gate-keeper' sounds a bit Harry-Potter-like and is way too detached vocabulary to express what this person has meant for this research project, I will tell).

The role of 'gate-keepers', or 'key informants' has been widely covered in literatures on qualitative research, especially with regard to ethnographic approaches (Burgess, 1982, 1991; Miller & Bell, 2002; Whyte, 1955). Participant observation can be extremely difficult, as the researcher is not only busy collecting data but has to continuously negotiate access and establish relationships and trust in the field. Gate-keepers can be helpful here. Gate-keepers are defined as "selected insider participants who aid the researcher in orientating to the setting, developing relationships and getting access to others" (Walshe & Boaden, 2005, p. 164). The role of the gate-keeper has been identified as 'crucial', since the roles and relationships of the gate-keeper in the setting can impact upon the success in gaining access to and trust of other participants.

Interestingly enough, I did not 'select' a gate-keeper. I was so fortunate, that the gate-keeper just kind of 'appeared' on the exact right moment. The 'gate-keeper to be' was put into touch with my first supervisor, because he was struggling a bit with contextualizing his clinical data. Experts in the field of Public Administration and organisation science can provide some useful insights here. That is when my supervisor saw some interesting links between this clinician who had a genuine interest in organisational processes, and my initial research plan, and decided to put us in touch.

And so, about a week later, I had my first conversation with the gate-keeper. I still remember his enthusiasm for the idea – even though he just finished a long night shift in the hospital. From the start, the gate-keeper was extremely supportive and we discussed some ideas for the fieldwork and getting access to

the site. The support of the gate-keeper may have stemmed from his genuine desire to see this research being conducted, but it was supported by the tentative personal relationship that was fostered through our exploratory conversations about research. These conversations were not limited to my initial plans for this dissertation, but involved wider explorations of possible research projects that could be conducted in the healthcare field, combining insights from healthcare, public admin and organisation science.

The gate-keeper was my entrée to the closed world of surgery. In the next chapter 'On ethnographying', I provide more details on what I call the difference between gaining informal and formal access, but I can underline that the gate-keeper has been crucial in gaining both. He did not put any restrictions on who I would contact, and he actively tried to find different colleagues to participate; juniors, seniors, those known as 'in favour of standardization', those known as 'hesitant' or 'against change'. In that way, we tried to create a balanced and representative group of respondents for shadowing. With his enthusiasm for the project, the gate-keeper convinced both his direct colleagues from Plainsboro, as well as 'colleagues' from St. Sebastian's to take part in the study.

To get a sense of the fieldwork, getting to know the surgical department and explore how the analytical frame worked out, I decided to start off with shadowing the gate-keeper. Naturally, he had more background knowledge about the project than the other respondents would have. I still remember that initially, the situation was a bit 'uncomfy'; we had been discussing clinical work, checklists and routines, and now the time was there to actually 'see'. At the start of the day, the gate-keeper told me: "I will to try to act as usual" and a bit later: "I will act as normal in a while anyway" (that's the thing with routines, you easily get back to routines as they provide guidance.) Interestingly, the gate-keeper got reflective; he was doing things as he was always doing, but started to reflect upon them. He started to apologize: "I noticed that when in a hurry, I can be very direct, and not always kind". Of course, that's exactly what I wanted to see; professional work being carried out within context. But, as I got to know the field a bit after a couple of days, and the gate-keeper had in-depth knowledge about the project, it was time to shadow other respondents.

Shadowing other respondents did not mean that the role of the gate-keeper was eliminated. Rather, the gate-keeper functioned throughout the process as 'sparring partner' and 'member check'. The conversations we had were extremely valuable. The gate-keeper provided contextual knowledge, helped me out with

making sense of clinical jargon. In this way, I could make better sense of the data, though I never had the feeling the gate-keeper tried to influence my findings in any way. On the contrary, he was always very careful in not providing judgments or personal interpretations: “It’s your story Marlot, it is about what you’ve found.”

With hindsight, the role of the gate-keeper thus moved beyond the scope of an ‘informant’ or ‘access provider’. But what would he get out of it?! During the process, I’ve been struggling with this a lot; the gate-keeper put loads of time, energy and intellect in this project, but I was not sure what would come out of it and what he would get from me in return. We’ve openly discussed this issue, and he always guaranteed me that the only thing he wanted is that I could conduct this research as he just deeply believed in the approach, and thus value of the project. I am deeply grateful for that.

The importance of so-called gate-keepers has extensively been described in the academic literature. ‘Importance’ in terms of ‘access’ mostly, but also in terms of providing contextual knowledge. After writing this dissertation, I can inductively add to this, that gate-keepers can also be of great importance beyond the scope of the research project. Gate-keepers can be of great importance in terms of establishing future collaborations, new research projects, and moreover, in terms of new friendships.

Chapter 4

On Ethnography*ing*

4.1 Introduction

"Ethnography is not for the faint hearted" – Mary Dixon-Woods

This chapter describes the research design and methodology that I used in this study, hereby answering the question: *"How can professional standards in performance-oriented medical practice be studied?"* The question how and why standards work, requires a close and in-depth look at real-life situations. My perspective is a relational one; through a routine lens I examined the mechanisms that fuel (inter)action in professional settings. In order to do so, I adopted an ethnographic methodology.

This chapter starts with introducing ethnography*ing* – a verb - to emphasize the active, processual and iterative nature of this research strategy. I will describe and account for the decisions I made throughout the research process, structured along the three main activities in this ethnographic study: headwork, fieldwork, and textwork (Hulst et al., 2017; Van Maanen, 1995, 2011).

As the researcher plays a crucial role in ethnographic studies, I will pay explicit attention to my position and discuss some ethical issues in the remainder of this chapter. The boxes provide additional information for the reader to better able to interpret the findings, concerning the specific case, the Surgical Safety Checklist, the composition of surgical teams, and the surgical trajectory.

4.2 Ethnographying, an ongoing process

'Ethnography' is a concept that can refer to a variety of things. Ethnography can for example mean the outcome of a study, a book, 'an ethnography'. Ethnography can also refer to the process, a methodology, that results in such an ethnography. Next, there are various styles that are all conducted under the same 'ethnography heading'. Though generally, ethnography means three things: reading and selecting theories, concepts and frameworks, and making sense of the findings *(headwork),* doing research (*fieldwork*), and articulating and presenting those understandings (*textwork*) (Van Hulst, Ybema and Yanow, 2017; Van Maanen, 1995). It is therefore argued that "ethnography is not a particular method of data collection but a style of research" (Brewer 2000:59) that is distinguished by its objectives to understand the social meanings and activities of people in a field,

and involves participation in this setting (Brewer, 2000; O'Reilly, 2012; Taylor, 2002; Van Maanen, 1995).

In philosophy of science literature, there is an ongoing debate about whether the data collection techniques a researcher selects, are pragmatic or result from a prior commitment to a certain methodological position (see Brewer, 2000; Bryman, 2004; Tashakkori & Teddlie, 2003). Without going into in-depth discussions about philosophical positions, I argue that for me personally, the approach of this research directly flows from the interest of the researcher and thus the characteristic phrasing of the research question - how checklists *work in situ*. I adopted an ethnographic approach to study how professionals create and modify standards 'from the inside out'. Getting an in-depth understanding of 'what goes on' thus became a specific aim of this study. Therefore, I indeed do feel that ethnography 'is not just methods', it is a specific way of defining the research problem and going about it. Or as Agar (1996, p. 2) puts it: "I don't just mean a toolbox, I mean a way of looking at a problem."

The research interest and formulation of the research question stem from the belief that the social world is complex, and cannot be understood in terms of simple cause and effect relationships. With the specific approach of this dissertation, I answer to the many studies that aim to distil factors that affect implementation. By providing rich narratives that show how the many 'variables' interrelate in practice, and how structure and agency work together, this study moves beyond instrumental studies that view successful implementation as the sum of the facilitators minus the barriers (cf. Zuiderent-Jerak 2007). The overarching purpose of this study was to observe, describe and explain the professional routines, as they unfold in context (Hammersley & Atkinson 1995).

As ethnography is something you *do,* something that develops along the way, something that is a process in itself, I call it ethnography*ing*. I emphasize that doing headwork, fieldwork and textwork, are not separate linear phases, but constantly evolving processes in which the researcher inevitably plays an important role (see also De Jong, Kamsteeg, & Ybema, 2013; Van Hulst et al., 2017; Tota, 2004). Naturally, I first gained access before conducting the observations, but I also started doing textwork while I was still doing field- and sensework. The coming paragraphs describe how I went about these activities.

4.3 Headwork: Starting off

As argued, I constantly moved between the different activities (headwork, fieldwork, and textwork) during the research process. This means that the order in which I describe the activities here, not necessarily means that I conducted those in a chronological order. For reasons of comprehensibility, I divided both headwork and fieldwork in two separate sections in this chapter. I use the term headwork to refer to both the conceptual work that informs the fieldwork, and the headwork that is required to make sense of the ethnographic data (see also Van Maanen, 2011). As this research started off with headwork; a thorough consideration of how and where to begin, that is where I'll start my description. Thereafter, I will discuss the fieldwork, divided in 'early-stage' fieldwork and the 'actual' fieldwork, collecting data. Next, I will discuss the headwork in terms of sensemaking, followed by a description of the textwork.

4.3.1 Getting into surgical care

When I started this research project, I began with reading into theories to demarcate the research topic and get to know 'the state of the art'. Without a theoretical orientation, the researcher is in severe danger of providing description without meaning (Hartley, 1994). Gummesson (2000) argued that a lack of preunderstanding will make the researcher spend substantial time gathering basic information. This preunderstanding may result from general knowledge such as theories, models, and concepts or from specific knowledge of institutional conditions and social patterns. In this dissertation, I explicitly used theoretical insights to gain knowledge of various theories and concepts. I read into various articles from different disciplines to get to know the 'state of the art' of theories from different (sub)fields like Organisation Studies, implementation science and the Sociology of Professions. (An extensive overview of the most important concepts and debates in the literature can be found in chapter 2.) The literature review led to an initial focus on the reconfiguration of professional work through formal standards, with surgical care as an appropriate field to study standards in a professional context.

The selection of surgical care as a field to study these issues resulted from high scores on three important aspects, ranked by their importance: (1) appropriateness and relevance of the field to study the theoretical problem (2) access to the field, and (3) personal affinity of the researcher with the field.

First of all, it is of crucial importance that the research field fits the (theoretical) research problem. An important observation from the literature was that the reconfiguration of professional work through the implementation of formalised standards was a highly 'alive' and debated topic in the medical domain. This becomes for example visible in the emergence of the field of 'implementation science' and the many studies on standard implementation that are conducted in this subfield (see also chapter 2). Exploratory conversations with key actors in the field underlined that the implementation of standards in this domain is also considered an important practical problem that is of great concern to many.

Further, the specific nature of surgical care makes this an especially relevant field to study the reconfiguration of professional work through standardization. First of all, professionals working in surgical care are considered the 'archetypical' professionals (see e.g Etzioni, 1969;Fox, 1992 Freidson, 1970). In this field, the contrast between a long tradition of autonomous work characterised by professional judgment, and the introduction of strict formalised standards is assumed to become most evident. Secondly, characteristic for this professional environment is that consists of various professional segments. Strong socialization within subgroups makes that the different segments each have their own taken-for-granted ways of acting and talking (Baker et al., 2011; Cameron, 2011; Freidson, 1994; Hall, 2005). New standards increasingly require professionals to apply generic, formal standards, and cross the boundaries of their professional segments. The matter of *connectivity* that is an important part of the research problem, is an urgent and complex issue in this domain. Thirdly, the surgical domain is undergoing constant development in surgical interventions and technologies, and as a result, surgery had not only become a specialized system of work, but also a domain where continuous adaptation is normal (Benn et al., 2008). Given the capacity to adapt and the many successes of innovations and ground-breaking therapies, the paradox of introducing a seemingly simple new standard such as a safety checklist that shows problematic in practice, makes this a crucial field to probe into.

Secondly, although the suitability of the research field may be considered most important, access to the field is prerequisite to conduct an in-depth ethnographic study. An important aspect in the selection of surgical care therefore was access to the field. The university department from where I conducted this research project, established a firm and enduring collaboration with the medical faculty of the University (for example resulting in the 'focus area' Professional Performance) which smoothened access to the field. Further, a gate-keeper (Burgess, 1982,

1991; Miller & Bell, 2002; Whyte, 1955) played an important role in gaining access and acceptance at both research sites (see also the intermezzo on the gate-keeper).

Lastly, since ethnographic fieldwork requires close involvement in the research setting, personal affinity of the researcher with the object of study is at least desirable (M. Dixon-Woods, 2003). Because of my personal interest in this specific setting, I already had some background knowledge of the field, as well as close relationships with people working in this professional domain. Therefore, I could more easily pick up the language and interact with actors in the field. More notes on how I got to know the usually 'close world' of surgical care can be found in paragraph 4.2.5.

4.3.2 Constructing an analytical lens

Next, a good deal of headwork involved developing a research perspective, a framework, that fit my particular research question. I had decided the focus of my question would be on how standards work in professional settings, without yet knowing the exact standard to start from. The framework I developed highlights practice, using organisational routines as a way to frame that practice. Although this framework provides analytical guidance, It must be noted the distinction between the different aspects of a routine serves an analytical purpose. In the complex reality of professional work, these 'boundaries' between abstract ideas and behaviour are more blurred, and their representation therefore to a certain extent always involves categorizations by the researcher. Further, this framing, like all analytical frames, foregrounds some aspects of the phenomenon under study (practice, i.e. interactions) and backgrounds others (e.g. individual characteristics of routine participants). Still, this analytical framework allows me to understand the practice of a standard as constituted in the interactions among surgical team members. Besides, this perspective allows me to take into account the duality of structure and agency.

I further developed the analytical framework by inserting the various 'sensitizing' concepts (Blumer, 1954; Glaser, 1978; Patton, 2002) that emerged from the literature study to inform the fieldwork. Although the various theories I had read provided relevant background knowledge, I maintained an open outlook. Theoretical considerations of how professionals encounter standards included for example notions of both resistance and acceptance. I thus explicitly remained open to all kinds of empirical findings.

In this dissertation, I thus started off with a selected, specified topic. Rather than studying 'surgical care' as a field, I focused on the question how professionals together work with a formalised standard. The scarce ethnographic studies that have been conducted in operating theatres, have mostly concentrated around big concepts like 'safety culture', that are – as self-confessedly stated by the authors, not unproblematic (McDonald et al., 2005). By studying specific, demarcated practices I got to see the many processes and interactions that constitute professional work 'from the inside out', and provide rich contextualized narratives. To further demarcate the study and find illustrative examples of such standards, I needed input from the field.

4.4 Fieldwork: Commencing into the field

The previous section already shows how headwork and fieldwork got blended, as access to the field is indispensable in selecting a field, and exploratory conversations were crucial for selecting surgical as a field. By further commencing into the field, I was able to further explore the research field, and gain more focus.

4.4.1 Exploring the field

After gaining informal access to the research field – that is, having a contact person and the permission to start conversations, the initial focus from the literature was specified from a native point of view. In this exploratory phase, I conducted both exploratory conversations with a gate-keeper (Burgess, 1982, 1991; Miller & Bell, 2002; Whyte, 1955) and a senior policy advisor of the Quality and Safety department, and exploratory observations shadowing the gate-keeper, to 'get a feel' of the research field and narrow down the research topic.

During the conversations, the implementation of safety standards in the surgery department appeared a 'hot topic' from both managerial and professional points of view. When entering the field, it often didn't feel like as a researcher I had to initiate a conversation and pose questions. On the contrary, respondents were willing to share their thoughts on the Surgical Safety Checklist. I selected the Surgical Safety Checklist as a starting point for close analysis (see box).

4.4.2 Selecting the research sites

To address the research question I conducted ethnographic fieldwork at two research sites. In this ethnographic study, I decided to first study the research topic thoroughly in one research setting, and then move to another site to

examine the research problem in a different context. (Marcus, 1995) argued that multi-sited ethnography fits if the social phenomenon under study cannot be understood by focusing on a single site. The essence of multi-sited research is to follow people and connections across sites, because they are substantially continuous but spatially non-contiguous (ibid; Falzon, 2012).

In conducting ethnographic fieldwork at two research sites, I had to balance the aim to deeply getting to know the research sites, and the aim to research the issue in different contexts. Two research sites seemed feasible in gaining both an in-depth understanding of the research problem and examine the issue in different contexts in the research time available for the project. The aim of studying the research topic in an additional research setting was not close comparison. Rather I was looking for connections, associations, and relationships across space, to give the analysis some more depth.

The selection of the two research sites resulted from an extensive consideration of both substantive and pragmatic reasons. The research sites have some important similarities, but also differ in various respects. Needless to say, I did *not* select the research sites based on how (well) they work with the Surgical Safety Checklist; since this this is an explicit focus of the empirical study, and as I claimed, using (self-) registration data would lead to a biased selection of research sites.

First of all, both hospitals are situated in the same geographical area. This also means that they are part of the same 'educational area'; residents conduct parts of their training at both institutes. This implies that some of the respondents have been talked to at both research sites, which enabled them to share ideas on similarities and differences. Plainsboro Teaching Hospital[8] is a large academic hospital. The surgery department consists of a new inpatient clinic with 18 operating theatres and an outpatient clinic with 14 operating theatres. St. Sebastian's hospital is a so called top clinical institute[9]. The surgery department consists of 10 operating theatres. Both hospitals are engaged in complex surgical

8 In this dissertation, I use fictive names for both research sites for the purpose of anonymity. Plainsboro Teaching Hospital is a fictive hospital in the award winning television show *House M.D.* St. Sebastian's hospital is the decor of television shows like *House M.D., Lost,* and *Criminal Minds*.

9 St. Sebastian's is one of the 26 so-called 'top-clinical institutes' [top klinische ziekenhuizen] in the Netherlands. These top clinical institutes perform complex interventions, and are usually specialized into one or more care areas. Top clinical institutes deliver services to patients from the wider environment. Besides care delivery, top clinical institutes are engaged in (innovative) research projects and are responsible for educating physicians.

interventions, education, and scientific research, though these practices are performed on a more low-scale level in St. Sebastian's.

Besides the more substantive reasons, practicalities played their part in the selection of the research sites too. As said, access is crucial in conducting ethnographic research. The gate-keeper that had a great deal in promoting the research project had close contacts at both research sites which smoothened access. Further, because working days in the surgery department are long and start early, the research setting had to be within easy reach from the home location of the researcher.

4.4.3 Selecting research participants

At both research sites I started off with purposive sampling to select participants at the research sites. Because of the problem focus of this dissertation, together with a gate-keeper I initially selected participants that held specific knowledge on the research topic (Davies & Crookes, 2004), for example because they were involved in the implementation process of the checklist in the surgical department or had a position in for example a patient safety core team. Through a snowballing technique, the key actors subsequently helped to identify other relevant actors.

Individuals were chosen based on the purpose of maximum phenomenon variation (Hammersley & Atkinson, 2007; Miles & Huberman, 1994) which means that I explicitly asked to involve actors with both different professional backgrounds and specialties, and for example different attitudes towards standardization and checklists, such that the full range of the phenomenon was represented. Naturally, this method of selecting respondents only led to the inclusion of individuals that were willing to participate. This does not imply that they held the same perspectives towards the research topic.

Data saturation dictated the sample size, which means that I kept on recruiting new participants to the point that the generated data did not lead to new interpretations (Guest et al., 2006).

4.4.4 Negotiating access

At the start of this chapter, I described that the overarching purpose of this study was to observe, describe and explain the recreation of routines, as it unfolds in context. In order to describe and explain what happens in a setting; how people conduct their work and how they see their own actions, one not only needs

formal access to the setting, but one also has to gain acceptance (Hammersley & Atkinson 1995).

A first absolute requisite to conduct an ethnographic study, is to gain access to the field. In conducting this ethnographic study, I noticed a clear difference between what I call informal and formal access. The gate-keeper played a key role in gaining informal access to the research field. I got in touch with various actors in the field who were open to conversations and observations. After this informal access was arranged however, formal access appeared a bit more complicated. The various respondents did consent with observations, as long as "things were arranged officially".

Formal approval for the study was obtained via the hospital board and the heads of the various departments. Further, at both research sites, the research proposal was presented to a research board that is concerned with considering possible ethical concerns. Since this study did not involve any interventions with patients, approval of the Medical Ethics Committee was not necessary.

Still, as a researcher I did encounter patients throughout the process. The first hospital under study therefore required an appointment as 'research assistant', which included signing secrecy forms, obtaining a Certificate of Conduct (Verklaring Omtrent het Gedrag, VOG) and attending a Quality and Safety module for new employees. At the second research site, after the proposal passed the research board, a name tag stating the role 'guest' was sufficient. The second research site could rely on the experiences of the first research site with the research project, which could have caused that they did consent with the project more easily.

Gaining formal access from the hospital board had been a bit of a hurdle, but once I got formal access and entered the field, professionals were more than willing to show me their work. It is noted that besides the formal access to the field, gaining acceptance is a crucial element in gaining in-depth insights. Burgess (1991) noted that gaining access is a continuous process of negotiating and renegotiating relationships. Though the gate-keeper made an invaluable contribution in gaining access to the field by promoting the project and virtues of the researcher, as Gill (2008, p. 84) nicely stated: "total reliance on this entrée into the field is naïve" since the researcher has to form and maintain meaningful interpersonal relationships in the field (Harrington, 2003).

Harrington (2003) argued that to gain acceptance in the field, the researcher needs to find some common ground upon which to relate with his or her field members. I tried to build these relationships in different ways. Sometimes, finding common ground could be small talk about weekend plans or sports games. But more importantly, as a researcher, I tried to be very clear and open about the goal of the research project.

When talking to respondents, I did not mention 'ethnography', I simply stated that "I just want to see how you do your work", and with this open approach, I gained trust in the field and respondents were more than willing to show me their work. I assume there are two main reasons for this. Firstly, with an open approach I was not conceived as judgmental or offensive. Especially in a time were media scrutiny was commonplace, I even had the feeling that respondents sometimes desperately wanted to show me what they were doing, since media reports were often considered 'shallow' and not painting a true picture. Secondly, I suspect it also just had to do with the novelty of having an outsider profess fascination with the particulars of your everyday work.

In consolidating relationships, I sometimes encountered difficulties in on the one hand striving for complete openness, but on the other hand not becoming the professionals' spokesperson (Crowley, 2007). Every now and then, I had the feeling that professionals – unconsciously – tried to use me as a spokesperson to tell their side of the story, to counter media reports. In conversations, I therefore often tried to emphasize my role as a researcher and my aim to get grip on 'how things are done'.

4.4.5 Getting to know a closed world

Since I was trained as a social scientist, and thus an 'outsider' to the field, it was of crucial importance to quickly get to know the closed world of surgical care. At the start of this chapter I already presented 'personal affinity of the researcher with the field' as a side reason to select surgical care as a research setting. Because of this personal interest, I had read many books about this domain and had various personal relationships with people working in medical care, and surgical care more specifically. Therefore, I already did possess some of the professional vocabulary, and was able to pick up some more of it quite easily.

A prime example of picking up the vocabulary is when I once fainted shortly after the anaesthesiologist in training administered an epidural (Yes, I know… but it is said to happen more often!) she said to me: "Did you have a vagal nerve

fainting episode?" ("Werd je vagaal?" in Dutch) I immediately got that she asked me if I had blacked out.

The exploratory conversations and observations shadowing the gate-keeper also made a great contribution in getting to know the field. These first weeks were very intense; I got used to the 'ways of working' and the gate-keeper provided me with extensive explanations.

During this period, I also became aware of the socialization processes that play a vital role in the medical domain. It struck me how easily I identified myself with the 'group' I was part of. When I was shadowing professionals from anaesthesia for example, I easily connected with their perspective, felt like I was one of them, and even had the same irritations – for example when the surgeon was entering the OR 'too late'. However, when I was shadowing professionals from surgery, exact the same thing happened. From this perspective, I could feel annoyed when the anaesthetist in training took very long to give an epidural, which means that we got delayed in 'our' schedule. Organising the fieldwork in such a way that I could get a deep understanding of the micro-processes, but remain an outsiders' perspective as well, was therefore of crucial importance.

Box I: The Surgical Safety Checklist

The world health Organization (WHO) launched its 'Safe Surgery Saves Lives' campaign in January 2007. The main goal of the campaign was to improve the safety of surgical care around the world, by decreasing unwanted variety in surgical care and improve teamwork within the operating theatre (Haynes et al. 2009). One of the final outcomes of this program, was the Surgical Safety Checklist.

Data suggested that at least half of all surgical complications are avoidable (Donaldson, 2007;WHO 2008). Previous efforts to implement checklists to reduce complications, such as a checklist to reduce central line infections, had shown positive effects (e.g. Pronovost et al. 2006). Further, a growing body of literature linked teamwork in surgery to improved outcomes (Capella et al., 2010; Epstein, 2014; Russ et al., 2013; Schraagen et al., 2010). Based on these findings, the Surgical Safety Checklist was designed after extensive consultation of a multi-national team of surgeons and anaesthetists (WHO 2008).

The WHO checklist is a concise, single page list divided in three parts; (1) a sign-in before anaesthesia, where crucial items such as patient identity, planned procedures, required materials, and known allergies are discussed in interaction with the patient, (2) a time-out just before incision of the skin, when again crucial items have to be confirmed by the team members, and (3) a sign-out where important items have to be checked before the patient leaves the operating theatre, for example if all gazes and needles have been removed, and where team members have to agree upon and register proceeding therapies (figure 3).

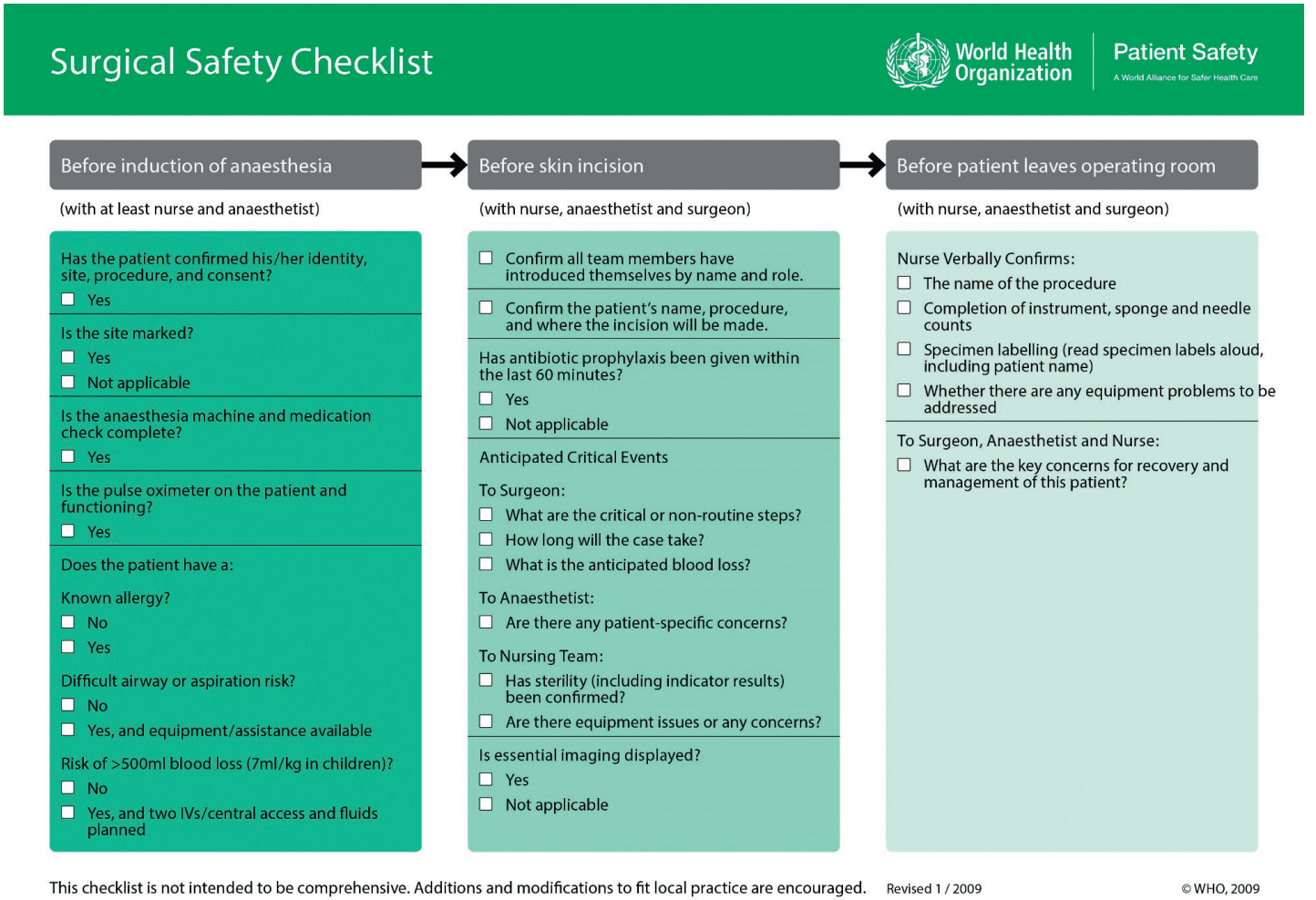
The developers of the checklist had several aims when developing the checklist. First and foremost, the checklist should improve patient safety by reducing surgical mistakes. Next, the checklist should enhance inter-disciplinary teamwork and communication in operating theatres. The artefact embodies thus both notions of a 'memory aid' and a 'team intervention'. It is important to emphasize that 'team work', or 'the creation of connections' is woven into this checklist in different ways; first, the checklist explicitly stipulates that team members introduce themselves before surgery. Further, in the performance of the checks team members rely on each other's information, they thus have to perform the checks in interaction with one another.

The WHO checklist was tested in a pilot study conducted in eight hospitals. Haynes et al. (2009) concluded that postoperative complications decreased by more than one third, and death rates dropped 62%. It thus seemed worthwhile to implement yet effective strategies as the surgical safety checklist to reduce surgical mistakes. Based on these findings, the WHO encouraged hospitals to adjust the checklist to their local circumstances and subsequently implement the checklist.

The WHO Surgical Safety Checklist is the most adopted checklist worldwide (Clay-Williams and Colligan, 2015; Sivathasan et al., 2010). However, there are highly similar procedural checklists that are associated with reducing postoperative morbidity and mortality. The Surgical Patient Safety System (SURPASS) is a comprehensive, multidisciplinary checklist that follows the patient from admission to surgery to discharge (Treadwell et al., 2014; De Vries et al., 2011).

This checklist – a Dutch initiative - incorporates existing protocols and checks to create a comprehensive framework for the surgical pathway and minimize errors during transfers from one stage of the pathway to the next (ibid).

In the years that followed, more than 4000 health care institutions around the globe implemented the WHO Surgical Safety Checklist – or similar initiatives – in their surgical department . (Pugel et al. 2015). By now, the Surgical Safety Checklist also is important 'indicator' for international accreditation (e.g. Joint Commission International), health care inspectorates and internal audits (Gagné, 2016).



Surgical Safety Checklist

World Health Organization | Patient Safety
A World Alliance for Safer Health Care

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
- ☐ Yes

Is the site marked?
- ☐ Yes
- ☐ Not applicable

Is the anaesthesia machine and medication check complete?
- ☐ Yes

Is the pulse oximeter on the patient and functioning?
- ☐ Yes

Does the patient have a:

Known allergy?
- ☐ No
- ☐ Yes

Difficult airway or aspiration risk?
- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
- ☐ No
- ☐ Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

- ☐ Confirm all team members have introduced themselves by name and role.
- ☐ Confirm the patient's name, procedure, and where the incision will be made.

Has antibiotic prophylaxis been given within the last 60 minutes?
- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:
- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:
- ☐ Are there any patient-specific concerns?

To Nursing Team:
- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?
- ☐ Yes
- ☐ Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:
- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:
- ☐ What are the key concerns for recovery and management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

Figure 3: WHO Surgical Safety Checklist (1st edition)

4.5 Fieldwork: Doing research

In ethnographic studies, the ways to collect empirical data are mostly referred to as "doing ethnographic fieldwork". Van Hulst (2008, p. 64) states in his dissertation that: "In a sense, 'doing ethnographic fieldwork' is just a posh way of saying 'go and see for yourself'". Indeed, ethnographic fieldwork is most distinct from other strategies since the most important element is being in the field (Fetterman, 1998; Rhodes et al., 2007; Van Hulst, 2008) to be able to *see* for yourself.

In this doctoral study, I adopted different methods of data collection; from which 'seeing', or 'observing' was the most important one. Further, I had various formal and informal conversations, both proceeding and during the observations. During the fieldwork, I was also able to collect all kinds of other data that are 'hard to get' (Gill 2008), such as internal documents, e-mail conversations and memos.

The data for this study was collected over a period of 29 months, in the period June 2014 – February 2016 (research setting 1) until March 2016 – October 2016 (research setting 2) (table 3 provides a schematic overview of the data collection; see also attachment I. Research log).

Table 3:Schematic overview of the fieldwork

	Observation time (hrs)	Formal conversations (hrs)
Plainsboro	140	12
St. Sebastian's	50	3

4.5.1 Shadowing professionals

From a routine perspective, I contend that 'working with checklists' is a dynamic process. Naturally, routines provide a sense of stability – there should be a recognizable pattern – but at the same time, through the repetition of this pattern there is continues change. The focus of this research therefore matches with a process approach in which questions about "how and why things emerge, develop, grow, or terminate over time" are central (Langley et al., 2013, p. 1). Often, a process approach particularly departs from events that bluntly show change such as reorganisations or crises. I see the introduction of a checklist as a possible driver for change – however not necessarily, promptly or exclusively. I therefore did not decide to study how professionals work with a standards right

after its 'implementation'. Rather, I ought to understand business as usual, and herewith encounter a 'flux' of apparently stable routines (Feldman, 2000).

Studying processes however, is not easy. Change is something that occurs over time. Doing ethnographic research therefore takes time and effort. As I wanted to create the opportunity to see a variety of routine performances – that is both ostensive and performative aspects - and with this distil mechanisms that could lead to change or stability, I decided to go along with actors, interactions, and artefacts on the move, rather than staying in one place. This implies that I did not conduct a longitudinal study tracing how processes evolve over time in one particular operating theatre, but that I observed many checklist performances by various teams, in various departments.

As said, the most important part of an ethnographic study is being present in the field. This ethnographic study is characterised by episodic observations, which means that I continuously switched between doing fieldwork and doing the analysis. The research sites were thus visited in various intervals and not continual. Conducting episodic observations had various advantages. First of all, the observations were typically data intensive. I produced a large amount of data in a relatively short time period. Moving from the field back to a desk during the phase of data collection allowed me to draw up and elaborate all the notes that I collected and start the analysis. Further, on the one hand negotiating acceptance and building relationships in the field is an important part of ethnographic fieldwork. On the other hand however, as a researcher I did my best to maintain the outsiders perspective and not 'go native'. The episodic character of the observations made it more easy to balance socialization and objectivity.

Data saturation determined the duration of the fieldwork. Though every performance of a routine is a unique instance in itself with unique features, I stopped the data collection at the point where I felt that data became repetitive and no new themes emerged.

In conducting the observations, I used a shadowing technique (see also McDonald et al., 2005; Noordegraaf, 2000; Rhodes et al., 2007). By shadowing various professionals from both anaesthesia and various surgical specialties, I got to see the many routines that constitute professional work in the surgery department. I explicitly decided to shadow the various actors for full working days, since I was not interested in solely observing the performance of the SSC routine in isolation of other practices, but in painting a complete picture of the various professional

routines and how they are interrelated (see also the analytical framework as presented in chapter two). I shadowed professionals for full working days to get to see the engagement of these actants across routines.

Days of observation usually started at the dressing room, from where I shadowed the clinician to everywhere he or she went. This meant literally everywhere, to the operating theatre naturally, but also to the holding, recovery, coffee room, and any other location in the hospital. I followed their footsteps until the door of the bathroom. Gold's (1958) classic typology of research roles characterises participation on a continuum from 'complete participant' to 'complete observer'. As a non-medic, I have never been a complete participant, though shadowing involved a subtle game of becoming more or less visible as a researcher. Sometimes, I acted as a complete observer, while in other situations I was more an observer as participant (Gold, 1958). For example when the surgical team was performing the checklist or operating the patient, I tried to fade into the background by positioning myself at the back of the operating room. At other times I was more involved in the setting, for example by practically 'doing' things like helping move patients from the surgical table back to their beds, handing gloves or other materials, picking up the phone, or tying up a surgeons' sterile coat. In these cases it felt more 'natural' to participate in the setting. An advantage of this research setting is that, because of its educational character, people are very used to 'unfamiliar faces' and 'shadowing'. Therefore, as a researcher shadowing the different respondents I could naturally 'fit' within the setting.

During the fieldwork, I was aware of the fact that I was shadowing an 'elite' professional group. Pierce (1995) has labelled this 'studying up'. I certainly became aware of power relations and my subordinate position being a female social scientist researcher in the surgical domain that is dominated by men. For example, I found out that picking up the phone in the operating theatre was something that I was expected to do – people kept firmly staring at me like "are you still planning to pick up the phone or what?!" - a task that is usually performed by scrub nurses or interns. The same goes for tying up sterile coats. Sometimes I felt that my status as a researcher worked in my favour; I was permitted to observe because I did not pose any threat. But occasionally I also felt as if I was some kind of 'mascot', just like Pierce (1995) and Pope (2005) have described.

4.5.2 Making fieldnotes

During the observations, I carried a notebook that fit the pockets of my surgical clothing to make field notes. I did consider video or audio recordings as way to collect data, but for various reasons I decided to rely on intensive field notes. First of all, the surgery department is a very sensitive environment, making recordings would have raised complex ethical issues, for example regarding patients' privacy. Further, I was constantly moving from one spot to another, so quickly picking a notebook out of my pocket whenever I wanted to also seemed very feasible for practical reasons. Lastly, I tried to disturb the natural setting the least as possible. Again, because of the educational character of the setting, people are used to observers making notes. Making audio or video recordings could have distracted them from what they were doing, or made them more aware of it.

Making field notes was not easy. Naturally, it was impossible to write down everything that was said and done. Writing up field notes therefore inevitably already involves a great deal of selection. Further, it was not always appropriate to take notes 'right on the spot' for example conversations over lunch, or when walking to a meeting. I had to remember these items and write them down later. In taking field notes, the theoretical constructs (chapter 2) helped to stay focused, but I remained open to new themes.

During the process, I developed a personal style of 'fast note taking' including abbreviations or small drawings. It was therefore important to write up such notes quite soon afterwards and this was done either on the same day, or – since days in the surgery department could turn out to be extreme long days - by the following day at the latest (see also attachment II).

4.5.3 Having conversations

All the observations were proceeded by conversations with the respondents I was going to shadow, to get to know each other and discuss the planned observations. Most of the time, these conversations turned into extensive conversations in which the respondents shared their views and concerns about standardization of healthcare practices and patient safety more in general. These conversations showed that the standardization is a 'hot topic'. All respondents were willing to participate in the study.

During the period of observations I also engaged in many informal conversations. These conversations started for example when I was involved in a team meeting or asked for my opinion, but also when I actively asked for clarification or opinions.

These conversations, which can be considered a form of real-time interviewing (Barley & Kunda, 2001) provided rich information about how professionals perceived concrete events or interactions (that had just taken place), but also gave insights into general views of professionals about their work. Since it is difficult to talk about the specifics of what you do outside the context of actually doing it (ibid), these informal conversations were a valuable addition to the observations I conducted (see also Oldenhof, 2015).

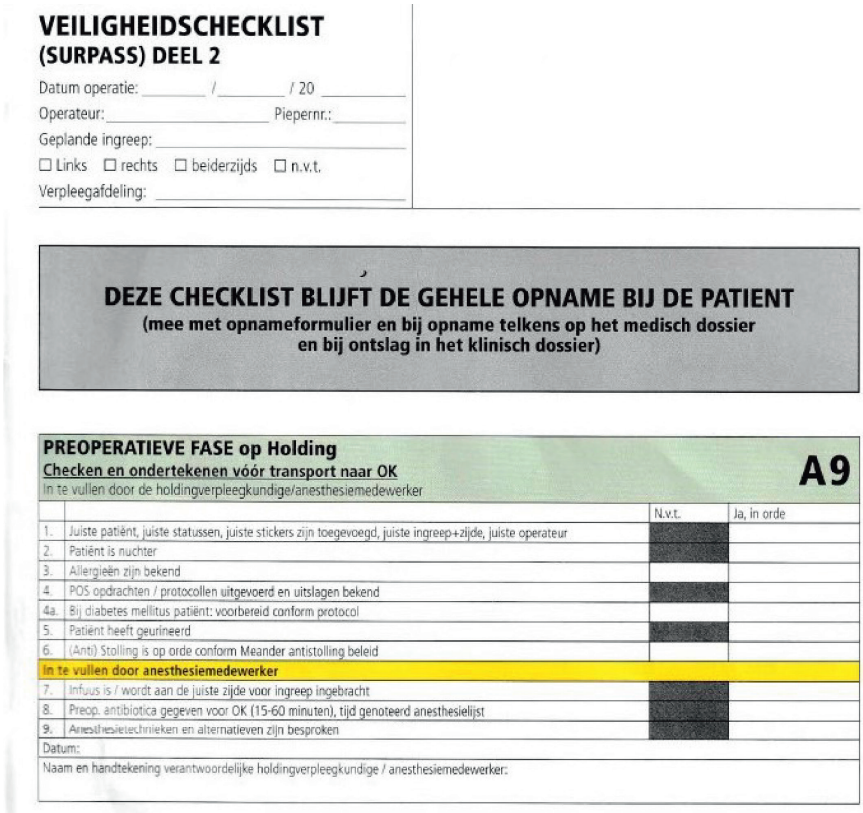
Although I only shadowed the key respondents (as presented in the attached *Research log*), during my days at the surgery department, I also informally interviewed many additional respondents, like full professors, division leaders, medical doctors in training, scrub nurses, and nurse anaesthetists.

4.5.4 Collecting artefacts

One of the advantages of doing ethnographic fieldwork, is that being there might open doors to all kinds of data that are usually hard to get (Van Hulst, 2008). During the process of data collection, I indeed have been able to collect various artefacts that are mostly not somewhere 'out in the open'.

First of all, I collected various artefacts that are 'representations of the rule' (D'Adderio 2011;2008), such as the checklists that are in use, but also amended versions of the checklist that were in a developmental stage (figure 4). Further, there were all sorts of other documents like internal memo's or e-mails. One day, the gynaecologist I was shadowing drew my attention to a document that was circulating among employees (figure 5, see chapter 5 for a full version). I subsequently received this document by e-mail. In the 'story' that was told in the document 'making soup' was used as a metaphor for standardization in surgical care. The document was therefore named 'soup protocol'. Such artefacts made an valuable addition to understand ostensive aspects, as they often were physical representations of 'what was going on', and reflected values and opinions.

The approach of 'artefacts' in this study is however broader than just 'documents' (see paragraph 2.4.4 for some theoretical considerations). In the most broad sense, artefacts also include the physical environment, such as the construction of the building and the (possible) uses of space.



VEILIGHEIDSCHECKLIST
(SURPASS) DEEL 2

Datum operatie: _____ / _____ / 20 _____
Operateur: _____ Piepernr.: _____
Geplande ingreep: _____
☐ Links ☐ rechts ☐ beiderzijds ☐ n.v.t.
Verpleegafdeling: _____

DEZE CHECKLIST BLIJFT DE GEHELE OPNAME BIJ DE PATIENT
(mee met opnameformulier en bij opname telkens op het medisch dossier en bij ontslag in het klinisch dossier)

PREOPERATIEVE FASE op Holding **A9**
Checken en ondertekenen vóór transport naar OK
In te vullen door de holdingverpleegkundige/anesthesiemedewerker

		N.v.t.	Ja, in orde
1.	Juiste patiënt, juiste statussen, juiste stickers zijn toegevoegd, juiste ingreep+zijde, juiste operateur		
2.	Patiënt is nuchter		
3.	Allergieën zijn bekend		
4.	POS opdrachten / protocollen uitgevoerd en uitslagen bekend		
4a.	Bij diabetes mellitus patiënt: voorbereid conform protocol		
5.	Patiënt heeft geurineerd		
6.	(Anti) Stolling is op orde conform Meander antistolling beleid		
In te vullen door anesthesiemedewerker			
7.	Infuus is / wordt aan de juiste zijde voor ingreep ingebracht		
8.	Preop. antibiotica gegeven voor OK (15-60 minuten), tijd genoteerd anesthesielijst		
9.	Anesthesietechnieken en alternatieven zijn besproken		
Datum:			
Naam en handtekening verantwoordelijke holdingverpleegkundige / anesthesiemedewerker:			

Figure 4: The checklist as used at St. Sebastian's

Soep

Al jarenlang kook ik soep. Lekkere groentesoep. Niks mis mee.

Een paar jaren geleden kwam er een kennis die zei: "Schrijf het eens op, hoe je die soep maakt".

Ik vond het een goed idee, en ik noemde het "protocol voor soep".

Als ik soep ging koken, deed ik dat precies volgens mijn protocol.

Toen kwam er iemand die zei: "als je nou eens precies opschrijft wat je erin doet, dan kun je de ingrediënten afvinken op een lijst".

Figure 5: Fragment of an internal memo at Plainsboro

Box 2: The Surgical team

For non-clinicians to be able to interpret the findings of this study, some context of the surgical team and the surgical trajectory might be useful. Roles in the surgical team include: a surgeon, an assisting surgeon - who usually is a resident supervised by the surgeon - an anaesthesiologist, a nurse anaesthesiologist and nurses. In some cases, a fellow (a registered surgeon who is further specializing) and an intern (who is studying to become an elementary physician) are also part of the team.

There are usually three scrub nurses in the team, who rotate their tasks during the day. One of them is assisting the surgeons during the intervention, for example by handing them equipment and holding clamps and sucking up body liquids. The other two are responsible for the materials. By working in teams of three, the scrub nurses can change shifts and therefore take breaks. For the surgeons and anaesthesiologist, there are no fixed breaks in the program, which means they on the spot have to decide to take a break.

For rare or complex interventions, the team can be extended by for example a radiographer. In specialized areas of surgery like thoracic surgery, a specialist who operates the cardiopulmonary bypass machine is a stable member of the team, and so is an anaesthesiologist who is specialized in these surgeries. There is thus no stable amount of team members, but teams usually fluctuate between 8 to 12 people (figure 6).

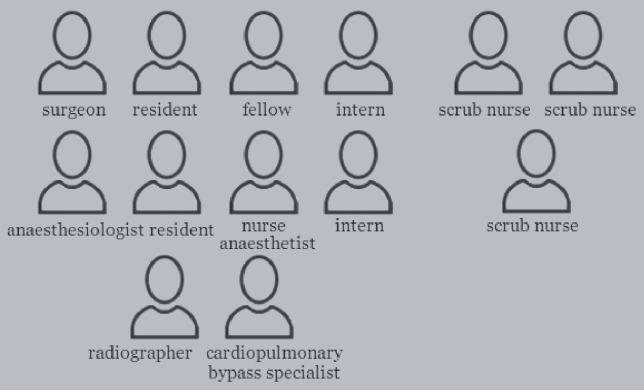


Figure 6: Composition of surgical teams

Box 3: The surgical trajectory

The surgical trajectory encompasses more than the surgery itself. Hence, the surgical department encompasses more than operating theatres. To interpret the findings of this study, I'll provide some background concerning the surgical trajectory and the surgical department.

A first important thing to note is that there is both inpatient and outpatient surgery. Inpatient surgery takes place in the hospital's surgery department, and the patient usually stays at least one night in the hospital after surgery. Outpatient surgery occurs in a another department of the hospital, and the patient is discharged the same day. Most fieldwork for this dissertation was done at the inpatient surgery department, but to get a comprehensive overview of surgical, observations were also conducted at the outpatient clinic, and even at the emergency department.

Patients enter the surgery department at the pre-operative holding. They can enter the holding either from home or one of the surgical wards. The holding is the place where the patient changes for OR clothing and is asked to confirm details about the surgery. The surgeon marks the surgical side and site. The patient gets a IV line for the administration of pre-operative medication like antibiotics, and in some cases the anaesthesiologist performs local anaesthesia.

From the holding, the patient is taken to operating theatre where the actual intervention takes place. All three parts of the Surgical Safety Checklist have to be performed in the theatre; at the start of the day, before incision and before the patient leaves the theatre.

After the operation is finished, the patient is handed over to the recovery unit. Here, the patient is closely monitored. When the patient is considered recovered from anaesthesia, he/she is either transferred to a surgical ward elsewhere in the hospital or discharged home. Figure 5 visualizes the surgical trajectory.

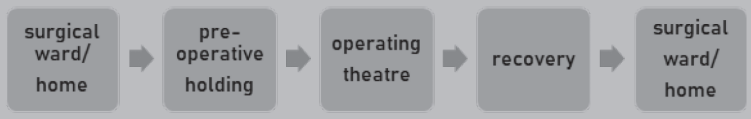


Figure 7: The surgical trajectory

4.5 Headwork: Making sense of the findings

One of the main benefits of this ethnographic study and the engagement in fieldwork, is the rich and detailed data that I could obtain (Denzin, 1997; Wolcott, 1999). A very important and challenging step in the process then, is to make sense of everything that you have seen and heard. Or as Ybema et al. (2009, p.8) stated: Ethnographers "work to make sense of organisational actors' sensemaking". The goal of this dissertation was to elucidate the specific performances, ostensive aspects and artefacts, and to link them to one another to make sense of the ways in which actants create and recreate social realities. I experienced this process as 'creating structure in chaos.' The challenge was to bring the data together and identify 'bigger storylines' of what was going on, without at the same time losing the sensibility for the "complexities of the everyday in organisational settings" (Ybema et al., 2009, p.1) and reducing the findings into a set of 'barriers' and 'facilitators'.

In structuring and analysing the data, I imported all observation data, conversation data and collected artefacts into NVivo software. From there, I coded the data several times and in multiple ways. I started off with open coding, to get a better 'feel' of the data and limit the possibility to code in presumed codes. After this first coding phase, I ordered the data into the three analytical foci; routine dynamics, routine interactions and artefacts. This process inevitably involved categorization of the researcher (see earlier notes on routines as an analytical lens). These themes are presented as three separate 'codes' for analytical purposes, though I do acknowledge that in practice they are constantly interacting and thus might be more "blurred."

After I divided the data into the three central themes of this study (internal dynamics, interactions, artefacts), I started to code the data for each of the themes separately. I worked with initial coding schemes that were informed by the analytical framework.

For the analysis of routine dynamics (chapter 5), I started off with an initial coding scheme listing performative aspects and ostensive aspects as a head codes. Informed by the Sociology of Professions literature, I for example included 'opportunity' and 'threat' as sub codes at the ostensive dimension, to incorporate professionals' ideas regarding the new standard. After collecting some data, I inductively added an extra code 'redundant' which reflects ideas like "I don't need a checklist to work safe." Further, during the iterative process of collecting

data and analysing, I identified other relevant themes and inductively added thematic codes. 'Team composition" for example, emerged as an important factor explaining differences in routine performances. Although I analytically focused on ostensive/performative aspects, I ultimately also included an artefact code, as I learned that artefacts are inherently linked to dynamics. The 'soup protocol' proved an valuable artefact in laying bare ostensive aspects regarding organisational control.

For the analysis of routine interactions (chapter 6), I started off with an initial coding scheme, again listing ostensive and performative. This time I focused on routine interactions and therefore included (informed by the theoretical study) "prioritization" and "coordination" as initial codes. From the literature review, I also learned that specialization, socialization and segmentation could be important for understanding how routine interactions 'played out'. Yet, as I did not know *how* these themes would matter, they were not used as initial codes. During the fieldwork, I found out that "conflicting routine demands" was a very prominent theme, which I divided into 'standards problems' and 'unexpected events', thereby distinguishing between conflicts that are firmly embedded in the organisation of surgical work (e.g. all theatres start at 8.00am) and less foreseen situations (e.g. doctors get sick too). Further, I could distinguish three major responses on the performative dimension; work on it, work around it, and work without it. These empirical findings were input for a discussion in terms of theoretical developments.

For the analysis of the role of artefacts (chapter 7), I started off with an initial coding scheme differentiating between artefacts that represent the checklist (paper, digital, and so on) and other artefacts (equipment, furniture, physical setting). The code "representation artefact" soon evolved into "artefactual arrangement", as I found out that multiple artefacts were used to model the checklist routine. Based on the theoretical study, I used material and spatial affordances to analyse the (perceived) uses of the artefacts. During the fieldwork, I added a temporal dimension, as I found out that artefacts were constantly changing. Concerning the other artefacts (furniture, equipment, physical setting) I added the code "boundary", split up in three sub codes, reflecting how artefacts (1) create boundaries, (2) are used to create boundaries, and (3) are used to overcome boundaries.

In short, I used theory to reflect on and further guide the research. With this ethnographic study, I did not test theoretical presumptions (deduction), rather

I used theory to structure and inform the fieldwork. From there, I tried to relate the empirical findings to the preliminary theories (induction), with the ultimate goal however, to move from 'rich points' in the data to the development of new theories and concepts (abduction) (Agar, 1996).

4.6 Textwork: Writing it up

The third main activity of ethnography is textwork. Following Van Maanen (2011), I use the term text*work* to convey that writing is a labour-intensive craft that represents a great deal of what ethnographers are doing. Just like headwork and fieldwork, textwork involves making difficult choices. For instance: what voice to use, whether or not to include the author in the text, whether or not to reflect professional jargon, and so on.

I needed to find ways to communicate my findings to my audience, written text still is the most common vehicle to do so. In writing up ethnographic texts, the ultimate goal – and challenge – is to explore and exemplify the general through the local and the particular (Van Hulst et al., 2017). Therefore, I needed to place the reader at the scene, and by providing thick descriptions take the readers along with processual interpretations of happenings in the field (Jarzabkowski et al., 2014). The fieldnotes – assembled in analytic codes – became the building blocks for the textual reports. However, I constantly moved back from my codes to the raw data, to not miss out on the detailed descriptions of events or conversations in my field notes.

Transforming fieldnotes into a comprehensible text is a daunting task. To give the reader 'access to the experience' (see Jarzabkowski et al., 2014) I for example had to complement direct quotes with descriptions of the environment, explanations of medical jargon in the field, and emotional experiences such as joking or anger. Additionally, I had to translate the findings that were collected in a Dutch context into English language. In doing so, I aimed to stay as close to the original text as possible. Still, some quotes were hard to translate without compromising on their linguistic power, for example because of alliterations. In these instances I decided to also include the original text between brackets; "channel your work versus excessive registration of your work" [original: "kanaliseren versus kapot proctolleren"].

As ethnographic texts involve both detailed and conscious descriptions of 'everyday activities' and the more general interpretations of these findings, I felt that I literally needed 'space' to communicate my findings. This is probably the most evident reason why this dissertation ultimately took the form of a monograph; in writing scientific publications I not uncommonly felt restricted in providing thick descriptions and a firm analysis by the word limit provided by both journals and book publishers. The empirical chapters 5 and 6 are therefore based on scientific publications, but they appear in a more extensive form in this dissertation. This again shows how ethnographic activities are mingled. I wrote and published an early text, and based on new insights, I reworked and extended the text, adding more data. With regard to chapter 7, the process will be the other way around as I am rewriting and confining the text into a publishable article.

4.6 The ethnographers role and ethical concerns

This dissertation is all about sensemaking, as a researcher I try to make sense of how people act, how they feel, and why they do what they do. The role of the researcher in these processes is often overlooked. Though 'doing' social science necessarily implies generating interpretations of interpretations (Geertz, 1973). A fundamental aspect of doing social science for the researcher is to address his or her own subjectivity within the project itself. All knowledge in the social sciences is construed from some point of view (Brown, 1976) and the acknowledgement of the social construction of reality asks social scientists to become more reflexive of and critical towards their own practice (Van Hulst 2008).

Key in ethnographic research is the participation in the social setting; getting to know 'how things are done' is crucial to this study. Though it is important not to lose sight of the outsiders perspective. The episodic observations helped me to maintain the balance between an 'insider' and 'outsider' status. I could merge myself into the setting and its participants for multiple days, but then literally move away to allow for a more distanced perspective on what I had seen. Brewer (2002) described this process of getting close to the people under study but maintaining a professional distance which permits adequate observation and data collection a 'fine balance'. The dual role that I played between complete observer and observer as participant, allowed me to participate while also critically reflect on what I observed and gathered while doing so (ibid).

When I was in the surgery department, I tried to make surgical team members aware of my presence and role as a researcher, I introduced myself likewise, or was introduced to the team by the actant I was shadowing. However, because of the amount of time spent in the setting, the context of training novice professionals - and thus the presence of 'observers' in the operating theatre, and the fact that I was wearing exact the same surgical clothing as all the others, I had the feeling that hospital staff were not unduly conscious of me as a researcher. Although gaining formal access had been a hurdle, to me it felt like once I was in, all doors opened and remained open. Even literally because as a 'research assistant' I obtained an access pass, that gave me full access to the surgical department. When I got embedded in the field, it appeared to me that the participants forgot that I was there as 'an outsider'. I was involved in various conversations, also about things that I am sure they would conceal from public scrutiny. The fact that I was actively involved in these conversations, suggests little evidence of a Hawthorne effect. I am confident that my presence as a researcher did not change the participants behaviour, once they were in the operating theatre they kept on doing what they always had been doing.

Despite I felt responsible for making others aware of my position, the setting just sometimes did not allow for a clarification of roles, and then it just happened that others might have thought that "I was one of them." For instance when a new team member entered the scene in the middle of an operation. Naturally, this raised some ethical concerns.

Most probably, the anaesthesiologist in training that asked me for an ampule Lidocaine – as illustrated in the intermezzo on getting responsibilities - wasn't aware of the fact that I was a researcher and not a clinician, as he walked in the operating theatre a few minutes after I had been introduced to the team as a researcher. If he would have known, he wouldn't have asked me, I assume. This sometimes caused an uncomfortable feeling, as my 'ethical radar' told me I should move away from my participant role here. Ideally, everyone in the setting should know my position as a researcher all the time, but is showed not possible to ensure this without fierce interruptions of the natural setting, that were undesirable too.

In some cases, I even somehow got forced into the position of a resident, probably because that is what professionals in the surgery department are used to. Some surgeons explicitly involved me into the surgical procedure, by exactly showing and explaining to me what they were doing, in what I call a 'teaching-style';

"You see, this is the left coronary artery, this is where we are going to construct the bypasses, do you see that?" For two reasons, I decided to move along in this position. Firstly, because it did not raise ethical issues or hinder my research activities but rather gave me an ideal observers perspective, and secondly, because I found it incredibly interesting.

Though I sometimes became slightly confused with my insider/outsider position and the responsibilities that came with it, I was always aware of the fact that I was a non-clinical, social sciences researcher trying to find her way in the surgery department. My role as researcher allowed me to not only see the 'front stage' of professional work, like formal policies or documents that are explicitly meant to establish a picture of professional practice, but also the 'back stage' processes that organisational actors usually conceal from public scrutiny (see also Van Hulst et al., 2017).

Although I do feel that my presence as a researcher did not distract professionals from 'just doing their work', I am aware that my research focus and the questions I posed most probably intensified the conversations about the Surgical Safety Checklist and (ways to improve) patient safety. As a researcher I might therefore have caused that participants became more aware of their own ideas and practices, which might have instigated discussions about these ideas, for example during coffee breaks.

These coffee breaks have been of crucial importance for my role as a researcher. Negotiating access is often described as an ongoing process (Hammersley & Atkinson, 1995). That participants also watch and monitor the researcher is less frequently argued (Van Maanen, 1991). Therefore, if the participants do not like or trust the researcher, the research will be unsuccessful, regardless of any actions taken by the researcher. I was aware that forming alliances in the field would be beneficial. Luckily, as a person I have always been able to easily connect to other people and adapt myself to various circumstances. This is a skill that I consider crucial for conducting ethnographic research. The conversations that I had naturally were often about the content of my research, however in building relationships and create trust, I consider the conversations in the coffee room, for example sharing experiences with the ease of food services like 'Hello Fresh' of equal importance.

While I constantly had the opportunity to establish and negotiate relationships with professionals in the setting, this was less the case with patients. Ethically,

I think it might have been problematic that patients often did not exactly know what my role in the team was. Because of the workflows in the surgery department, it was practically impossible to gain (written) consent from all patients without disturbing the social setting I was about to observe. A few things are relevant to consider. First of all, surgery is a field where many actors come for the purpose of observation. In that sense, my presence was not that prominent in the setting. Next, my research focuses on professionals and I did try to interfere with patients as little as possible. Characteristics of patients are not relevant for the research question. I signed a form before commencing in the fieldwork, that I would not share information about patients with others. During the fieldwork, it happened only once that one of the patients asked about my role in the setting. After deliberation, I left the setting after the time-out had been performed for the sake of the patient's privacy.

It shows that balancing roles and the need to observe, write, listen and think all at once make ethnographying a difficult task. I tried to become aware of the difficulties in balancing these tasks, by making reflexive notes to myself. So besides the field notes about performances or artefacts, I wrote down how I felt or how I experienced situations and what my role looked like in these situations in a separate section of my note book.

Another way to be reflective, was to have conversations with the gate-keeper about the process and what I had found so far. These conversations helped me to make sense of my findings and clarify for example medical jargon that I had missed out. Besides, these conversations acted as member check. The use of multiple data collection techniques was a way to enhance rigour, but by articulating my findings to someone from the field I could also check whether my findings made sense from a native perspective.

4.7 Conclusion

In this chapter, I answered the question: *"How can professional standards in performance-oriented medical practice be studied?"* I have explained why an ethnographic design best fits the research question, and I discussed the challenges that come with it. I explained how I went about the three main activities in this ethnographic study; headwork, fieldwork and textwork. These are difficult tasks and require the researcher to constantly move between them. Especially in ethnographic studies, the role of the researcher is relevant to consider and

reflect upon. I explained how I naturally moved between a complete observer and participant role, for a smooth fit in the setting and preventing ethical concerns as much as possible. The intermezzos provide some additional reflections on the research process. The coming three chapters present the research findings.

Intermezzo

Intermezzo: Getting responsibilities

"Can you give me an ampule Lidocaine, 10 mg?" the anaesthesiologist in training asks me. When he sees my questioned face he adds with a sigh: "In the left upper drawer."

Questions like these were no exception when I was in the operating theatre doing fieldwork. The answer to this question was rather simple to me; as I was a non-clinician observer, providing clinicians with medicine was beyond the scope of what I could do. Naturally, it was not like I physically couldn't give it to him, but ethically, I clearly just couldn't. I decided to quickly explain why I couldn't give the ampule of Lidocaine, but the anaesthesiologist seemed more frustrated by the fact that he now had to arrange the medicine another way, than that showed understanding for my position.

Clearly, the setting in which I conducted the study raised some ethical concerns, and mostly, they presented themselves very sudden. The answers to such questions; deciding what *(not)* to do, were not always that self-evident as with not proving medicine. Later on, it got to me that during the process of data collection, I *got* responsibilities. It wasn't a matter of *taking* responsibilities, but rather, they appeared as inescapable.

During a surgery, I am sitting on a stool in the corner of the operating theatre, flipping through my notebook. As the time-out has been done, and the team is operating, I have some time to read through my notes. The surgeon and the surgeon in training, assisted by the scrub nurse, are operating the patient. A second nurse is handing the equipment. At that point, I don't actively realize that they are all wearing sterile coats and gloves. Then, the phone in the theatre rings. Nobody picks up the phone. The nurse anaesthetist gives me an angry glare. I only get it till the surgeon says "'Are you still planning to pick up the phone or what?!' Embarrassed and a bit hesitant I pick up the phone. Luckily I remember which theatre I'm in. "OR7, Marlot speaking" I hear myself say. The person on the other side asks me if I can pass through that recovery is ready for our patient. "Thanks, will do!" I hear myself proactively say before hanging up the phone.

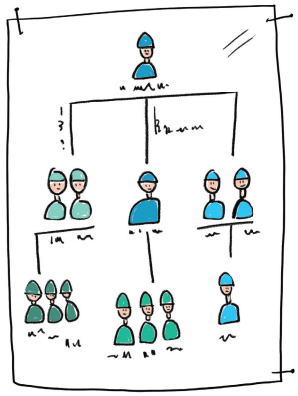
In this situation, I was struggling with my role as researcher, and the responsibilities other actors in the setting imposed on me. The adagio in the operating theatre very much is: "make yourself useful." And in this particular situation, I could live up to that expectation by picking up the phone. As I was,

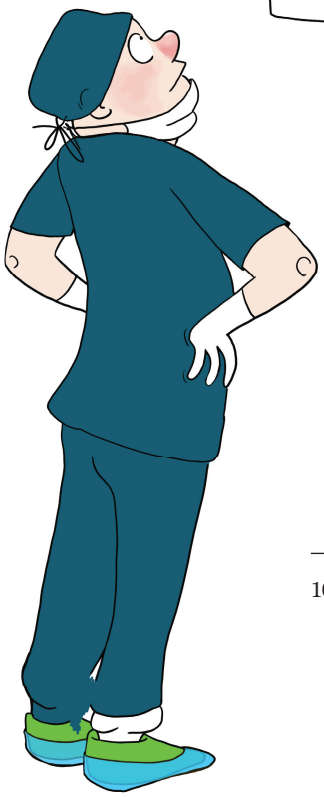
in contradiction to the others, not wearing sterile gloves, the responsibility for communication through the phone was imposed on me. Constantly, I had to find out a smooth and workable balance between being an observer, and being a participant. As time passed by, I learned when and how best to participate to fluently fit into the setting, for example by picking up the phone in the theatre, fastening sterile coats of surgeons before they'd even asked me to, and helping move patients from the surgical table back to their hospital beds on the count of three.

In some situations, I struggled with the responsibilities that apparently were part of my 'job' ("Am I really going to pick up this phone now?!") In other situations, I seized the opportunity to 'get some responsibilities' with both hands. Sometimes I really struggled with the fact that I was 'just observing' other people doing the hard work, especially when I recognized that they could very well use an extra hand. In that sense, it was not only that I liked tying up coats or moving patients, but it helped me feel like I could make a very small but valuable addition to the setting.

Chapter 5

How standards work out in medical teams: On routine dynamics[10]





10 This chapter is an expanded and adapted version of: Kuiper, M. (2018). Connective Routines: How Medical Professionals Work with Safety Checklists. P*rofessions and Professionalism*, 8(1), e2251-e2251. DOI: https://doi.org/10.7577/pp.2251

5.1 Introduction

"You should research if the checklist actually works" – orthopaedic surgeon

That is what an orthopaedic surgeon persuasively said to me when we were talking about this research project over a cup of coffee. Besides him, various actants showed a clear need to know 'if the checklist works', with which they presumably meant if it actually reduces in-hospital mortality. There is however a vital difference in studying *if* a checklist works, and studying *how* a checklist works. This chapter focuses on the latter – also to make sense of the strong presence of the first question in the field. By revealing insights on the internal dynamics of the checklist routine, I aim to answer the research question: *How do standards work out in medical teams?*

In the previous chapters, I worked towards an analytical framework to study how standards work. In this chapter, I use this framework that conceptualizes routines as dynamic systems of ostensive and performative aspects to show how ostensive understandings of the surgical checklist – such as: 'does it work?!' – fuel performances, and how performances in turn, can instigate a change in ostensive patterns. Though recognizable as 'the checklist routine', it showed that the individual repetitions of the routine by surgical teams widely varied across contexts. In this chapter I therefore delve into the origins of varying routine performances and their encompassing drivers for change.

The storyline of Plainsboro Teaching Hospital is the point of departure of this chapter. Insights from St. Sebastian's are added to the analysis to show the bigger, overarching storylines, and highlight interesting differences. First, I will illustrate how new employees are introduced to Plainsboro, and how organisational ideas about the checklist are communicated to them. Next, I will show how a dynamic interplay of such ostensive dimensions unfolds in professional practice. The chapter is structured along the lines of three 'basic' abstract patterns that fuelled the performances in specific ways: improving teamwork, reducing medical mistakes, and maintaining accreditation.

The final section of the chapter analyses the checklist as a dynamic system of interacting ostensive and performative aspects and draws some sub conclusions. The findings of this chapter show that there is no such thing as "the checklist". The understandings of the checklist are multiple, and even these 'basic understandings' turn out complex and contested at the frontline. Building on

this, role taking, hierarchy and connective potential matter for how ostensive understandings can fuel performances. The empirical findings feed into a model of routine dynamics in highly professionalised settings.

5.2 The envisioned routine

Plainsboro Teaching Hospital had introduced the Surgical Safety Checklist in 2009, after both the public opinion and health authorities had urged hospitals to implement such checklists in perioperative care, not in the least since there had been severe media attention for incidents. The Dutch Health Care Inspectorate mandated nationwide perioperative checklist implementation[1] in 2008, and nowadays measures compliance through registration data and side visits.

In implementing the checklist in Plainsboro, the aviation industry was looked at as a success case. In this domain, checklists had been successfully implemented to enhance teamwork and improve handovers, and thereby minimized avoidable errors. The example of the aviation industry is even visualized on the front cover of one of the policy documents regarding the Surgical Safety Checklist: surgical team members are handing over information in a simulation cockpit of an airplane (figure 8).

Even though the WHO Surgical Safety Checklist format was designed in a consensus project including both surgeons, anaesthesiologists and assistants (see chapter 4), the authors indicated on the policy document in Plainsboro are a nurse anaesthetist, and two senior professors in anaesthesia. With professor Slemmer, I had an extensive conversation about the checklist and its implementation. Professor Slemmer was greatly enthusiastic about the checklist, and he made improving surgical care his core ambition for the final years of his career.

In preparing the implementation of the Surgical Safety Checklist, the 'implementers' or 'frontline enthusiasts' like professor Slemmer drew inspiration from documents designed by international colleagues, such as the "General guidelines for assessing, approving and introducing new surgical procedures into a hospital or health service" by the Royal Australasian College of Surgeons (RACS). Despite this support in implementing new procedures, professor

1 This might be the Surgical Safety Checklist, or any other perioperative checklist, such as SURPASS. I refer to paragraph 2.3.1 for a detailed description of safety checklists.

Slemmer acknowledged that it remained difficult to translate 'general guidelines' to local circumstances: "We have all this detailed information, and now what?"

At the time, the implementation of the checklist was considered a more or less "linear process" that would, if well-prepared, lead to the adoption of the new standard. As indicated in the policy document, an explicit purpose of the checklist for Plainsboro was to create a routine in which teamwork is key in reducing medical mistakes and preventing complications. In short, the checklist routine envisioned three main things: improved teamwork, a reduction of surgical mistakes, and accreditation of the hospital. From the policy document, these can be considered the three 'basic' understandings of the checklist.

To prepare the staff for its introduction, information about the checklist was shared during staff meetings and through e-mails and the software system. Posters were put up in the operating theatres as a reminder.

Three years after its introduction, the hospital performed a retrospective cohort study to measure if the implementation of the checklist "had worked." In their study, researchers from Plainsboro measured if indeed the checklist had led to a reduction of in-hospital mortality. Although the study found a correlation between the two, a striking result of the study that drew attention was that compliance did not exceed "average". The numbers of this self-evaluating study indicated that the checklist was used in practice, but also that there were "barriers" for fully incorporating them. Exploratory conversations with various key actors revealed that the hospital was having a hard time in finding clues for what they called "lacking implementation." Possible explanations remained rather general; "It is something cultural I guess" or "The staff wasn't well-prepared enough."

By looking at routines, I was open to a more social and situational explanation of how standards work.

Figure 8: The aviation industry as an example for checklist use

5.2.1 One checklist, multiple understandings

Plainsboro Teaching Hospital organises monthly sessions for all new employees, from radiologists to nurses, and from housekeeping employees to HR managers to surgeons. As a newly hired 'research assistant' I enter the spacious lecture room and find myself a seat. As I will not work with patients, I am only assigned to the 'Quality and Safety module' that is obligatory for all new employees, and exempted from the Fire Safety Training, medication prescription training, and Electronic Patient Record training that my neighbour – a neurosurgery resident – is going to later that day.

The Quality and Safety module contains some basic information and instructions, like which number to dial in case of an emergency, but most emphasis is on the vision and mission of Plainsboro. A member of the hospitals' management board lectures about Plainsboro's strategy, in which 'getting together' is the cornerstone. The aim is to "collaborate with patients, GP's, researchers, with each other", he says. It is acknowledged though that translating a strategy with a "mission" into daily practice is a daunting task. The board member states: "Our mission is not a pixel on our website, but it is about real impact in daily practice. And that's… that's a real challenge." Although it is stated that translating this mission into daily practice is quite a task, no attention at all is given to 'how to actually do that'. The only thing that is further communicated to us as new employees is that

the hospital is "working on it". Interestingly enough, as no further details are given on how Plainsboro aims to translate the collaborative strategy into daily practice, the goal to "optimize processes", is repeated several times throughout the module and appears as one of the organisations' primary goals.

Remarkably, as new employees we are directly spoken to when it comes to 'optimizing processes'. The board member explicitly invites us to send him an e-mail in case we encounter something "odd" or are amazed by what we see, since "fresh eyes" are very helpful in "breaking through routines." The audience responds with laughter, as if people do not take this offer quite seriously. "As if he has the time to read it" my neighbour whispers to me with a smile. At least, unravelling routines in this hospital is exactly where I - as a research assistant - came for.

Optimizing processes is also an important focal point for Plainsboro for the sake of accreditation. The implementation of the Surgical Safety Checklist has been just one of about 1400 standards that have been implemented aimed at improving quality of care, research and education, and herewith achieve a renowned international accreditation. The fact that Plainsboro received this accreditation – about 2,5 years before this module for new employees takes place – doesn't go unnoticed, as it is being repeated by several speakers throughout the meeting.

Throughout the 4-hour-during meeting, the hospital has already signalled various diverging goals of standards to us that have been or will be implemented; improving collaboration, reducing mistakes, optimizing processes and maintaining high-ranked accreditation. Goals that are not congruent per se, and therefore not necessarily require the same approach. Moreover, these different abstract patterns embodied in the same artefact – the Surgical Safety Checklist – might fuel conflicting performances. In creating social connections between team members for example, team performances could be at the forefront, whereas in maintaining a high-ranked accreditation 'ticking the boxes' is of great importance. This dynamic interplay of ostensive and performative dimensions comes to life in working with standards at the frontline.

The coming paragraphs all depart from one of the three 'basic' understandings i.e. abstract patterns of the checklist: improving collaboration, reducing medical mistakes, and maintaining accreditation. I will show how these 'basic' understandings actually are multiple, contested, understandings.

5.3 Improving collaboration

An explicit purpose of implementing the checklist in Plainsboro was to improve teamwork, at least from the perspective of the hospital board and the 'frontline leaders' from anaesthesia. With more than twenty operating theatres, this large teaching hospital not only has a significant labour force but also a high staff turnover, since multiple employees come and go for educational purposes. As a consequence, the 'teams' vary, and people operating together who have never met before is quite ordinary. In order to familiarize team members with one another, the SSC not only includes checks concerning patient identity and intervention but explicitly stipulates that team members introduce themselves before a case by writing their name and function on the whiteboard.

5.3.1 Direct goals and beyond

Halfway the period of episodic observations, several 'time outs' had passed by during the days at the various theatres in the general surgery department, and in all these instances, the time-out was performed in 'some kind of way.' Mostly, the first items were systematically checked (patient identity, intervention, allergies), while other aspects were often more loosely applied and in varying sequence. Every now and then, the names of team members were on the board. However, if any mutations in the team composition occurred, this was not adapted. Moreover, there seemed to be no attention for or vocal confirmation of the names on the board at all. I wondered how this pattern of 'selective' performance emerged; the first items were systematically and consequently checked, whereas the items striving for stronger connections were—if at all—more 'loosely' applied.

During a coffee break, a conversation about such selective performance started, and ostensive ideas about the checklist surfaced. Professionals often do attach importance to the time-out procedure, yet some items are considered more important than others. Writing down the names of all the team members, for example, does not add to the safety and quality of the specific surgery performed is the dominant conviction. In other words, there mostly is a focus on the direct goal — performing a high quality surgery — and with regard to that, writing down the names of the team members is not immediately considered to attach value to the quality performance of the operation.

However, a conversation with an anaesthesiologist brings forward a different version of the ostensive dimension that emphasizes in-direct, long term effects.

Writing down the names of team members on the board will strengthen connections between routine participants on the long term:

> "We are such a large hospital that it is impossible to know everybody by name. In that respect, just reading the others' names on the board makes it easier. If I don't have to ask, "hey you, can you give me that ampule" it becomes easier to communicate, and I am more inclined to ask more personal stuff like "how was your weekend," you see?"

Writing down the names serves a broader purpose — it does not only mean that team members basically know each other's names, but it is also an attempt to form more in-depth connections that could lead to more shared understandings, and thus ultimately, safer practices. These views that reflect different understandings of the ostensive dimension of the time-out, rooted in a focus on either the direct goal – performing a surgery - or long term – creating firmer team connections, explain differences in the performative dimension.

5.3.2 Hierarchical positions

The performance of the checklist requires interaction among the various team members. Every individual participating in the team must be able to communicate about the various items and 'pause' the process in case the requirements of items have not yet been met. The findings show that for creating such connective patterns of action, the hierarchical position matters. The following observation note reflects the performance of a time-out procedure in the general surgery department.

> **Time-out**
> The resident in surgery does the time-out with the patient. The checklist poster is put up prominently in the OR. The resident asks for the patient's name while checking his wrist ID, after which he asks the patient to describe the surgery in his own words and name the surgical side and site.
>
> | | |
> |---|---|
> | Resident in surgery: | Okay, perfect. And you have no allergies, no. Do you have any questions left for us, sir? |
> | Patient: | [nodding] |
> | Resident in surgery: | No? Okay. We're gonna take care of you, sir. Let's start. |
> | Scrub nurse: | [mumbling] And we all live up to hygiene protocol. |

> The scrub nurse starts writing down the names of all team members on the whiteboard.

In this specific performance of the time-out, the first items of the checklist were consistently checked in interaction with the patient. However, the surgeon performing the checklist finishes the procedure by checking for allergies and herewith neglects, for example, hygiene items and team composition. The fact that one of the scrub nurses 'mumbles' these items and writes down the names on the board herself indicates that she is aware of the incomplete performance of the time-out. Nonetheless, she does not communicate about these items with the other team members.

The working situation hindered the possibility to immediately ask for further clarification; why did the scrub nurse mumble? A conversation later on, however, focuses on the experienced hierarchical relations. This scrub nurse is finalizing her education, and because of her educational program, she has worked at various surgical departments to get acquainted with the diversity of surgical interventions. The observation note reflects the conversation we had about the performance of the time-out in various contexts.

Scrub nurse:	"The performance of the time-out differs widely. In some instances, it is just very quick and superficial, while in other cases, it is a rather extended procedure in which all items on the checklist are also written down."
I:	"How do these differences occur you think?"
Scrub nurse:	"I think it has to do with how approachable the doctors are, and whether it's a 'real' team. It has to do with the atmosphere, whether there is a pleasant and open atmosphere. Sometimes, you have the feeling that we are all equal, and then it [the checklist] goes smooth. Especially with the older doctors, you notice that it's more hierarchical."

This conversation shows how individuals high in the hierarchy play a key role in the emergence of connections. Team members refer to a "pleasant atmosphere" and the existence of "a real team" as requisites for performing the checklist together. The surgeons — who often lead the checklist procedure — are indicated as the actors responsible for the atmosphere in the theatre. If other team

members - especially scrub nurses - feel free to speak out, they are more inclined to participate in the team discussion and interrupt when necessary. However, if the surgeon explicitly presents him or herself as leader of the team and others do not feel that they are "all equal," it becomes more difficult to cross these hierarchical borders. In these situations, there is attention for the checklist, for example by the scrub nurse who mumbles and completes the items by herself, but not in a connective matter.

The checklist routine therefore is an important activity in which actors can construct and strengthen their identity. As surgeons often lead the checklist routine, they are the actants that can break through hierarchy patterns and construct more connective patterns. Paradoxically enough, at the same time the performance of the checklist creates important opportunities to further strengthen their hierarchical position. As surgeons mostly lead the routine, they are literally at the centre of attention. The surgeon puts on a show, in which the other members of the team have to reply and confirm the items. The actant leading the routine, determines the script of routine, the timing, the order of items and the involvement of other actors.

This construction of professional roles and hierarchical relations is not limited to the performance the checklist. This process also surfaces in other routines, as I found out. At the first exploratory observation day, I was going to shadow the gate-keeper, to get acquainted with the surgical domain and the ways of working. Before we enter the operating theatre he warns me: "Make sure that you introduce yourself to the team members, especially to the surgeon, that's very important." I'm being told that this is a very important unspoken rule of propriety. However, living up to this rule appears a bit more complicated than it sounds. Introducing yourself is something that has to happen 'on the fly'. Most of the time, when entering the operating theatre the surgical team is already preparing the surgery. As a new 'team member' you thus have to interrupt them while doing their job. Short and even irritated responses were no exception. Moreover, it sometimes appeared to me that people were not really listening since they did not remember my name, and even the fact that I was introducing myself as 'research assistant' — a very rare 'role' in the theatre – often did not lead to any further questions. In short, you always feel uncomfortable since on the one hand it's a 'no go' to not introduce yourself, while at the same time doing so often doesn't seem much appreciated.

The 'introduction routine' at the start of the day in the operating theatre is an institutionalized one, and professionals point out its importance. Nonetheless, this routine does not seem to reach a deeper level of 'connections' than just exchanging names and roles. The checklist envisions, at least from an organisational ostensive perspective, the creation of connections, by prescribing that team members should introduce themselves to one another. The introduction routine that already had 'been there' for a long time however, has not been replaced by the checklist routine.

In sum, professionals often do not think that the introduction as scripted in the checklist adds value to the quality of the surgery as such. Besides, there already is an 'introduction routine' though not fuelling deeper connections than exchanging names. Possibilities for change lie in actants that are 'frontrunners' and align their performances with ostensive patterns in which they indeed see the checklist as a means to strengthen connections.

5.4. Reducing medical mistakes

Checking is – what's in a name – at the core of the *check*list. Rather than relying on the memory of individuals in the team, the idea behind systematically checking safety items is that it would decrease medical mistakes. It turns out however, that those who are working with the checklist are not unanimously convinced that this rationale is correct; do checklists indeed reduce medical mistakes?

5.4.1 The discourse of Evidence Based Practice

At one of the observation days in St. Sebastian's I am in the staff room with the anaesthesiologist I am shadowing that day. Anaesthesiology particularly involves a lot of waiting, so anaesthesiologists spend a lot of time in the staff room, replying to e-mails, drinking coffee and chatting. Another anaesthesiologist picks up the conversation we are having about my research. He engages in the conversation by stating: "You should research if the amount of left/right-mix-ups indeed decreases." This quote echoes the 'evidence based discourse' that shows prominent in this domain. The same narrative is quite dominant in Plainsboro as well, where one of the surgeons even states that "Evidence Based Practice is the only valid underpinning of professional practice." When talking to professionals about my research in both Plainsboro and St. Sebastian's, most of the time they found the way I was conducting my research particularly 'odd' – observing what

people do. Was it research even? Mostly, they were interested in one thing: Does it work? Or, as an orthopaedic surgeon in St. Sebastian's put it: "We are doing it and stuff.. but there's never been a baseline measurement, so we don't even know if it actually works!"

Not knowing if it actually works resulted in a more resistant attitude towards the checklist (ostensive). Various professionals I talked to argued that it has not been proved that the Surgical Safety Checklist indeed affects outcomes; "The evidence base is too thin." As a result, performances become more 'slack'. Performing the checklist routine is something professionals are expected to do, but at the same time they are not sure whether it reaches its goal. 'Goal' is stated here as singular, as in the conversations it showed that most respondents only assigned the goal of 'mistake reduction' to the checklist.

Most of the time when talking about the checklist, respondents narrowed down the conversation to specific cases. They talk about a safe surgery, a safe intervention on *their* patient. In distributing the scarce amount of time in the operating theatres, surgeons are even inclined to compete with peers; "My patient needs to go first". They are busy with doing what's best for what they consider 'their patient'. Whereas in the introduction module for new employees the goal to "optimize processes" was clearly communicated, in practice individuals not so much bother about optimizing workflows. Rather, they treat individual cases and just want to perform a safe surgery. And needless to say, that is exactly what that individual patient is expecting them to do.

Only those who had been involved in the development or implementation of the checklist in some way, identified broader goals of the checklist – such as improving teamwork, i.e. creating connections. While we were drinking coffee in the staffroom waiting for another operating to finish, an anaesthesiologist working at St. Sebastian's expressed his enthusiasm for the checklist and identified himself as a 'frontline leader'. He had been involved in implementing the checklist at St. Sebastian's, and as an "early adopter" of the checklist, he particularly considered his role to engage others and "get them on board". Put differently, his aim was to anchor this broader ostensive pattern of the checklist.

The ideas prevailing under those involved in the implementation process thus differed from those who are expected to work with the checklist in daily practice. 'Early adopters' had no doubts about the checklists' evidence base and endorsed Gawande's (2009) idea that "The checklist works, as long as it is implemented

well." In doing so, providing information and "giving the right example" were at the forefront. Whereas for most of the professionals who work with the checklist in daily practice, the checklist is just there to affect outcomes; to "prevent mistakes."

Preventing mistakes as an abstract pattern of the checklist routine also raised some tension, as according to several respondents this is an "illusion." Naturally, there's something to be done about surgical mistakes, is the dominant conviction. However, the tendency to standardize professional work receives some firm criticism. "We're taking it really, really far", a gynaecologist working in Plainsboro told me. Especially surgeons felt that what they are doing is "heavily scrutinized." According to the trauma surgeon I shadowed in Plainsboro: "We should also accept that making mistakes is human. We have protocols and checklists, but you cannot cover everything in checklists and protocols." The view of his colleague from orthopaedic surgery at St. Sebastian's perfectly aligned: "Where people work, mistakes are being made, and always will be made."

5.4.2 Professional judgment; the doctor knows best

Paradoxically enough, as the evidence base of an intervention appears crucial in the decision making – "does it work?" - doctors 'know best' and should always have the final say. The following observation note illustrates the start of the day in the operating theatre in St. Sebastian's hospital where the surgeon is about to perform seven orthopaedic knee arthroscopies throughout the day.

Briefing

At 8.00am the day starts with the morning briefing. The patients to be operated are discussed 'altogether'. In an informal way, the surgeon informs the other team members that they are "all healthy people". "Nothing special really." There are no special conditions mentioned the surgical team should take care of. After this concise briefing, in which only the orthopaedic surgeon speaks, he leaves to scrub in.

Time-out

After a couple of minutes, the surgeon has returned to the theatre and the first patient is already on the table. With enthusiasm, he greets the first patient and assures everything will be fine. Together with the patient, he checks the identity, surgical side and site, and allergies and then gives green light to start anaesthesia.

In this situation, the surgeon decides on the spot what he deems necessary. Naturally, operations require conscientious preparation. Mostly the day before, surgeons and anaesthesiologists both prepare the cases, separate from each other. The surgeon prepares the intervention by deciding how to go about it and listing the equipment that is needed for the surgery. The anaesthesiologist decides what kind of anaesthesia is needed for the intervention, whether there are special conditions to take care of, and how the patient can be best positioned for the surgeon to do his or her job.

In this specific case of orthopaedic surgery, the surgeon relies on his own preparation; he concludes that the patients are "all healthy people" and decides to not further consult the anaesthesiologist in the briefing. So although professionals do attach value to 'evidence based practices' and want to know 'what works', such evidence gathered in checklists is not used as a blueprint. The professional decides on the spot how to use 'the evidence', which means that checklists are often used as 'assistance', but only in case that assistance is deemed needed. In case of seven 'standard' knee scopes on seven 'healthy people' the checklist is used in a very flexible way.

Linking to this idea of professional judgment – that fosters the ostensive understanding of the checklist being merely a 'help' – is the argument made by multiple respondents that the "checklist is nothing new really." Both surgeons and anaesthesiologists claim that patient safety is, and always has been, at the centre of their attention. A gynaecologist in Plainsboro stated: "We've always done it like this, I don't need a checklist to work safe." An orthopaedic surgeon said: "We've been checking for safety items long before there ever was a checklist".

This is where a difference in abstract understandings between the more senior and thus experienced doctors, and the more junior professionals manifests itself. Senior doctors in particular, might feel challenged by the introduction of a formal standard. They have developed routines for patient safety, but with the introduction of a new formal standard it gives them the impression that what they always had been doing "wasn't good enough". However, professionals themselves often feel that they don't need a formalised standard to work safe. For the novices on the other hand, there is no 'then versus now' situation. They have entered the field in a time where the checklist had already made its way into surgery. They often claim that working with checklists is normal to them, since they learned about checklists in med school. To them, working with a checklist

is therefore not so much a change in routines, but rather performing a routine that is just part of their work.

In sum, reducing medical mistakes is for most professionals the checklists' *raison d'être*. They attach great value to an evidence base, and because the evidence base of the Surgical Safety Checklist is often considered 'too thin', professionals are not unanimously convinced of its effects on outcomes. They therefore flexibly use the checklist in their activity patterns. Besides, doctors themselves decide how they use scientific evidence in their decision making. Different roles have different perspectives though; individuals who have been involved in introducing the checklist in the field are convinced that the checklist works. They also have a broader understanding of what the checklist is and can do.

5.3.3 Team compositions

Although most surgeries are performed in 'variable' teams and an explicit purpose of the checklist was to create firm connections among team members, there are a few subspecialties where teams work together in more stable compositions. Subspecialties such as cardiothoracic surgery and vascular surgery are forms of very specialized work that require more stable teams. Anaesthetists that work in cardiothoracic surgery, for example, mainly work in these specialized areas. Therefore, stable teams emerge in which surgeons, anaesthetists, nurse anaesthetists, scrub nurses, and clinical cardiac perfusionists frequently work together. Because of these frequent encounters, these teams have the possibility to create shared understandings about what has to be done and what is appropriate.

I conducted observations at both the departments of vascular and cardiothoracic surgery to see how these specialized teams work with the SSC. The observation day at the cardiothoracic surgery department starts at 8.00am in the operating theatre. The team immediately starts with the time-out — the second part of the checklist. Since all team members only have responsibility for operations in this OR today, everyone is present in time[2]. The cardiothoracic surgeon starts the time-out and checks the patient's identity, allergies, and prosthetic devices, and he performs the procedure entirely from memory.

2 In specialized areas such as cardiothoracic surgery or vascular surgery, the anaesthesiologist is responsible for just that operating theatre, and is therefore present all the time. In general surgery, each anaesthesiologist is responsible for two operating theatres simultaneously. In Chapter 6 I show how professionals try to manage these different work flows.

After the time-out, the surgeon leaves the OR to scrub, while the residents, nurse anaesthetists, and scrub nurses prepare the patient for the surgery. When the patient is safe and asleep, the team members are making 'fun' with each other while doing their jobs, for example, by squirting water from syringes in each other's ears. People not only know each other by name, but they also seem to get along quite well and work in a 'relaxed' atmosphere.

A couple of minutes later, the surgeon is operating the first patient of the day. While he is working, the next patient is already discussed in an informal way. Statements like "what shall we do", "you tell me!" and "we'll get there" pass by. Though the 'plan' for the next patient is discussed on the spot—comparable to what a briefing stipulates — this conversation is not systematic and moreover, required equipment is not yet resembled and checked at the start at the day, as the checklist prescribes.

Two hours later, the operation is finished. While the assistants are cleaning up the OR, the surgeon asks: "Did we do the sign-out?" The other team members nod approvingly. "Oh, I missed that. That's not quite right actually", he replies. When the next patient is on the table, the surgeon takes the lead in the time-out again. Just like the case before, he checks the identity, intervention and prosthetic devices out of memory. The performance here deviates from the prescribed items on the checklists; some items are not covered, while others (prosthetic devices) are added to tailor the checklist to the needs of this specific context.

A few minutes later, when the patient is on the table, and the time-out has just been performed, I start a conversation with the resident in thorax surgery to ask him about the briefing. The observation note covers the short conversation.

I:	"Do you also have a team briefing?"
Resident in surgery:	"This was the briefing"
I:	No, this was the time-out, the last check right before incision of the skin.."
Resident in surgery:	"Oh, no. We don't have a briefing then."

Some confusion occurred, since the resident was convinced that they do work with the checklist — they indeed 'performed' some deliberation regarding the patient. However, it turned out that this team had altered the checklist through recurring performances in such a way, that it deviated from the artefact as such. In this case, strong connections among team members — that thus already exist

— prompted that items were not explicitly checked. Strong connections made team members *entrust* one another and therefore undermined their felt need to consistently check items, as they rely on many successful team experiences ("We know what we're doing") that the patient will be fine.

St. Sebastian's surgery department is considerably smaller than Plainboro's surgery department[3]. It shows that practices in St. Sebastian's are kind of 'in-between' what's happening in Plainsboro's general surgery department and the very specialized subfields. In St. Sebastian's people actually do know each other by name, they regularly greet each other, and they notice when someone's returned from a holiday ("Good to see you here again Fred, you had a good time?!") At the same time, 'knowing each other' not generally led to an erosion of the checking activity. Whereas in the specialized areas in Plainsboro there was considerable trust among routine participants, and therefore less systematic checking in interaction with the whole team, in St. Sebastian's actants are inclined to 'check' more often (see also paragraph 4.5.1. in this chapter about understandings of what the checking routine actually *should be*).

As both hospitals are situated in the same educational region, there are situations in which doctors in training spend part of their training in both hospitals. Therefore it happened that I encountered one of the anaesthesiologists in training who I met in Plainsboro, a couple of months later in St. Sebastian's. During a conversation in the staff room we discuss her experiences in both the general surgery department in Plainsboro, and the surgery department in St. Sebastian's. Her expressions very much align with what the operating assistant had told me about a 'pleasant atmosphere'; If people know each other – which is a deeper connection than just knowing names – as is the case in St. Sebastian's, it gives the feeling of an "equal" team and you more easily speak out and perform the checklist together. In Plainsboro, at your first you're more busy with 'getting to know people' and getting to know 'how things are done', before you even think of speaking out about the checklist.

In sum, the checklist envisions connections among team members. In many instances however, such connections are already there. People work together in a pleasant atmosphere and pay attention to patient safety. Notably, when actants have developed firm working routines and shared understandings about what

3 Plainsboro teaching hospital's surgery department consists of 23 operating theatres, and an additional 14 theatres for outpatient interventions. St. Sebastian's hospital's surgery department consists of 10 operating theatres.

should be done, this might lead to a tension with consistently checking for safety items as people trust that they "will get there", because they always do. At the same time, communication and collaboration are no 'automatic' outcome of the checklist. Rather, connections are a *requisite* to make standards work in practice. Actants in a high position play a key role in maintaining or changing the status quo.

5.5 Maintaining accreditation

Although taking care of patient safety is something that professionals consider something they have been doing for years already, there is – particularly from an organisational perspective – a clear impetus to make this explicit by implementing a safety checklist: Accreditation. Hospitals can receive an accreditation from an independent, external organisation that evaluates their performance. The accreditation organisation assesses if the hospital delivers high quality and safe service to its patients, based on a wide array of performance indicators, such as adherence to checklists. With accreditation, hospitals can thus show 'the outer world' that they have things properly organised; that they have implemented protocols for safe care, and herewith they can gain legitimacy.

With accreditation, registration becomes particularly evident. After all, checking items becomes not only a matter of checking *as such*, but also a matter of registration. In practice, two separate action patterns emerge: (1) checking and (2) ticking off the boxes.

5.5.1 Checking

It is 7.30am when I enter the surgery department at St. Sebastian's. The nurses at the secretariat warmly greet me when they hand me my 'guest' pass, they already know me by name. "So you're going with doctor Hood[4] today", she says. "He's with the E.N.T. today. That's quite machinery work, you'll see." That was no exaggeration. The E.N.T. specialist was going to do a 'street' of throat tonsil removals that day, and dr. Hood was responsible for anaesthesia. Removal of the tonsils is an intervention that is mostly performed on very young children. The intervention as such is not that risky, however, it is of crucial importance that when the patients get out of anaesthesia, they are in an up-right position so they will not drown in their own blood.

4 All names in this dissertation are fictive

That day, my pedometer showed some impressive results. As it was mostly children we were operating, the anaesthetist was picking up the patients himself at the holding. From there, we took them to the operating theatre to make them feel a little more at ease. Directly after the intervention, we delivered them at the recovery and assisted them in awaking from a light anaesthesia. After that, we rushed to the holding to pick up the next patient, and so on. So, when the surgeon was performing the sign-out with the operation assistants for example, most of the time we were already on the move.

After a short break however, everyone was back in the theatre and I could observe the E.N.T. specialist performing the time-out while holding the checklist in his hands, and reading the items that were listed out loud. This was something different than most of what I had seen before; surgical teams indeed performing a time-out, checking items, but not explicitly using the checklist while doing so. At the end of the day I started a conversation with the E.N.T. specialist to gain an understanding of why he actually used the checklist so explicitly.

I:	"What does this checklist mean for how you do your work?"
E.N.T. specialist:	"This is really routine work actually. Removing the tonsils is not that complicated, you just know what to do, where to take care of, and they are all healthy young children."
I:	"So what *does* the checklist then?"
E.N.T. specialist:	"I think it is exactly these types of surgery where you need a checklist for. It goes fast, many different patients. You see, when you have to do something that is very complicated, you are aware of that and make sure that you have everything covered. When it is like this, something might slip through, so I always make sure I have the right patient in front of me."
I:	"Many people told me that that's something they always have been doing, checking whether it indeed is the right patient, or the right surgical site. That they don't need a checklist for that.."
E.N.T. specialist:	Well, that's exactly the point. I *know* [emphasis added] these things too. But that's the danger. I use

> the checklist to *check* if I don't overlook something I think I know."

This conversation lays bare the different ostensive understandings that actants might have about what the routine actually *should be*. To this surgeon, the essence of a checklist is that you *check* these items following the checklist, to make sure you don't forget about or mess up something you *think* you already know. Using a checklist is therefore 'professional'.

A different abstract pattern is that the checklist is a help to routinize safety checks. After the safety checks have become routine, you don't need the checklist anymore. Moreover, it's not very professional to continue using a checklist, this implies that you don't know what to do. Or as an orthopaedic surgeon put it: "It has to be in your system."

"Routinizing safety checks" or "routinizing the safety checklist" are two very different things however. The second understanding, "it has to be in your system", aligns with the previous argument about professional judgment. Taking care of patient safety is something professionals always have been doing, they don't need a checklist for that. Besides, many of them think that it is a sign of professionality if they don't *need* a checklist. As a professional you know what to do, and therefore also know how and when to pay attention to patient safety. This also means that they use the checklist – or 'deal with safety items' better phrased – in a more flexible and unstructured manner.

These two abstract understandings result in different patterns of action. Both involve checking safety items, but only the understanding of a check*list* fuels action patterns in which professionals consistently involve the artefact. The 'routinize safety items' understanding, appears the dominant one, resulting in action patterns that are more 'loose'.

5.5.2 'Ticking off boxes'

On the one hand, there thus is the checking activity with the patient. Action patterns may differ based on individual understandings of the checklist, but overall there is a distinguishable routine in which safety items are checked and confirmed in interaction with the patient. Within the checklist routine, a 'separate' and consistent action pattern emerged: registration.

It is 11.00am when I am at Plainsboro's surgery department for a day of outpatient gynaecology treatment. 'Outpatient' means that patients come in for a surgical intervention and go home on the same day. Mostly, they leave shortly after the intervention. Interventions are not that complex, and follow-up on each other quite fast. Three patients have already been operated, and the third patient just entered the OR for a removal of an IUD (a hormonal intra-uterine device, or coil). Before the surgeon has scrubbed or performed the time-out procedure, he sits behind the computer screen in the corner of the theatre.

I:	"What is it you are doing right now?"
Surgeon:	[laughing] "I am ticking off boxes so I can continue."

After the time-out boxes are ticked-off in the software system, the surgeon leaves to scrub. When he returns he walks towards the operating table and does the time-out with the patient.

This observation note reflects how two action flows emerge in the checklist routine. The 'rule' is that professionals perform the SSC, and after they did so, register this performance in the software system. Interestingly, in many cases, the registration of the routine is done before the actual checking routine has been performed. Ticking off boxes appears as something different from what they do with patients. Ticking off boxes doesn't necessarily imply that there has been – or will be – actual checking with the patient.

It shows that the registration of the checklist is consistently done, be it before or after the actual checking. There are three reasons for the emergence of this pattern. The first reason is a practical one. The software system has to give professionals 'green light' to continue. Only when all boxes are ticked-off, the system allows to proceed with the next patient. Also the next reason, is a practical one. When the gynaecologist was behind his computer ticking off the boxes, the team members from anaesthesia were preparing the patient for the operation. They help the patient onto the surgical table, and install the devices that they need to put the patient in the right position. Already ticking off the boxes herewith appeared as an effective use of 'spare time'. The surgeon had to wait for the patient to be ready anyway, and by already fulfilling the administrative tasks, he can smoothly resume the program later on.

The third reason, is a more fundamental one and has to do with how professional work is monitored. Interestingly, in most conversations, professionals demonstrate a rather passive attitude when it comes to registration, it is something "they have to do", while in the actual performance they proactively rely on their professional judgment and amend to routine to their needs and wishes.

"They have to do it" because for the hospital board, the Health Care Inspectorate and the International Accreditation Committee, compliance to standards, such as the SSC, is of crucial importance. These institutes heavily rely on compliance rates, for example in deciding whether or not to prolong the accreditation. Most professionals do not want to "get in trouble" because of lacking registration, therefore they do it, as is visible in Plainsboro's Intranet:

> Percentage correctly performed 'stop moments': 97,4%

The phrasing on the Intranet gives the impression that for the organisation 'performing the checklist' and 'registering the checklist' is one and the same thing. The percentage still, does only provide us with information about the *registration* of the checklist. That indeed is very consistently done.

The fact that actants do register procedures, does not mean they do so because they are convinced that it is a valuable activity. Rather, they see it as a considerable burden. At the end of the day of gynaecology outpatient treatments, I'm chatting with the surgeon to review the day. "Wait a sec", he says. "I'll e-mail you a document that perfectly reflects how it is. I don't know who wrote it, but it is floating around and everyone feels it exactly like this." Later that night I find the 'soup protocol' in my inbox (figure 9).

The soup protocol reflects some of the abstract patterns. There is something about the tendency to standardize professional work as such, and the consequences for professional judgment (making soup based on a protocol rather than the chef's expertise and sense of taste). But mostly, this artefact reflects understandings about the registration of practices ("you can tick off the boxes" and "Just Control Intensively"[5]). The fear of ticking off the boxes and intensive control is that it distracts attention from the core process, treating patients, or put differently: "who cares about the soup?!"

5 JCI (Joint Commission International) is the best-known accreditation worldwide

Soup Protocol

For many years, I have been making soup. Delicious vegetable soup. Nothing wrong with that. A few years ago, an acquaintance said to me: "Why don't you write down how you make the soup?" I thought that was a good idea, so I wrote everything down and called it 'soup protocol'. When I made my soup, I did everything exactly following protocol.

Then someone said: "If you precisely write down all the ingredients that you put in the soup, you can thick off the boxes."

All said and done. [...] It took quite a lot of time but I took that for granted.

One day, my aunt visited me. She had been on a holiday, and she had learned something new: JCI. "That means: Just Control Intensively", she said. "There are lists that prescribe the size of the cooking pan, the length of the dipper, the cups for the ingredients, and there are protocols for the interior of the kitchen." "Besides, you can't wear your kitchen apron anymore, but you have to make the soup in your own clothing, that's way more homely."

"And here we have lists for the registration, stirring your soup left- or rightwards, the fat percentage, the calories, and the protocols naturally, the BIG-registration, the observation lists, and the safety certificates.." "And of course, all these lists will be monitored and updated regularly." "Moreover, we have an accreditation plan, which means that we are going to look into each other's pans." "We will organize evaluations and peer-to-peer coaching." "In short, everything has been taken care of!"

You will understand, this is all very handy and stuff and there's something to be said for all this.

But, when ticking all these boxes, I can't help but think "Who is still concerned about the soup?!"

Anonymous

Figure 9: Soup Protocol

A site visit of the Health Care Inspectorate illustrates how tensions arise between the checking routine with the patient and the registration routine.

> It is 7.45am when I lean with my back against the rear wall of the meeting room. The morning handover of vascular surgery is about to start. In the handover, interesting cases from the night shift are discussed and the patients that will be operated throughout the day are briefly discussed with the whole team. Mostly, this means that the surgeon explains what he is going to do. Before we get started, there is one final message: "We just heard that an inspector will be joining us today"

The Health Care Inspectorate makes regular visits to all hospitals. Some of these visits are announced, others – like this visit – are not. The idea behind these site visits is that the inspector is able to observe how surgical teams usually work, that is: what their work routines look like. The site visit has been announced just before the morning briefing. Immediately, all team members are made aware of this. The team members are very aware of the fact that they 'will be watched' today, "just make sure we live up to all protocols" the surgeon closes the meeting.

> It is 10.45am, the team is operating the third patient of the day. So far, all parts of the checklist have been consistently performed for each patient; the surgeon holding the artefact, reads out the items that are confirmed by the patient and the other team members. It's a tense atmosphere.
>
> The inspector has positioned herself at the back of the operating theatre. Halfway the operation she walks towards one of the scrub nurses who is responsible for the instruments. I can catch up their conversation:
>
> Inspector: "Can you show me the time-out?"
> Scrub nurse: "What do you mean exactly?"
> Inspector: "Well in EZIS [the software system] of course!"
> When the inspector finishes the conversation she walks towards me.
> Inspector: "Can you tell me what the atmospheric pressure in the operating theatre should be?"
>
> I excuse myself by explaining that I am just an observing research assistant. The conversation then evolves into a different direction.

Inspector:	"Do you know that there's a strand of hair coming down your cap?"
I:	[blushing] Oh…I'm sorry, I just looked into the mirror fifteen minutes ago and then everything was fine…"
Inspector:	"I feel more sorry that none of your colleagues addressed this."

After an uncomfortable silence I try to get the conversation back to the checklist.

I:	"I was just wondering, how should the team ideally perform the checklist?"
Inspector:	"They must do it and also register it."
I:	"Yes, but *how* should they do it? What would it look like?"

Apparently, the question *how* teams should perform the checklist is a difficult one. This inspector clearly focused on things that are easy to observe and monitor: do individuals know what the atmospheric pressure should be? Do they wear a cap? Do they wear earrings? Do they put on a mask? Do they register procedures? As I am chatting with the scrub nurses afterwards, it shows how this approach causes frustration among team members. They are willing to show the registration of the checklist in the computer, but what surgical care is actually about is pushed into the background. Or as the scrub nurse, who clearly was irritated, said: "She doesn't even wanna know what we are actually doing here!" I felt uncomfortable myself in the conversation with the inspector, as I only had the intention to live up to hygiene protocols.

To 'observe' if teams registered the performance of a checklist is more easy than to observe how they actually do it. What is important? Where do you pay attention to? In the conversation it showed that the Inspectorate was having a hard time in going about this. Just checking numbers is simple and 'effective', but as said, it not necessarily gives a good impression of what actually is going on. The inspector concludes that she doesn't really care who does the time-out, be it the surgeon, anaesthetist or nurse, as long as it's been done. This chapter has shown how it actually *does* matter.

In sum, Hospital Boards, Inspectorates, and accreditation organisations concentrate on numbers. They often even equate the registration of procedures

with their actual performance. For work at the frontline, this implies that actually two separate action patterns within the same routine emerge. The first one is the actual checking, that is mostly, fuelled by professional judgment, amended to specific situations and needs. There are different abstract patterns (routinizing the checklist/routinizing safety checks) that enable different activity patterns. The second one is the registration, that is consistently done. In registration professionals demonstrate a less pro-active attitude, they want no trouble.

5.6 Main findings and reflections

In this chapter, I have shown how medical professionals really use medical checklists as artefacts, although I sketched a nuanced picture. In many ways they are critical of new standards and they 'tick the boxes' while working with them, but they also really use standards to improve case treatment. In this paragraph I discuss the main findings of this chapter to analyse standards as dynamic systems of ostensive and performative dimensions.

5.6.1 "The checklist" does not exist

From the findings of this chapter, we can conclude that there's no such thing as 'the checklist', in terms of how professionals conceive the checklist and how they refer to it. It is widely known that images of what the checklist is or should be affect how they are actually used in practice. Feldman and Pentland (2003, p. 101) identified the ostensive dimension of routines as "the abstract, generalized idea, or the routine in principle." Routine participants use the ostensive aspect to guide their actions, to account for what they are doing, and refer to patterns of activity that would otherwise be incomprehensible. Feldman and Pentland (2003, 2005) already underscored that it is actually ostensive aspects in the plural, since individuals can hold different understandings, for example based on their perspective. The findings of this study confirm and extends this view by showing that the "the routine in principle" could be conceived as an abstract superset of several subsets presenting the individual understandings of the routine. The collective understanding of the routine is thus layered and built out of multiple subsets (figure 10,11).

The figures represent a simplified picture of ostensive subsets, taking into account three individual, subjective understandings. First, figure 10 shows the interrelation of ostensive perspectives from different professional backgrounds, i.e. an anaesthesiologist, a surgeon and a scrub nurse. Some of their

understandings of the checklist diverge, for example with regard to the 'evidence base' of the checklist and its potential for improving teamwork. The subjective understanding of the individual anaesthesiologist is that the checklist reduces medical mistakes and enhances teamwork. The subjective understanding of the orthopaedic surgeon on the contrary, is that the evidence base of the checklist is too thin, that he doesn't need a checklist to improve patient safety, but he acknowledges the importance of the checklist with regard to accreditation. These findings thus also show that even the individual guiding principles consist of different sub ideas that motivate professional behaviour.

Besides the different subjective understandings both within and between these individuals, there are also more congruent ideas. For example, the subjective understandings regarding teamwork of the anaesthesiologist and the scrub nurse overlap. They both consider the checklist a teamwork facilitator. The abstract pattern "the checklist is there for accreditation" is an understanding that is held by all three routine participants. If individual understandings of what the routine is overlap, it becomes more likely that these understandings firmly embed in the collective understanding, and hence, steer practices.

Next, figure 11 represents a simplified interrelation of the ostensive ideas of three individuals with the same professional background. The figure shows that also *within* professional segments, in the example anaesthesia, ostensive patterns might be shared ("checklist improves teamwork") but also, that ostensive aspects might diverge and even contrast "checklist reduces medical mistakes" versus "there is no proof the checklist reduces medical mistakes".

The envisioned checklist routine is often portrayed as pretty straightforward (see also chapter 2). The findings show however, that "the routine in principle" does not exist. Understandings of the checklist are not only multiple, they are also contested. Individuals know or assume portions of the envisioned routine, such as their own ideas and parts that are shared, but they are mostly not aware of understandings that others hold as a guiding principle, so all is known to none (see also Weick and Roberts (1993, p. 365)). The next section discusses how the (diverging) ostensive aspects translate into collective understandings and practice.

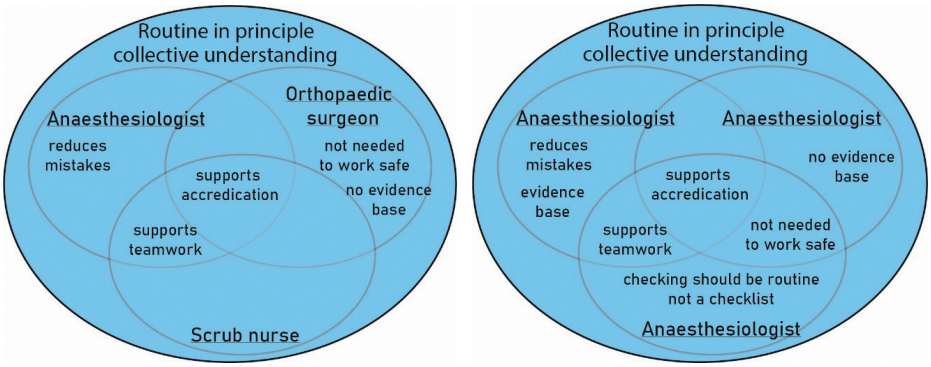


Figure 10&11: Stratification of the ostensive dimension across (left) and within (right) professional groups

5.6.2 Social mechanisms mediate routine dynamics

The idea that ostensive aspects might be diverse, for instance because of different professional perspectives, has found its way in literature about routines. Nonetheless, it remained rather unclear *how* multiple, individual understandings evolve into collective understandings, and hence, performances. The findings of this chapter elucidate some of the mechanisms mediating routine dynamics. Role taking, hierarchy and the strength of connections and 'connective potential' affect which patterns become dominant, and are therefore decisive for professional performances.

Role taking

The idea of 'role taking' is valuable in understanding how different subjective of understandings of the checklist find their way in practices. Mead (1934) already argued that through taking the role of others, individual patterns of action fit together to form joint action. Each individual aligns his or her action to the action of others by identifying the social activity in which they are about to engage and by learning what those others are doing, or what they intend to do, in forming the joint action (see also Blumer, 1969). For instance, in a football match, what a player does depends on his or her assumption of the actions that his or her team players will take. Role taking thus refers to anticipating others' behaviours.

In some of the observed performances of the checklist routine however, actants stuck to their own role rather than anticipating on others and aligning their practices with other participants. The orthopaedic surgeon who was about to perform knee arthroscopies on all "healthy people" did not anticipate on the role of the anaesthesiologist and performed a more independent action pattern. In the

envisioned routine, routine participants rely on each other's information and the anaesthesiologist confirms items as named by the surgeon. However, based on his professional judgment, the surgeon decided not to consult the anaesthesiologist and thus not align practices based on role taking. Moreover, surgeons often depart from the idea that the patient is "their patient" which centralizes their own role, and precludes taking on others' roles. In such situations, individual understandings also enable individual action patterns.

Hierarchical positions in the team

The presence of such individual understandings resulting in individual patterns of action, does not imply that individual understandings cannot ultimately lead to collective patterns of action. In understanding how individual understandings ultimately become shared while others are not, hierarchical positions are relevant to consider. An individual understanding can still find its way in the collective understanding, even though it might not be shared from the beginning. In the example, the anaesthesiologist understands the checklist as something that will improve teamwork. Though, this idea was not shared with for example the surgeon. But, if the anaesthesiologist – who's high-ranked position is acknowledged by the team members - starts to perform actions that are guided by this abstract pattern (introducing himself, writing names and functions on the board, calling people by their names, asking for weekend plans) this might instigate a change in other individual abstract patterns (the checklist improves teamwork), and thus ultimately in the collective understanding.

It is important to note that the hierarchical position of the anaesthesiologist provides opportunities to amend abstract patterns. As Cast (2003, p. 188) put it, some powerful individual individuals will more than others be able "to alter the situation so that meanings in the situation are consistent with their own definition of the situation." This helps explaining why the scrub nurse, who holds the same understanding regarding teamwork (figure 11), but has a considerably lower position in the hierarchy, mumbled and did not change action in interaction. The observed 'uneasiness' with speaking up, might indicate hierarchical relations in the team. During the informal conversations, participants showed well aware of such relations, by referring to the high ranked or referring to their experiences of an 'equal' team. The different hierarchical positions thus also imply differences in professional agency.

Hence, insights from the Sociology of Professions are helpful in understanding how ostensive aspects are (not) amended. When performing a routine,

participants will note if the performances and the ostensive "model" of the routine align (Pentland & Feldman, 2007). If a misalignment between the abstract idea and performances occur, Howard-Grenville, Rerup, Langley, and Tsoukas (2016) suggest individuals can do two things: they can alter the ostensive to match their actions, or they can change their actions to match the ostensive. Differences in hierarchical positions suggest that while those in high positions can make actions align with their ostensive, those in lower positions are forced to amend their ostensive to actions. Or, as the findings of this study show, lower-ranked professionals not necessarily amend their model of the routine. Rather, they do not speak up but perform actions individually, like the scrub nurse who mumbled and checked items for herself.

Strength of connections between people and 'connective potential'

Besides some shared understandings of the checklist that fuel consistent action patterns – for example the understanding that the checklist is a vehicle to receive accreditation - we have also seen how in specialized surgical teams in Plainsboro the presence of shared ideas lowered the perceived need for ongoing coordination of practices. Individuals in the specialized teams relied on their shared understandings about how to go about the surgery, that they herewith precluded the need to continuously coordinate their actions. Rather than consistently checking for safety items, they assumed to "get there". Based on previous successful experiences, they might entrust the patient will be fine, also without consistently checking items.

Interestingly, these findings contradict with the work of LeBaron, Christianson, Garrett, & Ilan (2016) and Dionysiou & Tsoukas (2013) who illustrated how the presence of shared understandings did *not* preclude the need for ongoing coordinating during routine performances. LeBaron et al. (2016) showed how ICU physicians engaged in significant ongoing work of coordination during a patient handover routine, while they had firm shared ideas of the routine. The explanation for this difference might lie in the 'strength' of connections. The argument that frequency of interaction facilitates role taking and the development of shared understandings (Feldman & Rafaeli, 2002; Reichers, 1987; Weick, 1979) is helpful in understanding that the specialized surgical teams with frequent interactions, rely on firmer shared understandings than the ICU physicians in the case of LeBaron et al. (2016). Frequency of interactions thus presents a continuum on which shared understandings are being developed, in which firmly shared understandings ultimately might undermine the need to coordinate action i.e. consistently use the checklist.

Further, this chapter shows that connections do not so much result from standards, but are a perquisite for using standards. They can be better considered as 'effortful accomplishments' (also Feldman et al. 2016), rather than automatic outcomes of artefacts. There must be some 'connective potential' when standards for making connections are used. As shown, high-ranked professionals play important frontrunner roles in order to exploit such 'connective potential'. When they set the tight tone and stimulate others to collaborate, checklists are used differently, both in terms of ideas and actions. Professionals themselves rather than checklists establish collaboration, but checklists are important devices for actually using such connective potential.

It has been commonly assumed that most of the barriers to effective implementation, such as negative attitudes, operate at the level of the individual health care professional (Grimshaw, Eccles, & Tetroe, 2004). An observational study by France, Leming-Lee, Jackson, Feistritzer, and Higgins (2008) on the compliance to a surgical team checklist for example, focused on the 'engagement' of individual professionals. Although this chapter shows that individual attitudes do matter, from the analysis I claim that they only exist, change – and thus matter, in *interaction* with others. This analysis from a routine perspective underlines the collective, and therefore social nature of working with standards.

5.6.3 Hybridity is not yet 'natural'

In the theoretical chapter of this dissertation, I introduced the notion of hybrid professionalism, a rather new theorization of professionalism in which 'classic' professional logics are combined with organisational logics. In theory, contradictory professional and managerial principles such as autonomy and control, or quality and efficiency are combined in order to establish contemporary professional actions (Noordegraaf, 2015). Standardization in professional domains, and thus the introduction of a safety checklist in the surgical domain more specifically, can be considered a proper case to empirically trace what 'hybrid professionalism' looks like in practice.

The observations did show how professionals are working with broader 'organisational themes' like patient safety, also directly linked to accreditation. They are aware of the (politically) demanding environment they are operating in (not just literally). Nonetheless, in daily practice, they tend to focus on individual case treatment, emphasized with notions of "my patient", and herewith neglect the overarching organisation of surgical care. Indeed, individual case treatment can even instigate conflict among professionals since they want to prioritize 'their

patients' to finish their tight schedule (see for example also chapter 6 about the construction of emergency).

So, whereas in theoretical considerations of hybrid and organised professionalism 'quality' is conceptualized as multifaceted (e.g. Noordegraaf, 2015; Adler and Kwon, 2013), in empirics, professionals predominantly stick to individual case treatment, in which they mostly define 'quality' as a high quality *intervention*, thus focusing on the short term and confined to the core activity of surgical care. There were some exceptions though. The anaesthesiologist that was aware of the scope of the checklist *beyond* case treatment and did strive for building firmer social connections can be identified as 'hybrid' professional that does take organising team work beyond individual case treatment seriously. As hybrid professionalism is described as "not merely offering quality when cases are treated, but organising for quality becomes a central ingredient of professional work" (Noordegraaf, 2015, p.188), the findings of this study suggest a more nuanced (or, modest, if you wish) picture of hybrid professionalism. Yes, there is evidence for the involvement of organisational logics, but in daily routines 'classic' attributes of professionalism still seem to dominate.

5.6.4 Creating (and understanding) a routine is beyond internal routine dynamics

Despite the findings of this chapter provide answers to the question how standards work out in medical teams, they also show that creating a routine and understanding how the routine works, is about more than the internal dynamics. This chapter already revealed how internal routine dynamics are affected by both routine interactions and artefacts.

Firstly, the findings of this chapter suggest that the checklist routine (the abstract model and concrete performances) is affected by the connection with other routines that constitute surgical work. For instance, the findings point toward two different activities within the same routine; checking safety items and registering those. Doctors often already register the checklist before the actual performance. In doing so, they effectively use their time. This indicates that the checklist does not stand on its own, but has to fit with multiple tasks. If time wouldn't have been an issue, there would be no stimulus to already register the checklist and quickly move on. Simply put, the checklist takes time and effort, and so do other activities. To gain a better understanding of how standards work, we thus not only need to take into consideration professionals' thoughts on the checklist (i.e. "improves teamwork", "reduces mistakes") and their performances of this

routine, as these ideas and performances are created and amended in a context in which professionals constantly have to perform multiple routines and assess the time and effort that is needed to perform actions in particular situations. So, even if a doctor thinks "the checklist improves teamwork", performances are not necessarily accordingly.

Each guiding principle has to be assessed, in terms of the relative time and effort it takes to perform the checklist in a particular situation. To put an example, if the program is on schedule, and no patient is waiting for an epidural, the "improves teamwork principle" will guide an anaesthesiologists' behaviour (initiating and extensively performing the checklist). If, on the contrary, time pressures are fierce and more tasks are waiting, the checklist might very well not be performed according to principles regarding teamwork or safety.

Secondly, the findings of this chapter suggest that the checklist routine (the abstract model and concrete performances) is affected by the connection with various artefacts. For example, the 'soup protocol' artefact, is an interesting one as it clearly represents some of the ostensive aspects that are held by individuals. As argued, individuals mostly know their own guiding principles, and at best assume those of others. Because ostensive understandings are physicalized through the soup protocol artefact, they become easy to share. Individuals can therefore become aware of other understandings and herewith align and create a firm shared, collective understanding. Because the artefact is anonymous and 'floating around' professionals can distance themselves from it, while uniting at the same time: the collective abstract pattern becomes that intensive control is a burden. Moreover, the message that is communicated through this artefact, builds on the argument above: surgical care is not only about 'the soup', but about many, many more. So rather than a mere recursive cycle of ostensive and performative aspects, these findings lay bare how artefacts might influence this dynamic. In chapter 7, there will be explicit attention for the role of artefacts in shaping routines.

These latter explanations that hint on prioritizing activities and the influence of artefacts, lay bare the analytical limitations of this chapter. A focus on internal routine dynamics does provide us with sufficient understandings of how ostensive aspects evolve into practices. At the same time, internal routine dynamics only provide us with partial explanations, as the interaction of routines and artefacts strongly influence these internal routine dynamics. I'll therefore expand the analytical focus in the next chapter.

5.7 A model for routine dynamics in professional contexts

Based on the findings of this chapter, I further develop the model for routines in highly professional work contexts (figure 12). The figure below translates the key findings of this chapter into an amended routine model. The initial model by Feldman and Pentland (2005) identified routines as dynamic systems of ostensive and performative dimensions. The findings show how ostensive aspects are not only plural, they can also be contested. Different ideas about the checklists' evidence base and its purposes fuelled selective performance, that were either individual or connected, and predominantly case oriented. Role taking, hierarchy, and connective potential and were identified as mechanisms that constrain and enable (shared) understandings and performances. This chapter therefore contributed to an advanced understanding of the relational character of professional routines.

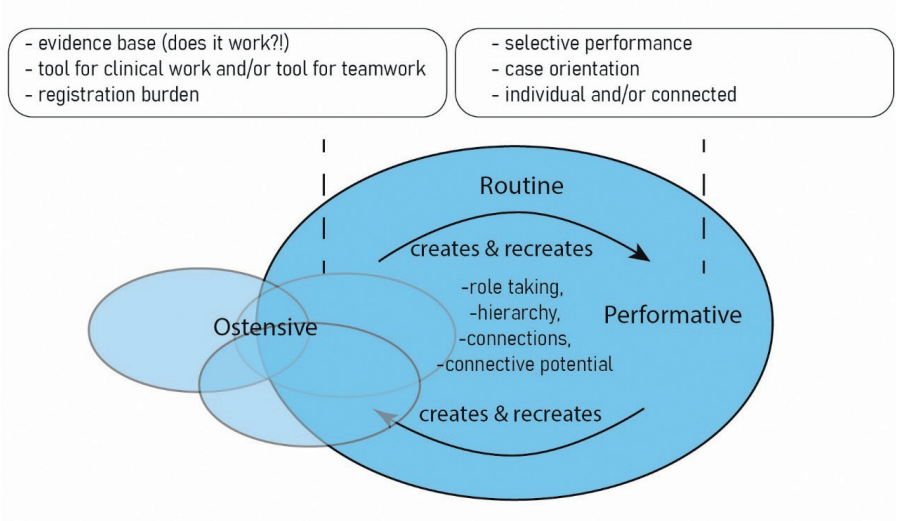


Figure 12: A model for routine dynamics in professional contexts

5.8 To conclude

This chapter focused on the question: "*How do standards work out in medical teams?"*

Medical teams really work with checklists. Professionals are not only resistant and attempt to restore or maintain the status quo, they actually work with checklists to improve case treatment. Safety checklist can be considered an organised response to safety challenges. Still, frontline professionals are mostly busy with securing the safety of their individual patients, thereby showing 'modest' hybridity.

There is agreement that checking safety items is crucial part of professional work, and always has been. Importantly, ideas of what the checklist is or how it should be used diverge. For instance, some consider the checklist a tool to memorize safety checks, while others see the checklist as an artefact that should be routinely used. Especially surgeons are more hesitant towards the latter, the idea of a check*list*, as they often doubt the checklists' evidence base. Even though other professionals in the team value the checklist for reducing mistakes and enhancing teamwork, these ideas will not automatically translate into the collective understanding. Hierarchy proved important for explaining how (individual) ostensive aspects translate into practice. Those team members with high hierarchical positions have the agency to amend performances to their abstract ideas, while those lower in hierarchy are inclined to amend their ostensive aspects, or perform their guiding principle individually. Hence, high-ranked professionals can be identified as frontrunners. If they use the connective potential that is mostly already there, firmer connections can be established.

To conclude this chapter and continue to the next; a focus on routine dynamics offered answers to the question how standards work out in medical teams, though these are partial explanations. How standards work can only be fully understood by looking at their interrelation with other routines and artefacts. In other words; surgical care is not only about the checklist. Or to use the phrasing in the anonymous artefact; it is not only about the soup. Surgical teams also have to take care about the lasagne, salads and the drinks. And they have to be served at exact the same time. In the next chapter, I therefore shift the focus from *internal* routine dynamics, to routine *interactions*.

Intermezzo

Intermezzo: Fainting and/or eating

I have been introduced to the surgical domain by the gate-keeper, and after a couple of days it is time to shadow other professionals in their daily activities. I started off with his colleagues from anaesthesia. After shadowing two anaesthesiologists at Plainsboro Teaching Hospital, today, I will shadow dr. Groenraven at Plainsboro's Children's hospital. In one of the theatres where dr. Groenraven is responsible for anaesthesia, there are several eye operations planned.

It is about 8.15am when the surgeon puts the scalpel into the little patient's eye. I have been able to note down the briefing and time-out. But now, when watching the tiny bloody eye with the extraordinary long lashes, my knees start to feel weak. I shouldn't have had this hasty, tiny breakfast! Sweat drips appear above my upper lip, and I feel a nauseous feeling coming up. I know this feeling very well. But in trying not to look stupid, I decide to take a deep breath and hope for it to go over. That's even more stupid, cause as someone with experience in fainting (It's a matter of low blood pressure, I believe) I should know that once this feeling comes up, it's too late and you will faint anyway. As collapsing in the theatre feels ever more embarrassing, with great difficulty I manage to mumble: "I don't feel so well" before leaving the operating theatre.

In the corridor, I seat myself at the floor with my back against the wall and my head in-between my knees. "Are you okay?" says one of the colleagues that just crossed the corridor. "You better go lie down in the staff room, you will feel better soon." And while he already starts walking away: "It happens more often!"

I can't remember feeling as uncomfortable as I was laying on the couch of Plainsboro Children's hospital staff room. One of the operating assistants who was having her break and saw me laying there with an awful pale face, put a cup in front of me. In case I had to throw up. When I was laying there, different people walked in and out. Some of them quickly glanced at me, others just kindly smiled as if they were thinking "There we go again.." But no one seemed surprised. At all.

Yes I fainted. Two times in total. That day at the Children's hospital was a near miss. Two times in total. That is over the course of almost 200 hours of observation. Is that a lot? I'm not sure. What I'm sure about is that nobody in the surgery department thought it was. What I'm also sure about is that when I would

have fainted while giving a lecture Public Management at my own department, students and colleagues would have been shocked and worried.

That day when I was observing – and subsequently fainting - when the anaesthesiologist in training gave the patient an epidural at the holding (nothing exciting really; no blood, no nothing) I noticed that I was starting to get familiar with the jargon and 'appropriate behaviour' in the surgery department. When she asked me: "Did you have a vagal nerve fainting episode?" ("Werd je vagaal?" in Dutch) I immediately got that she asked me if I had blacked out, and I wasn't surprised by the reactions anymore.

'Language' played an important role in the fieldwork. Naturally, there was plenty of medical jargon I had to get acquainted with. Luckily, I was already a bit familiar with some of the Latin words (epidural, caesarean section, everything ending on 'itis' means infection, 'ectomy' means cutting out) because of my personal background with family members working as a doctor. Still, at first I was surprised when I was in the operating theatre and when the operation was almost finished, the scrub nurse asked if he could already "order the next patient". As if they were ordering a product on Amazon.com. Later on, I did get why sometimes very 'corporate like' terminology was used when talking about patients. In order to deliver best care to your patient, you also need to be able to keep your distance. To some extent, patients are indeed 'things' – especially when they are covered by surgical drapes – that require an intervention. I had to learn these phrasings, the appropriate behaviours and what was expected from me, sometimes the hard way.

Something I also had to learn, is how to deal with 'food' when observing surgical work. As said, that day in at the Children's hospital, at the beginning of the fieldwork, I almost fainted when I just had a tiny breakfast. I learned that although having a decent breakfast (and lunch!) is crucial, taking care of yourself is not something that is 'routine' in this professional domain. Usually, doctors take better care for their patients than of themselves. This 'culture' of 'not having food' became overtly clear to me when once a scrub said to me: "Did you already have lunch dear? You better take care of yourself, cause no one else will." During the observations, it occurred to me several times how "eating" appears as a 'necessary evil' – it simply takes time to eat.

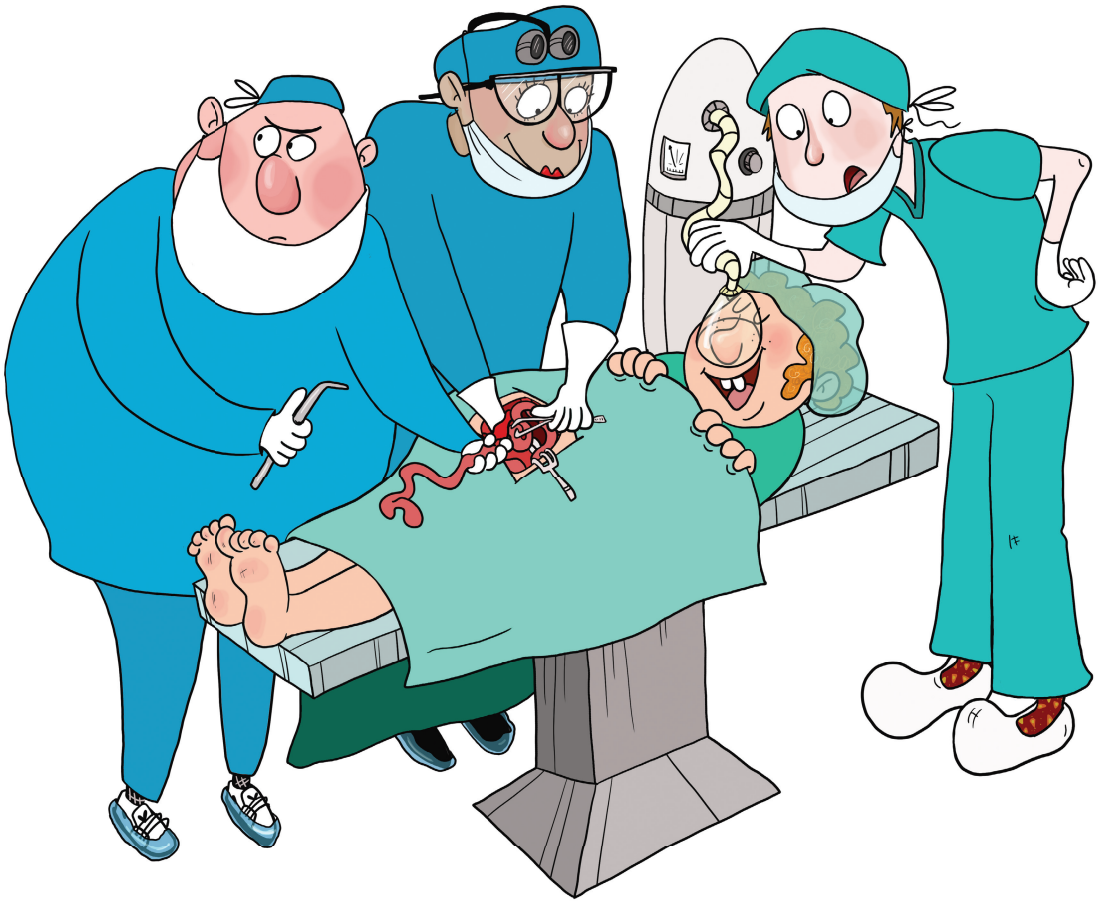
When I was shadowing vascular surgery, one of the surgeons in training left the theatre when anaesthesia was going to pick up the next patient at 11.15am; "I'll

grab a sandwich, I'll be right back, I haven't had breakfast yet." Or, when I was shadowing orthopaedic surgeon dr. Frederiks, he stopped at the vending machine on our way to the surgery department at 7.30am to pull out a 'Snelle Jelle' (a sugar bomb cookie). He didn't have breakfast – two little children at home that had to get dressed and ready to go to school, and the Snelle Jelle turned out to be the only food he would take that day. It all went quite well, until his hand started to shake during the sixth knee scope of that day. I also learned that hardly anyone in the surgery department drinks coffee with less than one or two sugars in it. It will allow them to get through the day, even if they haven't eaten much.

As there were no demarcated breaks to take any lunch, I had to develop routines to make sure I would eat and drink enough throughout the day, in order not to faint. In the final intermezzo of this dissertation about routines, I'll explain these and other routines I developed in conducting ethnographic research in the surgery department.

Chapter 6

Checklist as 'hub': On routine interactions[16]



16 This chapter is an expanded and adapted version of:
Kuiper, M. (2018). Checklist as Hub: How Medical Checklists Connect Professional Routines. In: McDermott, A. M., Kitchener, M., & Exworthy, M. (Eds.). *Managing Improvement in Healthcare: Attaining, Sustaining and Spreading Quality* (pp. 135-154). Palgrave Macmillan, Cham.

6.1 Introduction

> It is 7.55am when we enter OR8 at St. Sebastian's. Today, I join dr. Liem, the responsible anaesthesiologist for operating theatres 7 and 8. The day in operating theatre 8 starts at 8.00am with the briefing led by the plastic surgeon who is about to perform a reconstruction of the right breast. During the extensive conversation, there are some hitches regarding anaesthesia. After the time-out we leave for OR7.
>
> It is 8.11am when we arrive at operating theatre 7. The Red Hot Chili Peppers are blasting from the speakers while the orthopaedic surgeon is already busy placing a knee prosthetic. "Doing fine here!" the surgeon says without being asked. The intervention is proceeding as planned. We leave to answer some e-mails in the staff room.

The question central to this chapter is: *"How does a (new) checklist routine relate to existing routines?"* Although 'the operation' is the central and defining task of surgical work, surgical practice encompasses plenty of other practices around this core activity. Other practices that surround the operation are pre- and post-operative care, registration in electronic patient records, attending meetings, writing research reports, answering to e-mails, teaching juniors and so on, and so forth. To put the example of the previous chapter: professionals do not only have to take care of the soup, they also have to serve the salads and drinks. In the right place, at the exact temperature, and in just time.

The introductory note of this chapter shows how the anaesthesiologist cannot be at two operating theatres at exact the same time to perform the briefing as part of the checklist routine, and consequently prioritizes the briefing and time-out in OR8, at the expense of these procedures in OR7. This chapter shifts the focus to the second part of the analytical frame (see figure 1,2) by illustrating how the checklist routine interacts with other professional routines, and consequently, how professionals deal with incompatible demands.

This chapter starts off with an illustration of the checklist as 'hub'. I explain how different professional routines have to come together in the performance of the checklist. In the paragraphs 6.3 and 6.4 I will show that this doesn't come automatically though. I will explain how both 'standard' problems and unexpected events in routine interactions make the performance of the checklist difficult. In the final sections of this chapter I describe three main strategies

that professionals develop to deal with incompatible demands: work on it, work around it, and work without it. The chapter concludes with a discussion of the findings and the development of the second building block for the routine model in professional contexts.

6.2 Checklist as 'hub'?

In the previous chapter, I showed that a first and important finding was, that from all the many performances of the Surgical Safety Checklist I observed, not one repetition of the checklist routine was the same. The routine performances strongly varied, for example in the number of people that attended, how extensively the checklist was discussed, the extent to which participants paid attention, and who led the conversation. Despite there already were connections between professionals, these connections as envisioned by the checklist were not always self-evidently established. The previous chapter focused on internal routine dynamics, and I showed how different ostensive understandings led to different performances, and how performances in turn, adapted the abstract pattern. In the analysis, for example hierarchical relations and role taking were helpful in explaining the activity patterns that emerged. In other words, the previous chapter studied the checklist routine as a relational matter.

In this chapter, I broaden the scope of the analysis. As indicated in the analytical frame that was introduced in chapter three (figure 2), this chapter focuses on routine interactions, as routines never stand on their own. The internal dynamics of routines are relevant to consider, but routines are inherently connected to each other. And to create a new routine, it has to 'fit' with existing patterns of action. To move beyond an 'isolated' consideration of the checklist routine, I explicitly conceptualized routines as practices that are shaped by interactions with other routines through their continuous performance (Schatzki, 2011). To understand such generative 'bundles of routines' I thus needed to analytically trace the connections between the routines. It was therefore necessary to consider how different actors are involved in the performance of various routines, so I could gain insight into what roles the different actors play in creating, maintaining or modifying routine connections (Nicolini, 2013).

By shadowing different clinicians from different medical specialties for full working days, I got to know the various routines they engaged in. As I learned about the interaction of routines, clues about the varying checklist routine

performances became evident. Based on the observation data, I first schematized an ideal typical situation in which the checklist does generate connections between different routines (figure 13). Although this visualization is a significant simplification of reality, it does provide insight into both the various practices that construct professional work and the envisioned connections between them.

The vertical flow of boxes represents the various activities individuals are engaged in. The horizontal lines in the figure represent the location in the processes where the different phases of the checklist (briefing, time-out, sign-out) have to be performed, and thus connections established.

There are a few important observations supplementing this visual. First, professional work is *layered* since it consists of: (1) individual work practices, such as checking upon patients, (2) professional routines within subdisciplines, such as handovers; and (3) multidisciplinary routines that connect the various routines, such as the time-out in the Surgical Safety Checklist. Importantly, the individuals from different professional disciplines that are involved in the performance of the Surgical Safety Checklist routine, thus all are also involved in multiple different routines within their subdiscipline. The SSC can hence be considered a 'hub' in which different disciplines have come together. This involves a significant matter of coordination, fine-tuning and deliberation.

Second, the *organisation* of work processes differs among the professional disciplines: the organisation of surgical care is serial, whereas the organisation of anaesthesia is parallel. Anaesthesiologists have to manage at least two parallel surgical processes in different ORs simultaneously. This is with the exception of the very specialized types of work, in which the anaesthesiologist has full responsibility for just one operating theatre, such as in vascular or cardiothoracic surgery.

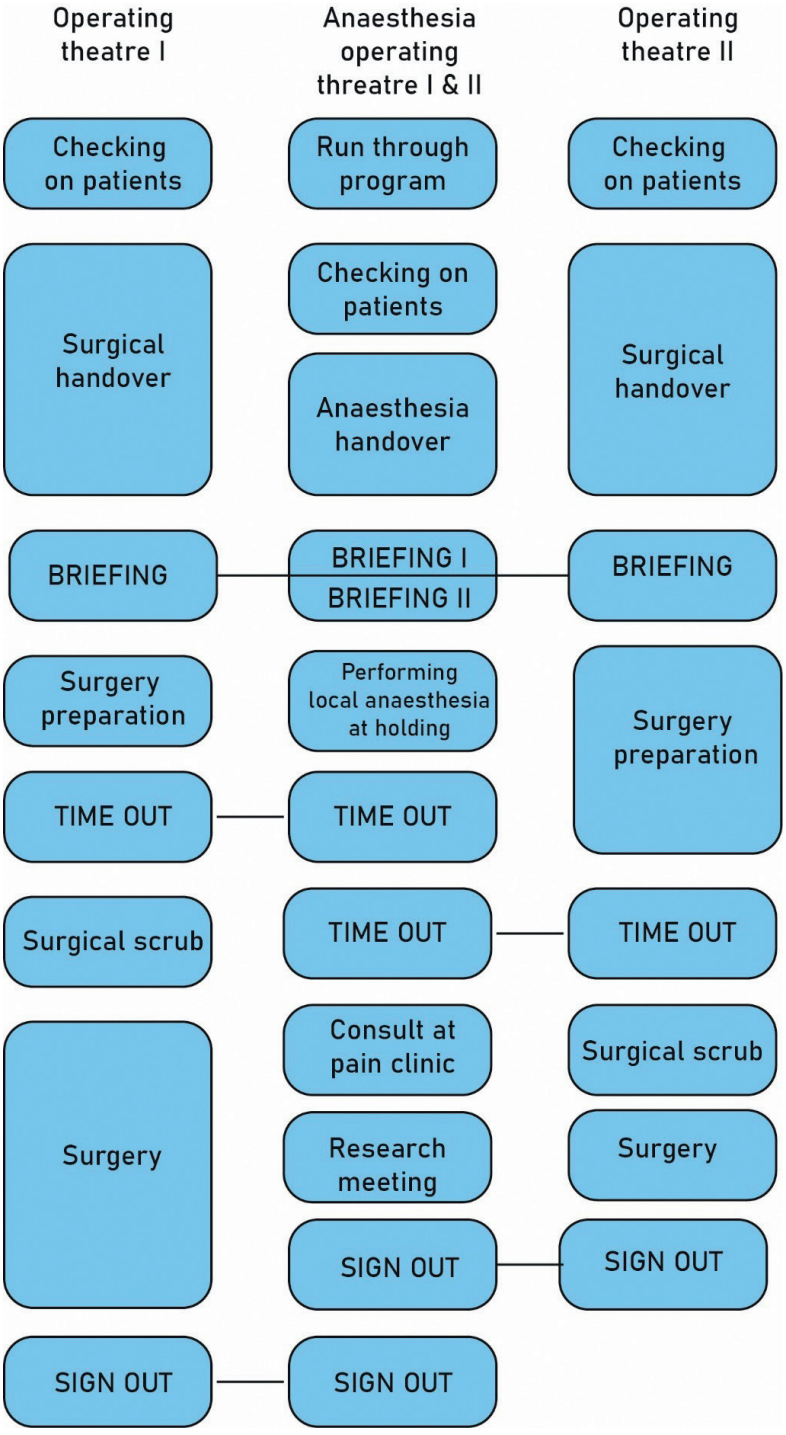


Figure 13: Envisioned routine connections

Third, this figure merely represents one series of routines – that is, one surgery in each operating theatre – while the number of operations per theatre can add up to seven or eight a day. Also, the blocks that represent time slots are clearly demarcated, but in reality the length of these blocks is highly unpredictable. The scheduled time for a surgery might be one hour, but because of unexpected events, for example concerning the patient's condition, this timing might fluctuate. Finally and importantly, this visual does not provide any information about the ostensive dimension of the various routines, and thus the values and norms encompassing these routines. It therefore neglects value judgments and thus pressures for prioritization.

All in all, the lines that represent the connections in the ideal type are not that straightforward. In reality, the envisioned connections lead to incompatible demands for professionals, for example because the time blocks might overlap and thereby disturb the emergence of connections. In the remainder of this chapter I will first provide detailed descriptions of everyday situations that steer conflicting demands for professionals. There are what I call 'standard' problems, since they seem inherently embedded in the organisation of surgical care, and there are unexpected events that can cause conflicting demands over the course of the day. Paragraph 6.5 then shows how professionals deal with these conflicting demands.

6.3 'Standard' problems

First of all, there are 'standard' problems. It is important to emphasize that 'standard' does not mean 'simple'. I use the notion of a 'standard problem' to illustrate that these types of problems are indisputable, at least, if surgical care is organised in the way it currently is. Standard problems are embedded in the process, they are always there. Such standard problems often require customized solutions and decisions on the spot.

In this paragraph I describe two major standard problems. First of all, the chronical lack of time and the irony of planning, in which trauma surgery – in which emergency is the defining principle – serves as a critical case. Naturally, in general surgery there might be emergencies as well (paragraph 6.4.1), but for trauma surgery, emergency is the rule rather than the exception. Secondly, the organisation of the care process and the impossibility of being at two places at the same time.

6.3.1 Ticking time and the irony of planning

Trauma surgeons deal with injuries that are caused by an impact. Trauma can be caused by falls, car accidents, or cyclist struck by a car. Trauma patients can also be the victims of stabbings or gunshot wounds. Trauma surgeons therefore must be familiar with a wide variety of general, thoracic, and vascular procedures, and they must be able to make complex decisions, often in an acute setting with little time and insufficient information.

Some of the conditions caused by a trauma are harmful and painful, but not immediately life threatening. An operation to stabilize a severely broken limb for example, can be scheduled. Other conditions, for example internal bleedings, require immediate action, these are 'Level A' emergencies. For trauma surgery, emergency is 'standard'. Emergency is expected. Nonetheless, it complicates the performance of the checklist routine as the flux of routines is never established and static.

A day at the trauma department can be considered a 'critical case', illustrating the irony of planning, and the consequences for safety checklist performances.

> It is 6.30am when I park my car at the huge parking garage next to Plainboro's hospital. It is early February, and it is cold and still dark outside. It strikes me how many cars are already parked at this hour.
>
> About fifteen minutes later I meet dr. Doornwaard, the trauma surgeon, while he is already running through the OR program of the day. The day starts at 7.00am with a round over the wards visiting the patients who are planned for surgery today or patients that need extra care. We have to hurry to make it to the patient handover in the trauma surgery department at 7.45am, where the status of the patients is discussed with all the trauma surgeons.
>
> The handover has already begun, and several clinicians are still walking in and out. We have been at the handover for only five minutes when dr. Doornwaard nods at me to leave. We have to go to the surgery department for the morning briefing.
>
> In the briefing, four scheduled operations are discussed. After two of these operations, dr. Doornwaard has to operate a girl from the 'emergency list', so the program has to be rescheduled. At noon, we are ready to continue

with the program. However, there a two patients on the neurosurgery A-emergency list[17], which means that our program is 'on hold', since the neurosurgeon has to operate these patients in the theatre where our operations were scheduled.

In these two hours of 'waiting time' we attend two meetings, attend a master thesis defence, and visit colleagues at the emergency department who are treating a 92-year-old patient who fell out of her stair lift.

At 2.00pm the program can be resumed. The morning briefing is exactly six hours ago when dr. Doornwaard performs the time-out. He is holding the memory board[18] in his hands while listing the items. As the anaesthesiologist is not present, the nurse anaesthetist confirms the items.

When the anaesthesiologist enters the operating theatre about twenty minutes later, he jokes: "Who are you people?! I don't see any names on the board! And who are you operating?!"

At the start of the day, with the two scheduled operations, the names and phone numbers of dr. Doornwaard and the anaesthesiologist were on the white board, as was the patient information. When the program was put 'on hold' because of A-emergencies that were operated by the neurosurgeon, the information was correctly erased from the board. However, when the program was resumed two hours later, the correct information was never put back on.

A day at the trauma surgery requires multiple acts of rescheduling. Some situations demand immediate action and involve high time pressures, while at the same time, trauma surgery can involve a lot of waiting time. Despite emergency is expected, it requires high levels of flexibility and decisions on the spot.

Especially waiting time is considered as tremendously annoying. Because of a chronical lack of time, operation schedules are tight, and to surgeons it is of great importance that 'their' patients get operated. If surgeons run out of time and the operation of the last patient of the day has to be postponed – who then

17 There a three types of emergency; A, B and C. The surgeon who is responsible for the patient, determines the level of emergency for the sake of triage.

18 Chapter 7 is about the role of artefacts. In this chapter I show how different representations of the checklist influence performances.

thus already has been waiting (in anxiety) for multiple hours - they are the ones to tell the patient.

This is where the 'game' of emergency construction comes in. The observation note shows how two scheduled trauma surgeries were put on hold because of two neurosurgery emergencies. In some cases there is no doubt about the level of emergency, but sometimes, the state of emergency is debated. 'Emergency' becomes something that is constructed by surgeons. They are inclined to present their patients as more urgent to make sure that there is an operating theatre for them available to operate, at the expense of other patients that were scheduled for surgery. In a conversation I had with the trauma surgeon during our waiting time, he expressed his dissatisfaction with the label 'A emergency' that one of the neuro patients got. "You can seriously doubt whether this indeed is an A emergency. It would have been possible to schedule this operation after ours was finished" he sighs.

These squabbles over emergencies and rescheduling also directly affect the performance of the checklist routine. A first thing to mention is that the anaesthesiologist notices that information is missing. With a joke, he addresses the fact that both the information about the operator and the patient is missing. Next, because of a rescheduling of surgeries, the anaesthesiologist was busy elsewhere at the time the program could be resumed. The trauma surgeon therefore decided to continue the program. After a lot of waiting time, again waiting for the anaesthesiologist would have put pressure on the already tight schedule even more. Instead, tasks regarding anaesthesia were delegated to the nurse anaesthetist in the room (see paragraph 6.5.2 for a further consideration of the strategies that professionals develop).

Because of their responsibility for two operating theatres, anaesthesiologist also constantly have to adapt. They have to flexibly move between operating theatres. The next subparagraph shows how the demand of being at two places at the same time is actually embedded in the surgical process from the start of the day onwards.

6.3.2 In two places at the same time?

The surgery department schedules the various operations in which mostly one surgeon is responsible for the surgeries in the operating theatre planned that day, for example, a range of hip fractures or colon carcinomas. As programs are full and schedules tight, all operating theatres start at 8.00am. The anaesthesiologists

on the other hand, are responsible for at least *two* of these operating theatres at the same time, which not only means that they have to monitor two patients at the same time, but also that they have to attend two briefings and time outs "at the same time."

The organisation of the care process thus produces a 'standard' problem; The surgeries are all planned to start at 8.00am, but anaesthesiologists cannot split into two to attend both briefings simultaneously. The introductory note of this chapter illustrated how the anaesthesiologist prioritized the briefing and time-out in the OR where a more complex intervention was about to start, so the surgeon in the other theatre already got going. The final sections of this chapter explain the different responses to conflicting demands and their considerations for these responses. First, I show how the checklist can also work to produce 'basic irritations', simply because people have to wait for one another. The following observation note reflects the start of the third operation of the day, shadowing an anaesthesiologist at Plainsboro.

Time-out:

Surgeon: "People, can we please first do the time-out? Where is everybody? I have a full schedule today!"

Resident in anaesthesia: [Walks towards the neighbouring room where the operation is being prepared to get the other team members]

Surgeon: "Okay, is everybody there? Thank you." [Does the time-out and then leaves the operating room.]

The anaesthesiologist starts to administer drugs for general anaesthesia. When the patient is asleep, about ten minutes pass by.

Anaesthesiologist: [annoyed] "Who is waiting for who now?! She could have started surgery ten minutes ago. She was pressing to do the time-out and look what happens now; we don't even know where she is!"

This situation reflects the importance of the embeddedness of the new artefact within existing practices. The organisation of the care process makes it difficult to create a new connective routine within this high-paced, demanding environment. One of the (organisational) purposes of the checklist was to improve collaboration, to better connect the different professional segments like

surgery and anaesthesia. However, aligning professional practices and creating a 'hub' in the form of the checklist, appears a daunting task. The lack of fit of the checklist with existing workflows not only seems to hinder the creation of a connective routine, but the basic irritations tend to reinforce segmentation and thus stimulate the opposite effect.

Also at St. Sebastian's, the programs at the various operating theatres start at 8.00am. Also here, anaesthesiologists are responsible for two of the operating theatres at the same time. The following note represents the start of the day at St. Sebastian's, shadowing anaesthesiologist dr. Herbers.

> It is 7.50am when we enter OR4. "We just did the briefing, no particulars" the surgeon says. Although the surgeon did the briefing with the anaesthesiologist in training, dr. Herbers still has some questions regarding the preparation and the process.
>
> A couple of minutes later, me move to OR5. Nobody there yet. "Let's have a coffee then!" the anaesthesiologist says.
>
> After we finished our coffee, we get back to OR4. The patient is already on the table. When the surgeon initiates the time-out, all team members surround the surgical table. The surgeon leads the time-out procedure while holding the checklist in his hands. The order of the items differs from the order in the artefact, but all items all covered.
>
> Thereafter, we move to OR5 for the time-out. Dr. Herbers knocks on the window of the neighbouring room where the scrub nurses are preparing the equipment. Immediately, everyone stops their activities to participate in the time-out. In this OR, dr. Herbers leads the time-out procedure, that contains of two parts. First, he checks the first items of the checklist with the patient. Next, he instigates a 'briefing-like' conversation with the team members to discuss the preparation and instruments.

Again, this observation note shows how professionals – in this case anaesthesiologists – cannot be at two operating theatres at the same time. Both operating theatres strive to start at 8.00am, and the anaesthesiologist has to decide where to go first for the briefing. It showed that there are no routines for prioritization. Some anaesthesiologists explained that the medical condition of the patient and the complexity of the intervention determine where they start,

thus referring to their professional judgment, in which complexity is prioritized over more standard procedures. Others claimed that it actually is a matter of "which surgeon shouts the loudest", with which they mean that some surgeons clearly express their impatience and pressure the anaesthesiologist to start in their theatre. Often, as a consequence, the more calm and understanding surgeon has to wait. To which an anaesthesiologist subsequently added: "Actually…that's not okay."

Still, at the start of the day, the decision that the anaesthesiologist is about to take is unknown to the surgeons. They can either wait and see what happens, or, as the observation note shows, anticipate on the situation. However, they can only anticipate on the information that the anaesthesiologist 'might be late'. The two professionals in the observation note responded in two different ways. The surgeon in OR7 decided not to wait, by already at 7.50 performing the briefing with the attending anaesthesiologist in training. The surgeon in OR8 also decided not to wait, but then by also being late himself, for example by taking some more time for final preparation of the operation or visiting patients at the holding and marking surgical sites.

Anticipation on insufficient information however, might be unfortunate for the progress and quality of the program. Performing the briefing without the anaesthesiologist as the surgeon in OR7 did, might lead to information deficits and eventually delays. (This specific situation is further illustrated in 6.4.2.). Being late anyway, like the surgeon in OR8 did, might even instigate more waiting time, and thus a delay of the program, since the anaesthesiologist did not find anyone in the theatre and decided to go for a cup of coffee instead.

Anaesthesiologist and/or surgeon availability is a common problem. Comparable practicalities emerged for example with "two-part surgeries," where two different surgeons perform different parts of the intervention (for example, a breast mastectomy followed by reconstruction), but have to be present for the briefing and time-out together. This routine required professionals to wait for another and interrupt and align their tasks, which proved a time consuming effort. In these instances the checklist routine interfered with existing workflows, which means that professionals have to improvise and decide "on the spot." This might imply that the action patterns that emerge deviate from the "rule" as inscribed in the artefact. Nonetheless, these instances of "non-compliance" might very well be best solutions for the situation at hand. Paragraph 6.5 provides more detailed descriptions of how professionals deal with such demands.

6.3.3 Sign-out for now, arrangements for later

The sign-out is the third and final part of the checklist that has to be performed just before the patient leaves the operating theatre. During the sign-out, the scrub nurse has to confirm to the team that all gazes, sponges and needles used during the operation are complete. The final item of the sign-out part of the checklist is the confirmation that the team has reached definite agreement upon follow-up treatment. Strikingly, in nearly all the performances of the sign-out observed, the surgeon replied something like: "Will do!" This item of the checklist is situated in the process where the team is focusing on rounding off of the intervention, cleaning up materials, putting information in the system, and ticking off the boxes. Thus, at the time the item has to be confirmed, they literally didn't have any time yet to actually make arrangements for follow-up. By confirming "Will do" however, nothing more than the intention to make arrangements for later has been confirmed.

6.4 Unexpected events

A second category of disturbances, is caused by unexpected events. It is important to note that 'unexpected' does not mean that such events are rare. Rather, unexpected events happen on a regular basis, but I use the framing 'unexpected' because their occurrence in the surgical process is unexpected. As in trauma surgery we can expect emergency, and emergency is even 'scheduled', in other domains emergency can arise more unexpectedly. As from the organisation of the process we can expect a standard problem of not being able to be present at two places at the same time, sick colleagues and scared patients present on a regular basis, but at unexpected moments. In this paragraph, I will explain how emergencies, delays and changing team compositions lead to incompatible demands for checklist performances.

6.4.1 Emergencies

While emergencies are the defining principle of trauma surgery, emergencies may also occur in other subdomains of surgery. Emergency then, is not only limited to the condition of the patient, but can also relate to other tasks and their unpredictability that have to be taken care of for a smooth flow of the process.

I am sitting on a stool at the corner of the holding, waiting. I am shadowing anaesthesiologist dr. Herbers, and we have been called in to place a last-minute local anaesthetic so the surgeon can later on operate the ruptured tendon in the patient's arm. In the end, the surgeon decided a local anaesthetic was the best solution at hand. Dr. Herbers has to work fast, as it takes quite some time for the local anaesthetic to work, and the surgeon underlined that he does not want to get behind schedule.

Dr. Herbers pulls his phone out of his jacket. "Dr. Herbers speaking. Someone on their way already? Ok, thanks." We are waiting for someone to bring the ultrasound device, as ultrasound is needed to set the local anaesthetic. "I also have to bring someone out of anaesthesia in OR3" he sighs mostly to himself.

When the ultrasound device finally arrives dr. Herbers is ready to get started. "Sorry sir" he says to the patient. "This is definitely not the most fun thing, I will do my best, but this is a very precise job and it's very unpredictable. Sometimes I immediately see where we should be, sometimes it takes ages before we get to the right spot. Hopefully this is a good day" he smiles.

This observation note shows how the anaesthesiologist has to improvise in balancing interacting tasks. The local anaesthetic was not planned at forehand. As a result, the anaesthesiologist has to align his task with the workflow of the radiology department. In performing a local anaesthetic, he relies on the availability of radiology equipment. Besides, the process of placing such a local anaesthetic is very unpredictable in itself; It can turn out quick and easy, but it can also take a very long time to get to the right nerve. It is therefore highly unpredictable how this activity will affect other routines in the flow of the day.

6.4.2 Delays

Delays may occur at various points in the surgical process. Mostly, they come about simply because the intervention takes longer than expected. In drafting the operating program, the planner makes 'calculated guesses' based on experience. Previous surgeries mostly give a quite accurate indication of the operation's duration. Nonetheless, there might be complications or unexpected findings that delay the process. The surgeon for example expects to find a colon tumour, but when he opens the abdomen, there are two. Sometimes, the reasons for delay are even more unexpected:

At one of the first observation days, I am shadowing the gate-keeper,[19] who is anaesthesiologist at Plainsboro. Some delays in the program already occurred when we're only halfway. The schedule is tight. I join the anaesthesiologist to the holding to pick up our next patient: A middle-aged woman who comes in for a coloscopy, since the surgeon suspects colophonies cause her pain symptoms.

Already from the corridor, we can hear the woman panicky shout: "I'm nót going!" Apparently, the nurse who prepared the patient for the surgery at the holding, just told her that general anaesthesia is a must. Something she is terrified of. An extensive conversation with the anaesthesiologist starts in which he tries to comfort the patient and convince her of the necessity of anaesthesia. "I'll die!" She screams. "I'm sure I will!" The anaesthesiologist points to the patient chart that indicates: schizophrenic affective disorder. This mental disorder can make patients suffer from unrealistic fear. However, how unrealistic fear may seem, patients cannot be forced into surgery. But when surgery gets postponed now, it will only lead to more trouble later.

More than fifteen minutes pass by, but ultimately the anaesthesiologist manages to persuade the patient. She gives her consent and we bring her to the operating theatre.

When we arrive there, the surgeon is already annoyed. "What took you so long?!" Before the anaesthesiologist can answer, the patient says: "I changed my mind, I don't dare!" To which the surgeon replies: "Are you kidding me?!" As a consequence, the patient starts to cry and the anaesthesiologist bows towards her to calm her down. After a couple of minutes, the operation can eventually proceed.

The anaesthesiologist hisses to the surgeon: "You almost ruined it all!"

The time-out is performed in a tense atmosphere. The surgeon does not hold the checklist in her hands while she checks for the patient's identity and the intervention. The anaesthesiologist nods to confirm the items.

19 For more reflections on the role of the gate-keeper I refer to the Intermezzo about the gate-keeper and the methodological chapter of this dissertation

This situation again shows that 'the operation', and performing the checklist routine shortly before the incision, is part of a complex web of multiple dependent routines. The anaesthesiologist has the responsibility for picking up the patient. Picking up the patient might be seen as a 'practical' task, but in reality it is a complex social activity, in which there is an important handover in which the nurse at the holding has to provide the anaesthesiologist with important information that has to be processed, and the anaesthesiologist has to 'deal' with the patient, which in some cases, might turn out rather complex.

The example shows how the surgeon departs from her own point of reference in the conversation. From her perspective, the schedule is disrupted, and it takes the anaesthesiologist quite some time to 'just pick up the patient'. She was not aware of the efforts that the anaesthesiologist put into persuading the patient at the holding, and she doesn't show open to this either. Naturally, she quickly wanted to get going since the program was already running out of time, but herewith almost blew up the efforts that the anaesthesiologist put into calming down the patient. As shown in other situations as well, rather than overcoming professional boundaries and improving collaboration, the checklist is performed in a tense and 'not connective' manner. Frustrations and irritations between professional groups because of delays do not, to say the least, smoothen the performance of the checklist.

'Doing surgery' thus involves a lot of organisation and coordination. Many actants are involved in the process, and when there is just a tiny mistake in the chain, this can lead to problems with severe consequences. In paragraph 6.3.2 I illustrated the start of an observation day at St. Sebastian's. Though the program had to start at 8.00am in both theatres, the briefing in OR4 had already been done by the surgeon and the anaesthesiologist in training before our arrival at 7.50am ("no particulars"), while in OR5 nobody was there at 8.00am so we had to grab a coffee. The following observation note reflects how the day proceeded at OR4, after two operations had been performed.

> The second patient just left the theatre and the cleaners are busy with preparing the theatre for the next operation. Dr. Herbers is about to move to the holding to pick up the next patient, but before doing so, he again quickly runs through the paperwork he used as a preparation for the operations. "has blood been ordered?" he asks. It comes up for discussion that the next patient has a very a-typical blood type. This type of blood is not standard in stock, so it has to be pre-ordered. Just in case of (unexpected) blood

loss. A conversation unfolds about *who* should have done this. But still, it hasn't been done, so there is no blood. It is not clear if the blood issue has come about during the briefing. The surgeon noted that there were "no particulars", but dr. Herbers wasn't there.

The scrub nurse grabs up the phone to order blood. She gets put through several times, and after a couple of minutes she confirms that the blood is on its way. One of the other scrub nurses leaves the theatre to pick up the emergency delivery at another location in the hospital. After 12 minutes, she returns with the blood and I follow dr. Herbers to the holding to pick up the patient.

There had been a morning briefing without the anaesthesiologist present, but the surgeon later on mentioned "no particulars" and attention had not been drawn to the special blood type of the patient. Before the particular intervention is about to start, the anaesthesiologist asks: "has blood been ordered?" This indicates that he has this information on his preparation sheet, and the issue might have been addressed at the morning briefing. Plenty of time would have been saved if this, which indeed is the exact purpose of the briefing, would have been the case. Nevertheless, the blood was not ordered so the team had to act on the spot to create the best possible solution.

So, where the surgeon at the start of the day thought to save time by starting off with the briefing while not all the responsible team members were there yet, it got back to him like a boomerang when it showed that things were not sufficiently covered.

6.4.3 Doctors get sick too

At a cold day in early January, I had an appointment in Plainsboro with gynaecologist dr. Nieman. As with any respondent who did consent with shadowing, I've had an introductory conversation with dr. Nieman before the actual observation[20]. As agreed, I go to the secretariat in the gynaecology staff corridor and introduce myself to the secretary. She replies: "Blimey! Dr. Nieman just called in sick. He will not come into the hospital to operate today." This means that other operators are taking over

20 For more reflections about the conversations I conducted before commencing into the observations I refer to chapter 4

his four planned surgeries. She calls the fellow[21] and a gynaecologist who together are going to do the surgeries. A third-year gynaecology resident will be assisting. When the secretary explains that I was going to shadow dr. Nieman today, they agree that I will be shadowing them instead. The secretary says to me: "That is also interesting for you, now you can see how things go when they suddenly change!"

It already is 8.10am. We quickly change into our operating suit in the staff room to save time. Meanwhile, the two operators are making up a plan. The patients have to be notified that dr. Nieman will not be operating today, and they have to consent that two more junior professionals are taking over the surgery. They decide that the two operators are going to inform the patients and together run through the paperwork as prepared by dr. Nieman. I join the resident to the operating theatre for the briefing.

When we enter the OR, he apologizes for the delay and explains the situation. The other team members show understanding. The resident leads the briefing. And then, they wait.

It is 8.30 when the operators are entering the theatre. The fellow who is going to operate the first patient does the time-out. Out of memory, she checks the patient's identity, the intervention, and allergies. Then, they quickly get started.

This observation note shows how professionals have to act on the spot when things suddenly change. That doctors get sick too, is a given. Still, the occurrence of such situations is always unexpected. When different activities require professionals' attention, they have to prioritize. In this specific case, professionals who did not prepare the surgery themselves – as this had been done by dr. Nieman who was about to perform the intervention – they have to read into the intervention and the patients' condition and decide how to go about the surgery. The gynaecologist and fellow decided to inform the patients and prepare the surgeries based on the information sheet prepared by dr. Nieman, at the expense of their attendance at the briefing where the equipment and position of the patient is discussed. As there also was a gynaecology resident available, this task was delegated. To put

21 A fellow is a physician who has completed residency and chooses to complete further training within a subfield of her specialty.

it differently, they had to make something out of it in the most safe and efficient way.

Prioritization may come at the cost of the checklist routine, as not everyone participated in the routine, and the time-out was performed in a flexible way. At the same time, the checklist routine still provided guidance. Even in disruptive situations, the checklist provides some stability. Despite 'flexible' performances – as also illustrated in the previous chapter – the checklist is nested in existing workflows.

The next paragraph explains three strategies that professionals mostly develop to deal with incompatible demands. They can't be at two places at the same time, patients get anxious, materials might get forgotten. In the interaction of all these processes, how does the checklist work then?

6.5. Dealing with incompatible demands: three strategies

As observations proceeded, I faced numerous situations in which the envisioned routine connections led to incompatible demands for participants. Incompatible demands that are entrenched in the surgical process, such as emergencies or managing surgical processes 'at the same time', make the performance of the checklist as a hub difficult. Besides, more unexpected events like sick doctors, disrupt the program and pressure prioritization. I further explored how professionals responded to these incompatible demands. From the data I derived three responses that routine participants developed to deal with these conflicting demands: *work on it*, *work around it*, and *work without it*.

6.5.1 Work on it

The first response was labelled 'work on it'. This tag emphasizes that professionals are 'busy doing things'. In the best way they can, they try to unite incompatible demands. The following note illustrates how one of the anaesthesiologists was confronted with conflicting demands. Because several delays occurred in the process, anaesthesia was demanded at two operating theatres at the same time. The observation note reflects how he goes about managing these demands.

> We are halfway through the programme in the operating theatre where four gynaecology operations are planned today. To resume the programme, the surgeon needs the anaesthesiologist for epidural anaesthesia and the time-out. The assistant calls the anaesthesiologist to ask if he will come to the theatre for the time-out. The anaesthesiologist answers that he is still very busy at the other theatre, where his task is complicated and will take a few more minutes. If they can wait a little longer, he will be there as soon as he can.
>
> A few minutes pass by, in which the surgeon checks the clock several times. She sighs. "Come on, hurry up! I have more to do today! And you know what, if the programme isn't finished in time, who has to inform the last patient that the surgery is postponed?! Me!" To the nurse anaesthetist: "Can't you call one of the other anaesthesiologists? There might be someone wandering around, right?"
>
> The nurse anaesthetist calls the staff room to see if someone is available. She hangs up the phone, and, satisfied, she says, "There will be someone any minute!"
>
> Again, a few minutes pass by. Then the second anaesthesiologist who was called enters the theatre and prepares for the epidural. Within seconds, the other anaesthesiologist enters the room. "What are you doing here?" And then, annoyed: "You should have called me if you didn't need me anymore. Now I have been working my ass off and rescheduled to be here, and for what? For nothing!"

The anaesthesiologist is not able to perform epidural anaesthesia in the two theatres at the same time. However, in the best way he can, he tries to manage these two processes anyway. This response involves informing the others to manage their expectations and prioritizing the different tasks. By giving priority to finishing the first task, the processes in the other operating theatre are put 'on hold'.

For the surgeon, this means that her series of routines gets disturbed. To keep the process going she tries to find a replacement for the anaesthesiologist, which again requires a lot of adjustment. In the end, the various professional routines seem to 'clash' rather than 'connect'. A conversation with the surgeon later on revealed some ideas about the ostensive dimension of the checklist routine. She

argued that they were already used to performing safety checks before surgery, but with the formal checklist that requires all team members to be present, the process became more complicated and was often disturbed. In other words: "It distracts me from what I'm doing." From a surgery perspective, the abstract idea of the checklist routine becomes a distraction rather than a valuable tool. This ostensive idea did not come about in isolation, however; it was fuelled by the interrelation with other routines where a misfit occurred.

Because the different routines do not connect, the checklist not only seems to fall far short of expectations, but also seems to reinforce routines within the subdisciplines – including senses of 'us' and 'them' – which makes the establishment of connections all the more difficult. This situation resembles the situation with the very anxious patient with the schizophrenic affective disorder. The anaesthesiologist did everything within his power to 'make it work', but tensions between the anaesthesiologist and surgeon proved unavoidable.

6.5.2 Work around it

The second response reflects strategies used by professionals to get to the best result by adjustment; they work around (Morath & Turnbull, 2005) the formal procedures. So, rather than doing the best they can to make it work anyway, professionals fashion a solution to an unexpected problem or situation. This response has been identified in medical settings in earlier research (e.g. Koppel et al., 2008; see Debono, 2013 and Halbesleben et al., 2008 for overviews). Workarounds occurred in different ways.

For example, they might involve completing and registering tasks at different moments than prescribed – surgeons who register the completion of the time-out checklist before actually performing the checklist so they can move on more smoothly (see also chapter 5), or who perform the sign-out checklist that entails recording post-operative agreements when these agreements are still to be made. Workarounds might also involve outsourcing operational tasks to someone else. The following observation note illustrates how an anaesthesiologists outsourced his tasks to a nurse anaesthetist who was lower in the hierarchy to deal with incompatible demands.

> The anaesthesiologist has been called because the patient is ready for the time-out checklist. I follow the anaesthesiologist to the operating theatre, but when we get there the surgeon is not present. The anaesthesiologist starts wandering around the surgery department to see if he can find

> the surgeon anywhere – without success. "Okay then, I am going to do something else as well" he says, apparently mostly to himself. To the scrub nurse he says: "Please call me when he returns." We head back to the staff room. About ten minutes later the scrub nurse calls to inform us that the surgeon has returned and we can come for the time-out.
>
> At that time, however, we are already busy signing out in the other operating theatre. The anaesthesiologist asks the nurse anaesthetist to take over his tasks and says, "You know the patient better than I do."

In this situation, again an anaesthesiologist faced different care demands at the same time: a time-out in one theatre and a sign-out in the other. In order to not further delay the process, the anaesthesiologist decided to complete the task he was working on, and asked the nurse anaesthetist in the other theatre to take over his tasks there.

During a coffee break later on, I asked the anaesthesiologist about this 'outsourcing'. He acknowledged that formally he was responsible and not allowed to delegate this work to someone lower in the hierarchy. However, trying to unite incompatible demands seemed unrealistic and thus unsafe, while this delegation seemed a reasonable option. The nurse anaesthetists are skilled, and they monitor the patient in the operating theatre the whole time, and therefore they do sometimes know the patient's situation better than the anaesthesiologists. Moreover, they can always call for assistance. When I asked the anaesthesiologist if he felt uncomfortable with this situation he replied, "That's why I made the call afterwards, just to be sure."

In the introductory note of this chapter, the anaesthesiologist was confronted with the same kind of incompatible demands, he simply couldn't attend the briefing in two theatres at the same time. He therefore prioritized the briefing and time-out of the more complex surgery, at the expense of procedures in the other theatre. The orthopaedic surgeon was already busy placing a knee prosthetic. Later on, it showed that in this OR, there was a final-year anaesthesiologist in training attending. The anaesthesiologist was supervising the anaesthesiologist in training. He explained that they could get along very well and that he had a good impression of the competencies of the anaesthesiologist in training. Besides, she could always make a call in case she needed help.

These responses comes out of the interrelation of routines in the first place, but they are fuelled by the abstract idea of a routine that differs from the artefact. Although the artefact prescribes that anaesthesiologists have to fulfil these tasks themselves, they might feel that this is not necessary in order to deliver safe care. When routines are conflicting, they work around the formal procedure since they consider it safe. At least the most safe alternative.

The situation in which the gynaecologist got sick and could not operate also led to some workarounds. Eventually, the two professionals who were going to operate the patients outsourced the briefing to the gynaecologist in training. Alternatively, they went to inform the patients and prepare the interventions. In these situations it shows how unexpected events make that professionals work around the formal rules as inscribed in the artefact, but try the best they can to deliver safe care. Outsourcing means no strict 'compliance', but this might very well be the best solution for the situation at hand.

6.5.3 Work without it

The third response was labelled 'work without it'. With this response professionals did not strive to unite incompatible demands, but they explicitly made a choice. They prioritized one task over the other. This might mean working without the checklist, using it partly, or involving only a few team members. However, it might also mean working *with* the checklist and thereby casting aside another task. The following observation note zooms in on the interaction of the briefing with the handover routine in the trauma surgery department, as introduced earlier in this chapter.

> We have to hurry to make it to the patient handover in the trauma surgery department where the status of the patients is discussed with all the trauma surgeons. The handover has already begun, and several clinicians are still walking in and out.
>
> We have been at the handover for only five minutes when the trauma surgeon nods at me to leave. We have to go to the surgery department for the morning briefing. In the corridor I bump into the head of department; he argues that the idea of a briefing routine is highly valuable, but other routines have been overlooked. The morning handover has been a firmly established routine in the trauma surgery department, and the head of department underlines the value of discussing all the patients within the subdiscipline. It not only valuable to exchange information about patients

> and ideas to go about surgeries, it also strengthens professional bonds within the discipline.
>
> The introduction of the briefing, however, interfered with this routine since it requires surgeons to be at the operating theatre at 8am for the briefing. In order to manage this, they skip the handover. "So they are going to a briefing to discuss the patients, but they haven't even properly discussed these patients within their own department", he concludes.

The handover, a longstanding routine within the trauma surgery department, had been put into second place by the multidisciplinary briefing. Professionals cannot fulfil these two tasks, and they prioritize the new routine. This made me wonder why they choose the new routine over the longstanding tradition.

Apparently, from a clinicians' perspective the ostensive dimension of the routine was that this briefing was 'important'. The briefing had been made into a formal routine and was reflected in several artefacts. In addition, surgeons argued that they were judged on their performance of the briefing – or rather, on the registration of the briefing. The patient handover in the trauma surgery department, although firmly institutionalized, was an informal routine. It was a longstanding tradition but was not backed by artefacts per se, and clinicians were not directly judged on it.

The briefing, as part of the new checklist routine had been made more prominent, backgrounding the institutionalized handover. Despite the head of the surgery department valued the new routine, he shows considerable dissatisfaction with the replacement of the routine that structure work in his sub department for a long time.

6.6 Main findings and reflections

In this chapter, I showed how the interaction with existing work routines greatly influences the checklist routine. In studies on organisational routines, their interrelatedness has been widely acknowledged (Feldman et al., 2016; Parmigiani & Howard-Grenville, 2011; Salvato & Rerup, 2011) but empirical insights into the mechanisms underpinning routine interactions, are little. This chapter contributes to our knowledge by showing that in the interaction of routines conflicting demands may arise, and how consequently ostensive ideas

about registration can foreground some routines at the expense of others. In this paragraph I discuss the main findings of this chapter to analyse the surgical checklist as hub, interacting with multiple professional routines.

6.6.1 Practicalities cause segmentation instead of collaboration

As we learned in the previous chapters, one of the main aims of the checklist, at least from an 'organisational' or, 'implementers' perspective if you wish, was to improve collaboration. Chapter 5 showed a variety of abstract aspects regarding collaboration at the frontline. Some professionals indeed saw and used the 'connective potential' of the checklist, where others were more hesitant or even negative. In this chapter, I showed how in the interaction of routines, there are mechanisms that fuel the negative abstract patterns regarding collaboration. 'Basic' practicalities like delays make the hub function of the checklist particularly difficult. This generates basic irritations, simply because people have to wait for one another. As touched upon in the previous chapter, professionals often lack taking the role of others (Mead, 1934) so they can anticipate their activities on those of the other team members. Surgeons who get annoyed for example, because they do not have an overview of the efforts of the anaesthesiologist in the other processes he/she is also involved. Still, these irritations caused by practical matters, ultimately reinforce more fundamental notions like 'us' and 'them'. In the theoretical chapter of this dissertation, I explained how professional segmentation is an important aspect of 'becoming a professional' (see paragraph 2.2.2.). Because of firm institutionalization processes in which novices learn the appropriate behaviours, also in relation to others, it is hard to overcome these boundaries (Baker et al., 2011; Cameron, 2011; Freidson, 1994; Hall, 2005; Lingard et al., 2004). And, as the findings suggest, even more when practicalities tend to reinforce segmentation.

In sum, in these instances, the checklist seems to instigate irritations that ultimately reinforce ideas of 'us' and 'them'. In Sociology of Professions literature, there often is an emphasis on professionals' fundamental resistance towards collaboration, as they have predominantly been trained within the borders of their professional segments (Lingard et al., 2004; Abbott, 1988). A focus on routine interactions provides a more nuanced picture. There was not so much fundamental resistance to the new standard at first sight, a lack of 'fit' of the checklist routine with the already existing work routines however, resulted in more negative ostensive attitudes.

6.6.2 Implementation and (measuring) compliance are contextualized activities

In the theoretical chapter of this thesis, I discussed the 'implementation discourse' that plays a vital role in the medical domain, and in which implementation of 'simple' checklists is often considered a rather technical process. In the previous chapter, I already explained the checklist to be a relational rather than a 'simple' technical matter. The findings of this chapter all the more show the complexity of embedding a checklist in daily routines. A checklist does not stand on its own, and this has implications for (1) implementing the checklist and (2) measuring compliance.

First, a multitude of routines make the organisation of the implementation processes difficult. In the previous chapter, I showed how the social nature of working with standards was underestimated (this is an understatement) when the checklist was implemented. 'Frontrunners' at the frontline and the hospital board heralded the evidence base of the checklist and considered implementation of the checklist a rather simple and straightforward matter. Information provision and accurate preparation were considered the success factors in implementing the checklist. Indeed, there was information provision to the 'intended users' of the checklist, but from their perspective, e-mails about the checklist were considered just one out of many. As professionals receive many, many e-mails a day, they have to prioritize, and "administrative" e-mails easily slip from their attention. Moreover, sessions to spread the ostensive dimension of the checklist were organised, but some practicalities hindered a smooth transition of these ideas. For example, an anaesthesiologist in training at Plainsboro told me that she had to work night shifts at the two days these sessions were organised. She missed both of them, as she explained: "I'm not going back to the hospital just to attend such a meeting, as I can use every sleeping hour I can get.."

It proves difficult to organise implementation processes in highly professional contexts that are characterised by multiple interacting routines, and participants that enter and leave the settings at different points in time. Meetings were organised to disseminate information about the checklist – that was considered 'basic' and straightforward. However, practicalities hindered attendance, so creating shared understandings was also difficult from a practical view. This might have caused a situation in which so many different understandings (chapter 5) could emerge already from the beginning.

The context embeddedness of the checklist also has implications for implementation in terms of 'transferability'. As I viewed the checklist routine not as isolated, but as a socially embedded construct with internal dynamics, that are in turn affected by the bundles of routines it is part of, I can also conclude that they are therefore not easily transferrable from one context to another (see also Parmigiani & Howard-Grenville 2011). It is not only about the social construct of the checklist, but about the construct of a wide variety of routines, that differs across contexts. In 'implementing the checklist' 'implementers' should not look for blueprints or general lessons like "A system that holds people accountable for improper behaviour or use of the initiative should be considered" (Russ et al., 2015, p. 89) as they only can get meaning and substance within specific contexts.

Secondly, a multitude of routines make the notion of 'compliance' problematic. In the theoretical paragraph about routine interactions (3.2.2) I discussed how many studies on the implementation of the Surgical Safety Checklist focused on 'compliance' and how these empirical studies were confined to either registration numbers, or isolated observation of the checklist performance. By considering the multiplicity of routines, I have been able to answer questions like: Why wasn't the anaesthesiologist there? Why did the surgeon already start with the briefing? Questions that would otherwise have remained unanswered. By observing just the performance of the checklist in the operating theatre, and herewith neglecting the interaction with other routines, these instances would have been reported as 'non-compliant'.

The findings of this chapter have shown how for example lacking attendance of professionals, not necessarily results from professional resistance towards the standard, but that this might very well be the result of strategies that professionals develop to cope with interacting and often conflicting demands. In his seminal work, Lipsky (1980) already extensively described how frontline workers developed their own routines and practices to control clients and reduce the consequences of uncertainty within their work environment. The high-paced and complex environment makes it hardly impossible to always neatly follow the standard.

So called 'workarounds' have been widely identified in recent studies. Studies that focus on coping strategies of professionals, have all underlined the often competing pressures professionals have to deal with in the everyday execution of their work. Hendrikx (2018), Hendrikx & van Gestel (2017) and Van Gestel, Kuiper, & Hendrikx (2019) noted that secondary school teachers work overtime a

lot, to meet their pupil's demands. Tummers & Rocco (2015, p. 817) found similar strategies when they state that: "frontline workers 'move toward clients' when coping with stress: they bend the rules, work overtime, and collaborate in order to help clients." When compared to these findings, one can see both similarities and differences.

A clear commonality is that in choosing a strategy, professionals depart from their perspective of 'what's best for the client.' They consider what is most safe and beneficial while balancing their tasks. The strategy I coined 'work on it', would in the context of Hendrikx' (2017) and Tummers and Rocco's (2015) studies for example mean 'work overtime'. Still, in this study, work overtime is not one of the possible strategies, as conflicts emerge on the spot. This implies that professionals immediately have to respond to conflicting demands, of which 'work on it' demonstrated the least fruitful one, in terms of the satisfaction of the professionals with the result, as of their co-workers ("You should have called me if you didn't need me anymore. Now I have been working my ass off and rescheduled to be here, and for what? For nothing!") With this strategy, professionals work on accomplishing the different tasks, often with unsatisfactory results.

Workarounds on the other hand, were often considered as 'the best solution at hand'. Professionals were very much aware of the fact that they bended the rules or worked around formal procedures, but based on their professional judgment, they decided that this would generate the most favourable outcome.

In the literature, debates have ensued about whether workarounds are 'good' or not, and whether it is beneficial or threatening to patient safety (Collins, 2003; 2012; Debono et al., 2013; Koppel, Wetterneck, Telles, & Karsh, 2008). The workarounds as identified in this study - like outsourcing - did not so much result from professional resistance, but from serious attempts to 'make it work.' I think it's therefore worthwhile to reconsider the notion of 'non-compliance' and not identify these strategies as non-compliance, but as pragmatically coping with the situations at hand.

6.6.3 Professionals use three strategies to deal with conflicting demands

In this chapter, I laid bare some of the processes that take place at the intersection of routines. Because of multiple, conflicting routine demands, professionals have to prioritize, construct emergencies and negotiate responsibilities on the spot.

Ultimately, these on the spot decisions unfold into three coping strategies: work on it, work around it, and work without it.

Conflicting routine demands make that professionals have to set priorities. Throughout the chapter, lack of time appeared a complicating factor in accomplishing work in the surgery department. Consequently, doing a job timely is considered a valuable trait; professionals have to do the job well, and they have to do it quick. With a chronical lack of time also arises the matter of prioritization, that seems to unfold through a 'game'. Getting an emergency label implies getting priority, and as for surgeons completing their schedule is of great importance, 'emergency construction' appears at different points throughout the process.

For example, the start of the program at 8.00am already is where conflicting routines present to anaesthesiologists; they simply can't be at two spots at the same time. In this sense, emergency construction seems a matter of "who shouts the loudest", the surgeon who is most convincing will get prioritized. The complexity of the first case is often raised as negotiation trait.

Emergency construction is also done to prioritize patients. If a patient gets a 'emergency A' label, it will be prioritized over an emergency B or C. This also implies that surgeons with B and C patients are put on hold. There are objective features to determine the level of emergency such as X-ray or blood test results. Still, the combination of such 'objective' features makes the construction of emergency subjective. Medical doctors have been portrayed as agents of control (Conrad, 1992; Fox, 1992; Freidson, 1988). They exercise control over the construction of an emergency, by debating on the state of emergency ("my patient is in a more critical condition than yours") and consequently, who gets surgery first.

Besides prioritization that unfolds through the construction of emergencies, conflicting routines steer the (re)negotiating of responsibilities. In the theoretical chapter, I identified the surgical checklist as a 'static sequential' in which a designated actor reads out the items on the checklist, and each responsible party verifies completion of this specific task. The results of this chapter show how this matter of responsibility becomes complicated. Conflicting routine demands make that actors with a formal responsibility (for instance, an anaesthesiologist supervising a resident) outsource their activities to actors they entrust, but who do not have a formal responsibility.

Prioritization, emergency construction and negotiating responsibilities unfold into three overarching coping strategies: professionals work on it, around it, or without it. Working on it refers to trying to unite incompatible demands anyway, for instance by *not* explicitly prioritizing one routine over the other. Work around it refers to bending the rules to generate the most favourable outcome, for instance by outsourcing tasks to those without formal responsibility. Work without it refers to either working without the checklist, or without another routine, by explicitly prioritizing one task over the other.

6.7 A model for routine interactions in professional contexts

The figure below translates the key findings of this chapter into an expanded routine model. The findings of this chapter give urge to expand the initial routine model (Feldman & Pentland, 2005) to explicitly take into account interacting routines. I have shown how demands emerge at the intersection of routines. These can either be backed in the organisation of the care process, or emerge unexpectedly. Professionals have to prioritize and (re)negotiate responsibilities. Tensions at the intersection of routines result in three different coping strategies, that range from working on it to working without it. The findings also point out how difficulties at the intersection of routines might reinforce internal routine dynamics. For instance, registration of the checklist procedure was already seen as a matter of 'control' detached from the intervention itself (Chapter 5). Because of the multiplicity of demanding routines, the idea of registration as a burden got strengthened. Hence, routine dynamics and interactions are inseparable, which implies that none can be fully understood in isolation. This underlines the contextual nature of professional work which is decisive for the creation of routines, and hence for understanding complex professional work processes.

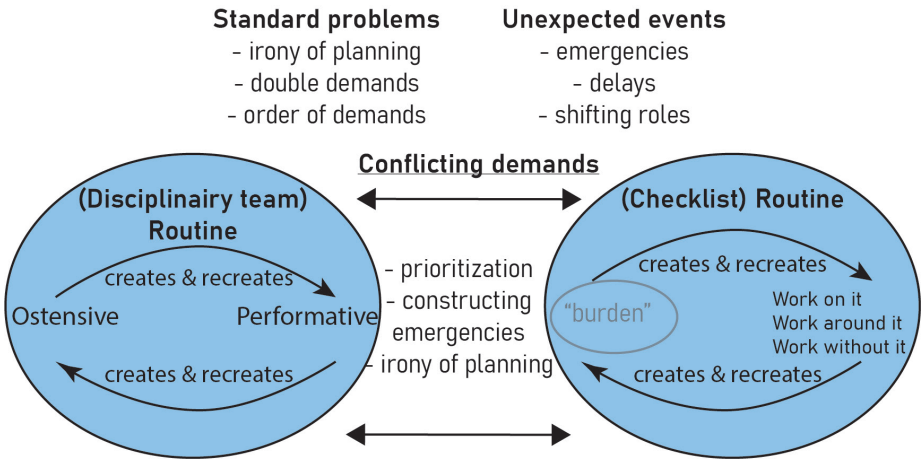


Figure 14: A model for routine interactions in professional contexts

6.8 To conclude

This chapter focused on the question: *"How do (new) checklist routines relate to existing routines?"*

A checklist in professional work does not stand on its own. I found the interdependence with conflicting routines to be an explanation for variability in routine performances. The routine connections as intended by the checklist are often not that straightforward and may even lead to incompatible demands for professionals; they have to be at two spots at the same time, deal with delays in the program, and frightened, demanding patients. Rather than standardized responses, these incompatible demands require responsiveness. I derived three responses that professionals have developed to deal with incompatible demands: work on it, work around it, and work without it. These responses often entail 'on the spot' decisions; there are no formal routines for prioritization, but 'games' of prioritization and constructing emergencies.

Further, the findings, show how routine dynamics can be altered through the interaction of routines. For example, because of a conflict between existing routines and the envisioned checklist routine, ostensive aspects of the routine might change from a 'helpful tool' into 'a distraction' and thereby affect performances. How professionals value the checklist routine is thus not so much about the checklist itself, but about its (mis)fit with existing routines.

Furthermore, different groups (anaesthesiologists, surgeons) might have different understandings of a routine's ostensive aspect (see the previous chapter). This chapter extends this view by showing that different groups may hold different understandings of what is important, and what is what is priority. When the checklist does generate a clash in terms of what should be done (first), it leads to the opposite effect of the envisioned 'connections', namely conflict (e.g. "You kept me waiting' and "Look what you've done!") In such situations, professionals illustratively refer to 'us' and 'them' rather 'we'.

To conclude, medical professionals pragmatically cope with checklists amidst high-paced circumstances. Real-life circumstances count and affect the extent to which the checklist is, and can be performed as a 'hub'. This is partly a matter of ideas (chapter 5), but largely a matter of performances, strongly affected by real-life circumstances. The abstract patterns are affected by interacting routines, and often, conflicting routines. Hence, I argue that in such professional contexts, it might be more valuable to adapt practices to situational demands, rather than focusing on strict 'compliance' with artefacts. I have shown that professionals not so much actively try to preserve old values, but pragmatically cope with artefacts in other to find the most convenient way to incorporate a checklist in existing workflows.

Intermezzo

Intermezzo: Developing research routines

It's 7.30am when I'm in the dressing room of Plainsboro. I walk towards the shelve to grab out an OR shirt and pants from the 'S' compartment. In the beginning, I always took a regular size 'M' as usual, but by looking like a bag of potatoes I found out sizes of OR-clothing not very well represent regular clothing sizes. Then I take some items out of my bag, and put my coat, clothes, car keys and bag in my locker. When I put my OR suit on, it's time to 'install' my outfit with my standard equipment: A 'Snelle Jelle' and Dextro Energy (I developed this habit after fainting the first time, also see the previous intermezzo), my note book that fits a back pocket, a pen, a spare pen, and a box for my contacts in case they might get dry because of the air circulation system. When I carefully put my hair underneath the cap, I'm ready for yet another day in the surgery department.

At some point, with hindsight I think after a day or ten in the surgery department, I quite knew what to expect, and what was expected from me. In the beginning, I was just extremely exhausted after a day of shadowing someone, because you have to follow someone, watch carefully what is happening, and you have no clue what's gonna come next. Sometimes I even had a hard time in carefully writing up my field notes behind my computer screen the same evening, just because my eye lids were too heavy. Getting to know the routines made things a lot easier. After a while, I understood the architecture of the operating theatre, and was able to find my way. I knew how a surgery was organised, and also how I could be of help.

When I started to get to know the routines in the surgery department, I also started to develop my own routines for conducting ethnographic research. Put differently, I developed routines for studying routines. Besides my routine of 'getting dressed and packed', I developed routines for making field notes. In my tiny notebook, I always wrote down the type of activity, thus the (aspect of a) routine (briefing, time-out, sign-out, or others like hand over or team meeting), the actors that were involved, and then in keywords or short sentences what happened. The analytical constructs 'ostensive' 'performative' and 'artefact' made it more easy to organise the notes, I added these in case I already could identify them at that point in time. I used quotations marks to indicate a quote by one of the actants. I also included notes about my state of mind, or things I was amazed by. Not so much for the purpose of data analysis, but rather to be able to reflect on my own position and role later on – and write intermezzos like these. In the beginning it was more difficult to decide what to write down, and what not – as

you simply cannot write down everything, and have to be 'on the move' many times, but I developed a routine for making these notes with a quick handwriting.

Sometimes it appeared more difficult to write up my notes, for example when a surgeon álso wanted to show me the intervention ("Look, here you can see the great heart artery"). Most of the time, I had some time to make notes after the time-out when the team was operating, but regularly, it happened that I had to do this real quick, and work them out in a later break, since I was expected to watch the surgery. As professionals in this domain are used to training novices, it not only felt more natural to watch (and learn) when they were operating, but I must admit, I found it incredibly interesting too. One of the surgeons once joked that I was doing a "a quasi-internship". I felt privileged to have watched an open-heart surgery, but I had to more carefully organise moments to make notes. Writing up notes when shadowing an anaesthetist was often more easy, as I knew that I would spend time in the coffee room. Developing these routines made me extra aware of the different flow of work routines in the different departments.

In that sense, switching roles also became a routine. Over time I knew more smoothly when to be the "quasi-internship student", when the complete observer, and when to roll out my sleeves.

Yes, I did develop routines - or 'habits' as they are on an individual level – to conduct the fieldwork, but the same underpinnings for organisational routines seem to count here. These research routines are not static, or mindless, but effortful accomplishments that constantly have to be revised and reflected upon.

Chapter 7

Artefacts in action: On workable artefacts

7.1 Introduction

After the second surgery of the day, I follow anaesthesiologist dr. Liem to the recovery at St. Sebastian's to hand over the patient. When we get there, the nurse immediately starts to connect the patient to the monitors, while dr. Liem scours the sheets. "Sh*t" he sighs. "I forgot the checklist, must be still in the OR. I'll be right back."

A couple of minutes go by. The nurse restlessly hips from one foot to the other. At the same time, she tries to start a conversation with the patient who is about to wake up: "Hello mr. Van den Broek, the operation is finished. Everything went well. You can wake up now." Mr. Van den Broek opens his eyes for a second, and then closes them again. "Mr. Van den Broek, open your eyes!" the nurse repeats, articulating more clearly.

Then dr. Liem returns, waving with a wrinkled piece of paper. "Got it!" He immediately starts to handover the information to the nurse: "This is Mr. Van den Broek, who just underwent a cholecystectomy." While dr. Liem is talking, he tries to wipe away the drip of blood that is on the checklist. As a result, a red stripe now adorns the piece of paper.

After the handover, dr. Liem stuffs the checklist between the sheets on the bed, and then we move to the holding to get our next patient.

This chapter is about the role that artefacts play in creating and recreating connective routines. In the previous chapters, I subsequently focused on the internal dynamics of the checklist routine, and the interaction of the checklist routine with other professional routines. In these empirical chapters, different artefacts, different representations of the checklist more precisely, already passed by in different ways. For example when discussing the registration of the checklist in the software system, or talking about clinicians holding a paper checklist or memory board in their hands. So far, several studies have acknowledged that material and immaterial resources are important for constituting, maintaining and changing routines (e.g. D'Adderio, 2008, 2011; Edmondson, Bohmer, & Pisano, 2001; Howard-Grenville, 2005; Turner & Fern, 2012). However, artefacts are rarely the focus of analysis, and there is no comprehensive framework to study how artefacts affect routines. In this chapter, I shift the analytical focus to artefacts. The research question central to this chapter is: *"How do artefacts affect how standards work in medical teams?"*

The introduction note of this chapter already reveals how artefacts afford and constrain certain actions. The representation of the checklist on a piece of paper for example, can be taken close to the patient and throughout the hospital, but at the same time paper gets easily damaged and dirty, and it has to be stored somewhere. The design and transportability of an artefact matter for routine performances, I will show in this chapter.

This final empirical chapter is structured as follows. This chapter starts, not so much with a description of 'artefacts' that are used in hospitals, but of what I call the artefactual arrangements in both hospitals. Informed by affordance theory, I develop a framework to study how artefacts affect routines, by distinguishing between three dimensions of artefactual arrangements that guide and constrain artefact use: material, spatial, and temporal dimensions. As discussed in chapter three in which I developed a research perspective, the focus on affordances flows from the idea that artefacts are neither 'things' that determine human behaviour (deterministic view), nor are they things that are what their users make of them (social-constructivist view), but artefacts do set limits on what is possible to do with, around or via the artefact (Hutchby, 2001). In this chapter, I empirically trace the (variety of) responses to (a variety of) artefact's affordances.

I will show how artefactual arrangements work in professional practice. The findings show that focused attention, clear responsibilities, and collaborative action are anything but automatic outcomes of checklists. In the discussion section of this chapter, I will explain why creating workable artefacts is a continuous struggle.

7.2 From artefact to artefactual arrangement

In this chapter, I start from artefacts that directly intend to steer behaviour. These artefacts are often referred to as 'artefactual representations' or 'rule-embedded artefacts'. In this study, these are versions of the Surgical Safety Checklist, that function as a 'model' for the actual routine (Pentland & Feldman, 2008; D'Adderio, 2011). Different than the previous chapters, this chapter thus departs from a clear distinction between the research sites, as the artefactual representations can, in contradiction to the ostensive and performative patterns that became visible throughout the research process, more clearly be disentangled by the researcher at forehand and at the research sites. This is

because they are easier to observe[22], typically being written down or embedded in technology (i.e. software, machines) (see also D'Adderio, 2011).

The artefactual representations of routines thus can take on different forms, such as printed posters, memory boards or modules in the software system. They can be either materialized (e.g. checklist on paper) or digitalized (e.g. checklist embedded in the software system). For each of the hospitals, I will first give a short and 'technical' description of what the artefactual representation of the checklist 'looks like'. But as I will show, these representations only matter in terms of their (perceived) possibilities for use. Therefore, the subsequent paragraphs will explicitly analyse how these representations actually 'model' the routine in practice by looking at their affordances and uses in context.

Plainsboro

In Plainsboro Teaching Hospital, three artefacts have been introduced that represent the Surgical Safety Checklist: (1) a digitalized version that is embedded in the software system, (2) posters that are put up in the operating theatres, and (3) tabloid-sized whiteboards that are to be filled out during the procedure.

Firstly, an important artefactual representation of the checklist is a digital one. Digitalization is, in a broader sense, one of the main focus areas for Plainsboro. To make information more accessible and reduce registration burdens, all the information is synchronized in the Electronic Care Information System (EZIS). This for example means that measurements from applications at the patients' bed such as the heart rate metre are automatically uploaded in the system. This also implies that the registration of the checklist is to be done directly through this electronic system, without interference of paper. Before starting the surgical procedure, members of the surgical team have to fill out the checks as indicated in the digitalized checklist.

Secondly, there are material representations of the checklist in the form of posters that are put up in the theatres. The posters visualize all the items on the checklist as a memory support and require no further action.

Thirdly, there are tabloid-sized whiteboards that need to be filled out with a marker while checking. Important to note is that these whiteboards are different from the bigger whiteboard that is put up at the wall of the theatre, on which

22 See also chapter 4 for these methodological accounts.

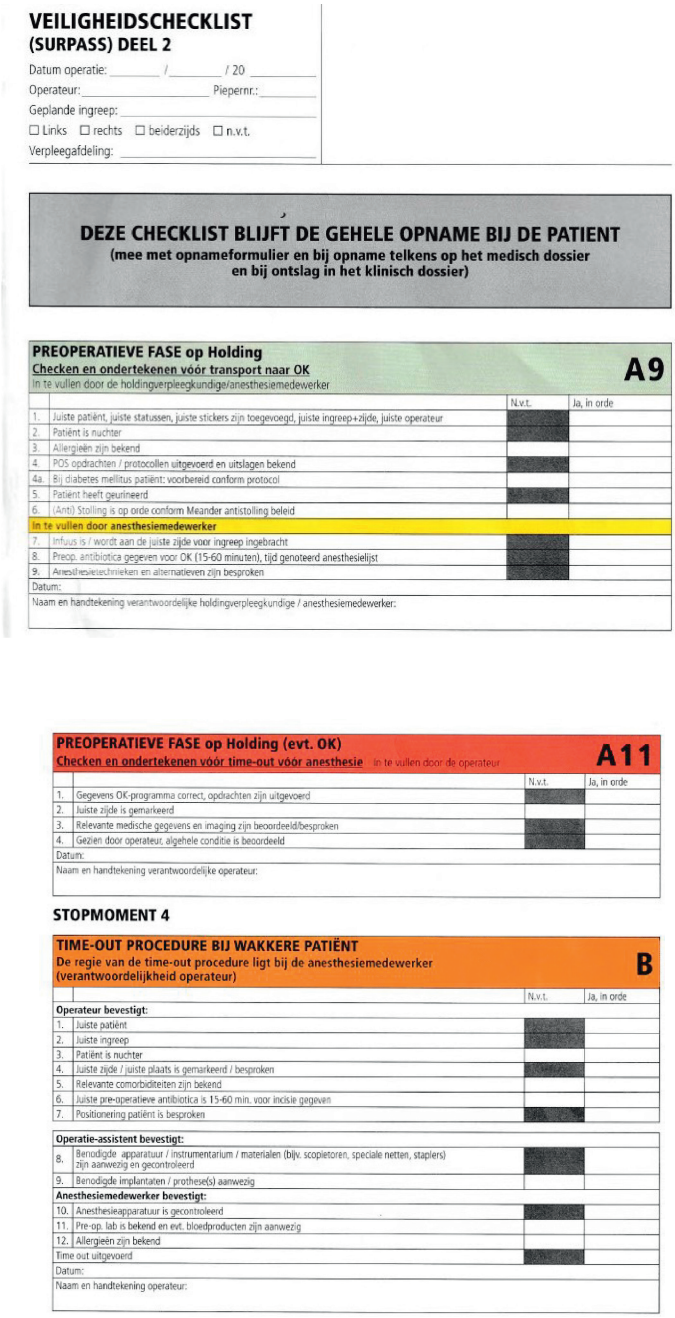
the team can write down names, phone numbers, and patient information. The tabloid-sized whiteboards are material representations of the checklist.

In short, although Plainsboro thus 'goes digital' there are supportive artefacts that are more tangible.

St. Sebastian's

In St. Sebastian's, there is one representation of the checklist rule that serves as a model for the routine. In St. Sebastian's, the representation of the checklist rule is a three-page paper version of the checklist. It encompasses coloured bocks that indicate when in the process which checks have to be performed, who is in the lead and who is responsible (figure 15).

Important to note is that the version of the safety checklist adopted by St. Sebastian's is SURPASS, a SURgical PAtient Safety System by Dutch design, comparable with the WHO Surgical Safety Checklist, but not based on this format (see also chapter 3). SURPASS encompasses the whole surgical process, from when the patient enters the holding, until the patient leaves the hospital. The paper checklist has to physically accompany the patient along its' way throughout the hospital. The checklist needs to be filled out at different stages in the process, for example time-out at the OR and handover at recovery. The same artefact thus serves the purposes of both checking and registration.



VEILIGHEIDSCHECKLIST
(SURPASS) DEEL 2

Datum operatie: _____ / _____ / 20 _____
Operateur: _____ Piepernr.: _____
Geplande ingreep: _____
☐ Links ☐ rechts ☐ beiderzijds ☐ n.v.t.
Verpleegafdeling: _____

DEZE CHECKLIST BLIJFT DE GEHELE OPNAME BIJ DE PATIENT
(mee met opnameformulier en bij opname telkens op het medisch dossier en bij ontslag in het klinisch dossier)

PREOPERATIEVE FASE op Holding **A9**
Checken en ondertekenen vóór transport naar OK
In te vullen door de holdingverpleegkundige/anesthesiemedewerker

		N.v.t.	Ja, in orde
1.	Juiste patiënt, juiste statussen, juiste stickers zijn toegevoegd, juiste ingreep+zijde, juiste operateur		
2.	Patiënt is nuchter		
3.	Allergieën zijn bekend		
4.	POS opdrachten / protocollen uitgevoerd en uitslagen bekend		
4a.	Bij diabetes mellitus patiënt: voorbereid conform protocol		
5.	Patiënt heeft geurineerd		
6.	(Anti) Stolling is op orde conform Meander antistolling beleid		
In te vullen door anesthesiemedewerker			
7.	Infuus is / wordt aan de juiste zijde voor ingreep ingebracht		
8.	Preop. antibiotica gegeven voor OK (15-60 minuten), tijd genoteerd anesthesielijst		
9.	Anesthesietechnieken en alternatieven zijn besproken		
Datum:			
Naam en handtekening verantwoordelijke holdingverpleegkundige / anesthesiemedewerker:			

PREOPERATIEVE FASE op Holding (evt. OK) **A11**
Checken en ondertekenen vóór time-out vóór anesthesie In te vullen door de operateur

		N.v.t.	Ja, in orde
1.	Gegevens OK-programma correct, opdrachten zijn uitgevoerd		
2.	Juiste zijde is gemarkeerd		
3.	Relevante medische gegevens en imaging zijn beoordeeld/besproken		
4.	Gezien door operateur, algehele conditie is beoordeeld		
Datum:			
Naam en handtekening verantwoordelijke operateur:			

STOPMOMENT 4

TIME-OUT PROCEDURE BIJ WAKKERE PATIËNT **B**
De regie van de time-out procedure ligt bij de anesthesiemedewerker (verantwoordelijkheid operateur)

		N.v.t.	Ja, in orde
Operateur bevestigt:			
1.	Juiste patiënt		
2.	Juiste ingreep		
3.	Patiënt is nuchter		
4.	Juiste zijde / juiste plaats is gemarkeerd / besproken		
5.	Relevante comorbiditeiten zijn bekend		
6.	Juiste pre-operatieve antibiotica is 15-60 min. voor incisie gegeven		
7.	Positionering patiënt is besproken		
Operatie-assistent bevestigt:			
8.	Benodigde apparatuur / instrumentarium / materialen (bijv. scopietoren, speciale netten, staplers) zijn aanwezig en gecontroleerd		
9.	Benodigde implantaten / prothese(s) aanwezig		
Anesthesiemedewerker bevestigt:			
10.	Anesthesieapparatuur is gecontroleerd		
11.	Pre-op. lab is bekend en evt. bloedproducten zijn aanwezig		
12.	Allergieën zijn bekend		
Time out uitgevoerd			
Datum:			
Naam en handtekening operateur:			

Figure 15: Artefactual representation of the checklist in St. Sebastian's

Table 4: Artefactual arrangements to model the checklist routine

Plainsboro	**St. Sebastian's**
Checklist embedded in software system (digitalized)	SURPASS paper checklist (materialized)
Posters on the wall of the operating theatres	
Tabloid-sized whiteboards	

These descriptive accounts of the artefactual representations provide sufficient starting points for an analysis of how artefacts influence routines. As said, because they are clearly observable and thus distinguishable by the researcher, but also because they reflect ostensive ideas, at least from those actants who have created them. But, as artefacts hardly ever result in performances of actants as intended (Pentland & Feldman, 2008) one should from here observe how artefacts actually 'model' the routine. I will do so by looking at their affordances.

But, affordances of what exactly? A first important insight that emerges from a description of the rule-embedded artefacts, is that they differ between the hospitals in two important ways. Firstly, the materialization of the checklist differs between the hospitals; where Plainsboro mostly 'goes digital', St. Sebastian's holds on to paper. Secondly - and more importantly; where St. Sebastian holds on to paper and paper *only*, Plainsboro adopts multiple different representations of the rule. Therefore, I refer to an artefactual *arrangement*, as a 'bundling' of different representations of the checklist rule. These artefacts intend the same behaviour pattern, the same routine, but have different properties. As these artefacts do not stand on their own, but are interrelated in many ways, I will look at their affordances from a relational perspective (e.g. what actions does artefact *x* afford in relation to artefact *y*?)

Building on this, I claim that although rule-embedded artefacts are 'touchable' or at least 'visible' and thus traceable by the researcher, what they *are* can be only be understood as a continuous, dynamic process, fuelled by their (perceived) possibilities for use. The next sub paragraph therefore analyses the artefactual arrangements in terms of their affordances.

7.3 Artefacts' affordances

Artefacts possess different affordances that constrain how they can be read and used. I defined affordances as the actual and perceived possibilities for use[23]. Following Gibson (1977, 1979), I put the role of perception central. The architecture of the artefact limits and creates possibilities for use – paper simply can't fly for example - but beyond that, the possibilities of what can be done with something, are unique to each individual and their situation. For example, a software system might *actually* afford the action to register clinical information, but if the actant that has to perform this action does not perceive this a possible use, it does not afford that performance for that actant in that situation. In general, the perception of an affordance should not be confused with the affordance itself.

As I want to advance our understanding of how rule-embedded artefacts function as intermediaries of routines, I will take into account both the characteristics of the artefactual representation itself (material affordances), and the possibilities for artefact use in its environment (spatial affordances). I inductively added a third, temporal dimension to the analysis.

7.3.1 Material dimensions

The material affordances refer to the material (or digital) properties of the artefact itself. The design of an artefact, affords different action possibilities. A checklist can for example be made out of paper, have a rectangular size and be foldable (its actual properties) and has a perceived suggestion of how it should be used (its perceived properties). Drawing from the ethnographic data, I will illustrate the material affordances of the artefactual arrangements in both hospitals.

Plainsboro

In Plainsboro, digitalization is at the core of the organisation's strategy. In chapter 5, I already showed that despite professionals consistently register the performance of the checklist for the sake of performance measurement, as something they 'have to do', it is only loosely connected to what they actually do with the patient. Professionals 'just tick off the boxes without further consideration of the items'. These activity patterns are fuelled by ostensive ideas about organisational control, as they feel that they are only registering for the

23 Chapter 3 extensively discusses the theories informing the research perspective of this study

sake of transparency and not patient care. These ideas are further exacerbated by the design of the system, as EZIS is not considered a clinical system.

> At the observation day with trauma surgeon dr. Doornwaard, I bump into the head of department when we are on our way to the briefing. He shows interest in my research, and so a conversation about the SSC starts, with an emphasis on the registration. "The biggest problem.." he starts off "is that it's [EZIS] a bureaucratic system. It is not a medical system." dr. Krijgsheer continues by explaining how the design of the system affects how doctors can do their work. "How the tabs are organised, the forms to enter the information, there's nothing medical to it. There is no room to report information you as a doctor would want to. You can definitely notice that this system was designed by IT people, smart people for sure, but not medical people."

The way in which the checklist is digitalized, clearly allows and constrains activity patterns in particular ways. Clinicians feel that the artefact does not leave room to use the system according to their needs and preferences. As an anaesthesiologist noted: "The program only allows for ticking off standardized elements, and leaves no room for us to register what we're actually doing." The opportunity to only tick off the boxes – and proceed when done so – reinforces ostensive patterns of 'organisational control'. The system is designed in such a way that it allows for organisational monitoring of processes, but not for registration of clinical information. Another anaesthesiologist adopted the saying "canalising versus excessive registration" [original: "kanaliseren versus kapot proctolleren"] to underline that professionals have nothing against registration per se. On the contrary, 'canalising' information by means of registration is valuable and even necessary for a smooth handover of information. Nonetheless, professionals should be able to do so on their terms. Respondents pointed out that system designers lack a 'clinical view', or as phrased by a gynaecologist: "They don't speak our language, but they want to determine our behaviour." The software system is perceived as an artefact that allows for registration, but not storage of clinical data.

Since Plainsboro introduced a 'bundle' of artefacts to model the routine, it is vital to analyse the interrelation of artefacts in the arrangement; what do artefacts afford in relation to each other? Besides the digitalized checklist that serves the purpose of registration, posters were put up in the operating theatres as a memory support. The posters do not afford anything more than to 'look at'. As

the computer devices where the registration has to be done are positioned at the back of the theatre[24], the digital checklist and the poster were mostly considered complementary. The intentional use of the later introduced whiteboards however, was less clear. A scrub nurse told me:

> "At first, there was this poster on the wall, representing the checklist. When we did the time-out, we looked at it. That was fine, then, wasn't it?" [as a rhetorical question]. "Then at once, a month or so ago, there was this meeting organised for all OR personnel, and there they told us that these boards would be implemented. It was said: "From tomorrow onwards, there will be boards in the theatres, and you have to fill them out."

So a new physical representation of the rule entered the OR. A whiteboard that had to be filled in. But by who? And with what purpose? That remained fuzzy. In contradiction to the posters that are on the wall, the tabloid-sized whiteboards afford picking up and filling out checks (actual properties). Although the whiteboards indeed afford the possibility to fill out the checks, they herewith do *not* allow for registration. In the conversations, different respondents pointed out that they did not get what the purpose of filling out the checks on the whiteboards was, as registration had to be done in the software system anyways (perceived properties). The actions that artefacts afford thus matter in relation to others. The whiteboard affords to tick off boxes, but not for the purpose of making actions transparent by registration. Registration in Plainsboro has to be done through software system EZIS.

St. Sebastian's

In St. Sebastian's they work with "old fashioned paper", according to their own sources. The three-page paper checklist functions as the only model for the routine. Many respondents from different disciplines apologetically stated that "luckily, things will soon be modernized." Paper is not only seen as outdated, but even as 'unprofessional'. Especially surgeons referred to paper's vulnerability, and the lack of fit of this material with the body liquids that are all around in the operating theatre. Besides an unprofessional look of a paper checklist with blood drops on it, a couple of surgeons underlined lacking hygiene.

At the same time however, paper does afford some flexibility a software system does not. Whereas the digital checklist in Plainsboro's software system only

24 For more details, see paragraph 7.3.2 on spatial dimensions

affords to tick off predefined boxes, paper generates the possibility to scribble notes. Professionals are not limited to only tick off predefined boxes – even though this is the intentional use by the designers - but they can more freely scribble on the paper according to their preferences. It was therefore no exception that professionals put additional clinical notes on the paper checklist. The flexibility in 'drawing' or 'writing' is also reflected in the following observation note. In chapter 5, I already wrote about the day on which I observed one of the orthopaedic surgeons in St. Sebastian's who was about to perform seven knee scopes throughout the day on "all healthy people". The following observation note illustrates one of those time outs.

> The patient is on the surgical table and the nurse anaesthetist is attaching the leg support to the surgical table to put the knees of the patient in the correct horizontal position for the scope. Dr. de Vecht walks towards the surgical table and shakes the patient's hand. "Just some final checks before we get started" he says. After that, he asks for the patient's name and date of birth, and he checks if it indeed is the right knee that causes the trouble.

After reassuring the patient the intervention will only take about fifteen minutes, he walks to the computer at the side of the theatre, and grabs the checklist that was laying on the keyboard. He pulls a pen out of his jacket, and draws one continues, vertical line across all the items.

The surgeon in this situation, performs some checks on the top off his head, and thereafter registers these checks, strikingly, by drawing one continuous line on the piece of paper. The predefined boxes in a software system like Plainsboro's leave no other option than to tick off the items one by one (actual properties), the observation note shows how paper offers wider possibilities; one can tick off boxes one by one, make additional notes or drawings, and one can 'tick off all the boxes' at once with one continuous line. Interestingly, no other team member commented on the stripe on the piece of paper, for example when handing over the patient to the recovery unit. Though the stripe visualizes that checks have not been performed one by one, or at least, that registration was done de-coupled from actual checking.

In short, paper is considered 'less professional' and more vulnerable than a software system, at the same time there is a wide variety of ways to make marks on paper, which allows a flexibility far exceeding that available for software systems. Affordance only matters in relation to others; the perceived affordances

of the whiteboards for example, are limited because of the affordances that the software system and posters already offer. Next, the spatial dimensions will be discussed.

7.3.2 Spatial dimensions

With spatial affordances, I refer to the possibilities to use an artefact in its physical context. Not only the construction of the artefact (material affordances) are important to consider, but also how the physical environment, and other artefacts in it, affect its use. How for instance, can an artefact be transported and stored?

Plainsboro

An operating theatre is quite a spacious environment, in which various objects and materials are situated. The surgical table is at the centre, and around this central object various other devices are situated, such as the anaesthetic device, the surgical lights and various screens (Figure 18). In Plainsboro, the poster representing the Surgical Safety Checklist is put up at the wall at the back of the operating theatres, about three metres from the surgical table. This artefactual representation of the checklist is thus partly hidden behind screens and devices, and distanced from the centre of the theatre were the action takes place. Put differently, the poster (memory support) is literally out of sight. Interestingly, in the conversation about the introduction of the whiteboards with the scrub nurse in Plainsboro, she underlined that before the introduction of the whiteboards, they looked at the poster while performing the checks; “That was fine, then, wasn’t it?” The *perceived* possibility for use thus is that the poster can be looked at, and also that this is actually been done. The observations show that this was hardly the case however.

Figure 16: An operating theatre

In chapters five and six, I illustrated how the registration of the checklist in Plainsboro is only loosely coupled with the actual checking with the patient. For several, mostly practical reasons, the registration of the checklist has been done before the actual checking with the patient. Literally, the behaviour patterns as prescribed by the rule-embedded artefact are distanced from the location where these actual activities have to take place. The computer that embeds the information system EZIS is positioned at the back of the operation theatre. As a consequence, 'checking' and 'registration' become disentangled. Observation notes from this and previous chapters show how checking with the patient and the team in Plainsboro were only 'loosely coupled' with the registration in the computer. It is simply not possible to bring the computer to the surgical table, or the other way around.

With the whiteboards on the contrary, this is the case. The tabloid-sized whiteboard can easily be transported throughout the operating theatre. But, as indicated, it is of great importance to not look at artefacts in isolation, but analyse their relations in the arrangement. The whiteboards afford to bring to the surgical table, show to the patient, and tick off the boxes, but in relation to other artefactual representations its additional value remains mostly unclear as whiteboards do not allow for registration.

Still, to some professionals the affordance to show the whiteboard to patients is of importance. The whiteboards make the checklist rule visible, and this procedure can be brought and shown to patients. The perceived need to inform patients about the procedure, and apologize for again checking for these items is reduced (see also chapter 5). The whiteboard visualizes the routine of checking items, and so also patients can see that this is routine, and not a lack of 'professionality'. This seems to apply mostly to junior professionals (in training).

St. Sebastian's

This chapter started with an observation note shadowing anaesthesiologist dr. Liem in St. Sebastian's. While he scoured the sheets, he sighed "Sh*t, I forgot the checklist, must be still in the OR. I'll be right back." The introductory note of this chapter illustrated a part of the checklist's journey throughout the hospital, and illustrates how it easily can get forgotten – and it takes quite some time to get it – and how it easily gets dirty and damaged. In short, it has to survive its whole journey throughout the hospital. In quite some instances, the checklist got 'lost' for a while somewhere throughout the process; it was left at the corner, on a stool in the theatre, next to the computer, or between the sheets. This affordance of 'wandering' becomes extra critical, as there is only one copy of the checklist; one physical piece of paper that can only be 'accessed' at one location at the same time and cannot be replicated. Still, the paper checklist can be taken to any location in the hospital, for example for the sake of deliberation. It has shown less interruptive for team deliberations to jot down information on a scrap of paper, than it is to input on a computer at the back of the theatre.

Observation notes from St. Sebastian's showed how the paper artefact can be brought to the centre of attention; the surgical table. The actant who leads the time-out procedure, usually the surgeon, sometimes the anaesthesiologist, can take the checklist to the surgical table to easily communicate with the team members and the patient. Still, the surgical table is where actions concentrate. Materials are being prepared, the patient has to be connected to the monitors. These artefacts that are in the room and are required for the surgical intervention, can act as blockades for team members to gather around the surgical table and participate in the time-out procedure.

Especially with the more complex orthopaedic interventions where patients are provided with protheses, the operating theatre is full of sterile tables on which all the equipment that is needed for the intervention is put on. Team members cannot pass these objects, which makes it more difficult to participate in the

conversation. The same goes for the surgical drape, that is used for covering the patient. The surgical drape secures sterility, but also physically separates surgery from anaesthesia by putting up a 'drape wall'. Herewith, the surgical drape puts up a physical barrier between two professional groups. In the previous chapter, I illustrated how routine interactions can reinforce notions of 'us' and 'them', rather than firm connections between professional groups. Also material objects, such as tables or the surgical drape mediate interactions and can hinder firm connections, by literally keeping professional groups separated.

These artefacts thus mediate interactions in the theatre, and can limit affordances of artefacts that represent the checklist rule. At first sight, paper for example does seem to allow for incorporating the artefact in the actual performance of the routine as one can take it to the surgical table. Nonetheless, other objects in the room might hinder active engagement and 'crossing borders' (both literally and figuratively speaking) as physical barriers are put up.

To summarize, the spatial affordances matter in two important ways. Firstly, the spatial affordances matter for 'accessibility'; information input on a computer is limited to spots where a computer device is located, but at least actants know where to find it, and the checklist information can be accessed from different locations simultaneously. From the paper checklist on the other hand, there is just one copy available that can be accessed from one location at the time. Just because paper can be accessed from anywhere, actants have no clear reference points of where to find the checklist. Secondly, spatial affordances matter for 'connectivity'; as the computer device where the checklist has to be registered in Plainsboro is located at the back of the operating theatre, checking and registration become de-coupled. The paper checklist in St. Sebastian's can be brought to the centre of attention, but other artefacts in the room can hinder connections between routine participants. The final subparagraph takes into account the temporal dimensions.

7.3.3 Temporal dimensions

Besides the material and spatial dimensions as identified in the theoretical chapter, I identified temporal dimensions during the ethnographic fieldwork. Because of the episodic character of the observations, there have been time intervals in-between the observations[25]. Therefore, I have been able to observe artefacts at different points in time.

25 See chapter 4 for methodological accounts

Plainsboro

At the start of my observations in Plainsboro Teaching Hospital, there were posters on the wall visualizing the checklist, and there was the checklist incorporated in EZIS for the purpose of registration. When I returned at Plainsboro's surgery department after a couple of weeks, a new representation of the checklist rule had been introduced in the meantime: the tabloid-sized whiteboard that needs to be filled in with a marker during the checking procedure. In this way, a representation of the checklist was literally brought more close to the process, and it also demands a concrete action: filling out the checks.

It took a while before I noticed the whiteboard was there, however. Apparently it had been laying at the sides of the operating theatre, unused. Until a day at the vascular surgery in early February on which a scrub nurse told me about the whiteboard and explained to me where these boards came from:

> "Then at once, a month or so ago, there was this meeting organised for all OR personnel, and there they told us that these boards would be implemented. It was said: "From tomorrow onwards, there will be boards in the theatres, and you have to fill them in." They also adapted the software system, so that we have to fill in our names, you have to fill in who registered."

The fact that a new artefactual representation was introduced in the operating theatres implies that the arrangement as it was, was considered "not enough". The strategy that was used in Plainsboro to improve performances, was to add new artefacts. At least for this scrub nurse, it felt like the new artefactual representation was 'induced from above'. At once, it was there, and it had to be incorporated in the process.

Besides the introduction of a new artefact, there have been small amendments to the existing artefacts by linking actions to specific actants. In the software system, it no longer only has to be registered *that* safety checks have been performed, but it has to be clearly indicated by *whom* registration has been done. In this way, performances can always be traced back to specific actants. This strategy of altering artefacts was exactly the strategy that was employed in St. Sebastian's.

St. Sebastian's

At St. Sebastian's, they did not employ the strategy of introducing more artefacts, rather, the strategy was to alter the paper checklist in such a way that performances would be improved. Altering artefacts involved two sub strategies; (1) clearly spelling out responsibilities – this strategy links to the alteration in Plainsboro's software system, and (2) further demarcating the checks to prevent extensive conversations.

The following observation note illustrates how the strategy of altering artefacts was performed by the manager of the surgery department and the chair of the anaesthesiologists.

> I'm in the staff room of St. Sebastian's. I just refilled my cup of coffee for the third time that day. I am shadowing anaesthesiologist dr. Herbers, and we have to wait for the operation to be finished. There are more colleagues in the room, some chatting, some behind their computer screen. Then mr. Bakker enters the staff room, who introduces himself as the manager of the surgery department. He has an appointment with dr. Laarakkers, the chair of the anaesthesiologists group. Dr. Laarakkers is still in the theatre reviving a patient.
>
> As I introduced myself as a researcher, we get into a conversation about the subject. Mr. Bakker states that coincidentally, the appointment he has with dr. Laarakkers is about optimizing the checklist and he invites me to listen in.
>
> Dr. Laarakkers enters the staff room. "Sorry you had to wait, it took a while to wake him up" he laughs. They get seated behind the computer, and dr. Laarakkers opens the file with the checklist. "I've been thinking about how to further demarcate responsibilities" he starts off.

In the conversation that follows, dr. Laarakkers and mr. Bakker are mostly deliberating about responsibilities, in which they aim to indicate more clearly what has to be done by who, and who's responsible. Their assumption is, that when responsibility has not clearly been indicated, no one will feel responsible. Clearly indicating responsibilities, will facilitate 'compliance'.

Besides more clearly disentangling responsibilities, the conversation concentrates around 'focusing the conversation'. In chapter 6 I described how dr. Herbers

led an extensive time-out procedure, in which he first checked the items of the checklist with the patient, and subsequently instigated a 'briefing-like' conversation with the team members to discuss the preparation and instruments. These 'briefing-like' discussions are the exact subject of the second part of the meeting about altering the checklist.

Mr. Bakker indicates that "it [the time-out] soon becomes some kind of process or instruction description" and "That's not supposed to happen." Dr. Laarakkers agrees. He noticed that increasingly, the time-out transforms into extensive deliberations in which the team members once again go over the procedure to perform. The manager has a clear view on the purpose of the artefact "The checklist should be a *check*list, not a free pass for extensive conversations"[emphasis indicated].

When we were waiting for dr. Laarakkers to arrive, and talking about my research project and standardization in general, the manager of the surgery department told me about his function and background. "I'm a historian by training" he says. "After that, I got into ICT somehow." His background is thus not a medical one, but his perspective is seen as a valuable addition rather than a shortcoming. He argues that he can very well add to the discussions by introducing an organisational perspective; "also for the sake of efficiency."

In sum, the aim of both strategies to add or to alter artefacts, was to improve performances. Hence, artefacts are not static entities. On the contrary, artefacts can be modified and arrangements can be extended by adding new artefacts. What this actually means and what these performances look like, is subject of the next paragraph on artefacts in action.

Table 5: Artefacts' affordances

	P T0	P T1	S T1	S T2
Affordances	Checklist embedded in software system (registration). Posters on the wall	Addition of tabloid-sized whiteboards	Paper checklist (registration)	Altering the checklist
	"Bureaucratic system" "Out of sight"	"Added value?" "Proof to patients" "Improving performance"	"Vulnerable, dirty, lost" "Flexible" "Unprofessional" "Old fashioned"	"Clarifying responsibilities" "Demarcating the conversation"

7.4 Artefacts in action

In the previous paragraphs, I have analysed the material, spatial and temporal properties of the artefacts that are adopted by Plainsboro and St. Sebastian's to model the checklist routine. These (perceived) properties of artefacts affect how they can be used in practice, or in other words, what routine can be developed. If an artefact is out of reach or out of sight, professionals cannot adopt it in their routine. If an artefact does not afford to store clinical information as wished for, they will likely put it aside. Artefacts were introduced, added and altered to model the checklist routine, but when taking their affordances into consideration, how do these artefacts actually model routines in the context of everyday work?

7.4.1 Focused attention?

Most simply and narrowly stated, the Surgical Safety Checklist had been introduced to reduce surgical mistakes. The assumption behind the checklist was that if the team as a whole would focus on safety items as inscribed in the checklist at critical moments, mistakes would be reduced. Already in chapter 5 on internal routine dynamics however, I discovered that though goals and purposes seemed simple at first hand – at least from an organisational or 'implementers' perspective, they were not that clear and uncontested in reality (plurality on the ostensive dimension). One of the fundamental 'debates' that occurred, was whether 'the checklist' should be routine, or that 'checking safety items' should be routine. More precisely stated; should artefact use become routine, or should the artefact be just a tool to make checking for safety items a routine? The following observation from Plainsboro underlines how the artefacts' affordances are key in constituting a routine.

> At my very first observation day at Plainsboro, I shadow the gate-keeper. At one of the two theatres we are monitoring, the surgeon is performing four urology interventions over the course of the day. The third patient just installed himself on the surgical table when the urologist instigates the time-out:
>
> "So, you are sir De Boer, born 12-04-1962", the surgeon says while looking at the patients' wrist ID. Without waiting for further confirmation, he continues: "You are here for a cystography. And you have no allergies. Okay, fine."

> The checklist poster is put up at the wall, but because the operating theatre is quite spacious, the poster is positioned about three metres from the surgical table where the urologist is doing the time-out, and partly hidden behind the arm of the surgical lamp that is hanging across the surgical table, the urologist does not seem to notice the poster at all. After ensuring the patient that everything will be fine, he leaves to scrub.

Although the posters are put up in the operating theatres of Plainsboro Teaching Hospital as a reminder so that doctors do not have to perform the checklist off the top of their heads, that is exactly what happens a lot. In this particular situation, the urologist does not pay attention to the poster, but performs some of the checks out of memory. The poster is out of reach – literally. The urologist is not able to sufficiently incorporate the poster in the procedure, let alone hold the checklist in his hands. Consequently, he addresses safety items that are in his memory. Besides, the surgeon mentions some of the items, rather than asking questions to the patient and the team. The artefact's affordances make that professionals are inclined to routinize 'checking safety items' rather than routinizing the artefact. In this situation, there is attention for safety items, but not in systematic way incorporating the checklist - let alone with a shared focus of the surgical team. The checklist routine turns out a solo performance by the surgeon, who covers some items out of memory.

In St. Sebastian's, the checklist has to physically enter the operating theatre together with the patient, indicated individuals have to tick off the checks after confirmation, and, as the introductory note of this chapter illustrates, the checklist has to be handed over when taking the patient to recovery. The registration of the checks thus comes directly with the performance of the checks. The following observation note illustrates how the paper checklist was used during one of the time outs.

> When I'm at St. Sebastian's, I shadow anaesthesiologist dr. Kronbach. We are at OR8 for the time-out. When everyone is in the theatre, the surgeon instigates the time-out by asking everyone to gather around the surgical table. First, the surgeon himself asks for the patient's identity and the surgical side. Then he asks the patient: "Can you tell us in your own words what we are going to do today?" After confirming the intervention, he directly speaks to the scrub nurse to check if all equipment is available. Lastly, he asks dr. Kronbach: "Any allergies known?" To which dr. Kronbach replies that the patient is allergic to iodine, he confirms antibiotic

prophylaxis given, and indicates no further patient specific concerns. After the surgeon ticked-off each of these boxes, he confirms that they're ready to get started, so we can move on to the other theatre.

When we get back at OR8 after a while, the operation is finished and the sing-out has already been done – as the nurse anaesthetist tells us, and the next patient is already on the table. Again, the time-out is been done extensively, led by the surgeon who reads out the items from the checklist he is holding in his hands. The scrub nurse confirms the equipment, and dr. Kronbach confirms no allergies, and that two packages of blood have been ordered, "just in case." Meanwhile, the nurse anaesthetist is preparing the patient for surgery. He is attaching her to the monitors while they are having some chitchat about the weather and holidays.

The paper checklist clearly indicates roles and responsibilities, and that does seem to provide routine participants with some guidance. The observation note illustrates how the surgeon directly speaks to his colleagues as indicated in the form. Items are systematically being checked. During the first time-out as described in the first part of the observation note, there indeed seems to be focused attention of the team; the whole team gathers around the surgical table and focuses on the time-out, items are confirmed and ticked-off on the piece of paper.

It must be noted still, that active involvement of all actants, and thus focused team attention, is not guaranteed. In the second time-out as described in the second part of the observation note, the anaesthesiologist confirms the items, so these checks have been taken care off. However, in a short while the anaesthesiologist will leave the theatre, and the nurse anaesthetist who was chitchatting during the time-out, will monitor the patient. In other words, as specific actants are spoken to, others might very well keep on continuing their tasks, as they precisely know when their active involvement is required, and when not. As the anaesthesiologist was taking care of the anaesthesia items in the time-out, the nurse anaesthetist knew that he would not be spoken to. The following short note is taken about 30 minutes later, during the operation itself:

When the operation is halfway, the surgeon mumbles "we have quite some blood loss here." Although he seems to mostly speak to himself, the nurse anaesthetist replies: "We did order blood, did we?!"

The answer to this question is 'yes', since the anaesthesiologist confirmed two packages of blood during the time-out procedure, but this information did not get to the nurse anaesthetist who was chitchatting at the time.

In short, when it is impossible to incorporate an artefact in the procedure, for instance because it's out of sight, performances fit 'routinizing checks' rather than 'routinizing the artefact'. Moreover, routinizing checks seems to be an individualized rather than a connected performance. The paper artefact can be taken to the surgical table and is used for coordinating the conversation. Still, there is a variety of possibilities to use this artefact. Performances show focused team attention, but also individual attention. Indicated responsibilities seem to point towards individualized rather than connected actions. The next sub section further explores the matter of 'responsibility' as inscribed in artefacts.

7.4.2 Clear responsibilities?

In St. Sebastian's, one of the strategies to 'improve performance' was to indicate more clearly in the artefact, who is responsible. 'Stopmoment 4' (Figure 17) represents the time-out part of the checklist and it indicates that: "the time-out is directed by the nurse anaesthetist (responsibility surgeon)."

STOPMOMENT 4

TIME-OUT PROCEDURE BIJ WAKKERE PATIËNT **B**
De regie van de time-out procedure ligt bij de anesthesiemedewerker (verantwoordelijkheid operateur)

		N.v.t.	Ja, in orde
Operateur bevestigt:			
1.	Juiste patiënt		
2.	Juiste ingreep		
3.	Patiënt is nuchter		
4.	Juiste zijde / juiste plaats is gemarkeerd / besproken		
5.	Relevante comorbiditeiten zijn bekend		
6.	Juiste pre-operatieve antibiotica is 15-60 min. voor incisie gegeven		
7.	Positionering patiënt is besproken		
Operatie-assistent bevestigt:			
8.	Benodigde apparatuur / instrumentarium / materialen (bijv. scopietoren, speciale netten, staplers) zijn aanwezig en gecontroleerd		
9.	Benodigde implantaten / prothese(s) aanwezig		
Anesthesiemedewerker bevestigt:			
10.	Anesthesieapparatuur is gecontroleerd		
11.	Pre-op. lab is bekend en evt. bloedproducten zijn aanwezig		
12.	Allergieën zijn bekend		
Time out uitgevoerd			
Datum:			
Naam en handtekening operateur:			

Figure 17: Excerpt time-out checklist St. Sebastian's

The artefact stipulates responsibility for the time-out procedure. Interestingly, responsibility for and direction of the procedure (patient?) are disentangled. The nurse anaesthetist is the actant to direct the procedure, but under responsibility of the surgeon. Specific actants are identified for specific items on the checklist; some have to be confirmed by the surgeon (intervention), others by the anaesthesiologist (known allergies) or scrub nurse (materials) for example. The final responsibility for the patient, is not indicated in the form.

In the first part of the observation note in the previous paragraph 7.4.1 there was focused attention and active involvement of the team. In the second part however, it showed that only specific actants with a clearly indicated role involved in the procedure. In other words, clearly spelling out individualized responsibility in the artefact, might erode the sense of a shared team responsibility.

Even though the artefacts spells out that the nurse anaesthetist should direct the time-out procedure, in none of the observed instances this was the case. Mostly the surgeon or surgeon in training initiated the time-out, by translating the procedure 'time-out' into a verb: "Shall we time-out?" [original: "Zullen we time-outen?"] As shown in the previous chapters, surgeons can herewith centralize their position in the team. Moreover, despite someone else is responsible for directing the procedure, surgeons strongly feel the responsibility for 'their patient', which makes them taking responsibility for the checklist procedure as well.

In Plainsboro, they adopted the strategy to employ more artefacts to improve behaviour, rather than to alter existing artefacts. Earlier this chapter, I described the conversation with the scrub nurse that told me that they were informed that the boards were introduced and that "they had to be filled in." The following observation note is from the very same day at vascular surgery at which the scrub nurse explained the introduction of the whiteboards representing the checklist rule.

> The surgeon starts the second time-out of the day. The patient is on the table, and is surrounded by the surgeon, the anaesthesiologist, the nurse anaesthetist and the operating assistant. Vascular surgeon dr. Huijs first checks the patient's identity by asking for his name and date of birth, and checking the wrist ID. Next, he extensively explains what he is going to do, and he also indicates the surgical side and side. Thereafter he asks: "And you haven't eaten?"

> Then he leans towards the scrub nurse, to look over her shoulder and list the items that are on the board. "Are all materials ready?" he asks. The operating assistant nods and ticks off the boxes with the whiteboard marker she was chewing on. Dr. Huijs finishes the time-out by asking if the patient has any questions left. With a somewhat forced smile the patient replies: 'Just let's get it over with!'"

As I did not yet understand what role the whiteboard played in the checklist procedure, I decided to ask the scrub nurse for more in-depth insights on this new artefact in the arrangement:

I:	"Who is responsible for the checklist board?"
operating assistant:	"That is very, very unclear. At first, they said anaesthesia is.. Some doctors do it themselves.. but actually, actually the scrub nurses took it as their task to fill out the checks on the board."

Indeed, in most instances, the scrub nurse was the actant that filled out the board during the performance of the checklist. In the observation note, the nurse confirms the item 'materials ready' before ticking off the box. But almost never, there was a conversation about what was actually filled out with the other team members, and in nearly all cases, almost directly afterwards the board was put to the side and never looked at again. In this way, filling out the board indeed became a matter 'that the scrub nurses took on', but it also was something they kept to themselves. As clinicians mostly did not see the added value of the whiteboards compared to registration in the software system, they left it aside and scrub nurses took it on as their task. It also happened however, that the board remained untouched on a table or stool at the side of the operating theatre; blanc. With the introduction of a new artefact, responsibilities were never re-negotiated, somehow they found their way in practice, but responsibilities got more complex and scattered.

Throughout the observations in both hospitals, I came across different understandings of 'responsibilities.' What did become clear, is that the surgeon is responsible for the patient. As treating physician, they are responsible for what they usually call "their patient." The abstract pattern of what this 'general responsibility' implies for further procedures surrounding the patient, is

scattered however. Different professional groups hold different understandings of where responsibilities lie, and how they have to be performed.

Although surgeons refer to their responsibility for their patient, they usually claim that the checklist is "a matter of the anaesthesiologists". Presumably, this has to do with the fact that the anaesthesiologists take the lead in optimizing artefacts. As surgeons feel that the checklist is something that has been annexed by the anaesthesiologists, they also feel that responsibility comes with that. The surgeon is responsible for the patient, but the anaesthesiologist is responsible for the checklist.

The operating assistants do not assign responsibility to a particular group. On the contrary, they see responsibility as something shared: "The checklist? It's a shared responsibility. We're responsible for it altogether!" a scrub nurse told me when I asked about responsibilities regarding the checklist. As the surgeons and anaesthesiologist in Plainsboro literally didn't pick up the whiteboards, the scrub nurses started doing this. This wasn't something that had been discussed, but through recurring performances, the abstract understanding became that the whiteboard was "something the scrub nurses take care of".

To conclude, either with disentangled responsibilities in an artefact or a plurality of artefacts it thus can become less clear who is responsible for what exactly. These understandings of responsibilities vary among professional groups. This adds to the finding that "the checklist" in principle, doesn't exist. As more representations or amendments of the rule enter the field, what the checklist 'is' becomes even less clear.

7.4.3 Collaborative action?

I am shadowing anaesthesiologist dr. Liem in St. Sebastian's. We just signed out a patient in OR5 and we're heading towards OR6 to see how the operation there is proceeding. When we arrive at OR6, dr. Liem lifts up to his toes (he's not that tall) to look through the small round window in the door. The screen besides the door accurately counts the door openings. Every time the door opens, there is a risk. A disturbance of the air circulation might invite bacteria into the patient's open body and cause infections. Dr. Liem points towards the clock in the OR and puts up one of his thumbs. The surgeon responds by putting up his hand two times – indicating 10 minutes – followed by a thumbs up. We head back to the coffee room to return in 10 minutes for the sign-out.

Building on the argument of dispersed responsibilities; as responsibilities become 'individualized' or narrowed down to specific professional groups, this might ultimately lead to a reinforcement of professional borders - rather than creating connections. In chapter 5, I have explained how conflicting routine demands can lead to reinforced images of 'us' and 'them', for example when 'we' surgeons again have to wait for 'them' anaesthesiologists. In this chapter, I have showed how artefacts can strengthen these images. It can have to do with the design of the artefact itself, for instance when the responsibilities of professional groups are spelled out and emphasized, and not so much the team. It can also have to do with other artefacts in the theatre that intervene with the performance of the checklist. The surgical drape for example, creates a physical boarder between the surgeon and the nurse anaesthetist. For the nurse anaesthetist, it becomes more difficult to participate in the conversation. Images of 'us' and 'them' thus become physicalized through the surgical drape. Also the observation note above underlines the matter of spatiality. In this situation, the artefact around which actions concentrate is in the theatre where the team is operating. The anaesthesiologist however, has to move through the environment to engage in multiple procedures simultaneously. The door of the operating theatre literally appears as a physical boundary to engage in the procedure. The risk of door openings - and thus the motivation to keep it closed as much as possible - is materialized in the counting that is visible beside it.

Professional borders are thus being demarcated through artefacts, but at the same time, these artefacts might be used to negotiate roles of these professional groups in the team. As surgeons and anaesthesiologists put the burdensome whiteboards aside, scrub nurses started to perform actions with this artefact. In doing so, the whiteboards served as a vehicle to make their role in the team more prominent. One of the scrub nurses told me: "the whiteboards help me to strengthen and visualize my role in the team." This visualization of a professional role through an artefact closely relates to the residents that used the whiteboard to their patients in an attempt to come across as 'professional'.

To conclude, the artefact's affordances do not automatically result in collaborative action. Especially other artefacts can mediate in connections among routine participants. At the same time, professionals do take on artefacts as a way to strengthen their professionality and role in the team.

7.5 Artefacts in performance-oriented contexts

This chapter has predominantly focused on the artefactual arrangements of the checklist rule. I analysed how different representations of the Surgical Safety Checklist affect routine dynamics. In doing so, I also came across other artefacts that can act as intermediaries in routine performances, such as the surgical table the surgical drape, and the door of the theatre. In studying artefacts in performance-oriented contexts, one specific artefact that was not the initial focus on this study (representations of the checklist) drew particular attention while I was observing in Plainsboro Teaching Hospital. Screens that visualize progress in the various operating theatres were put up in different places in the surgery department. As these artefacts that 'track performance' influenced the performance of the checklist in specific ways, and they 'physicalize' a prominent theme that appears throughout this dissertation, I included these in the analysis.

With the new, high-tech surgery department where digitalization was at the core, also came screens that visualize the progress of the interventions in the various theatres. The bars on the screen represent the progress in the theatres, also by indicating percentages, so everyone in the surgery department can track the process and see whether interventions are on schedule. For anaesthesiologists for example, the screen makes it more easy to monitor the process and therefore also more easy to decide when to enter the theatre. They can even monitor the process through a screen that is put up in the staff room. The screen therefore functions as tool that helps limit the amount of door openings – which benefits the air conditions in the theatre, and thus safety.

At the same time, the screen incorporates a competitive element. As this artefact displays the progress in the theatres in one screenshot, it allows for a quick-view comparison. Professionals cannot only trace their own progress, but also progress of others. While I was in the anaesthesiology staff room, I picked up a conversation between two anaesthesiologist who were holding track of their theatres while drinking a cup of coffee. "Well, well, dr. de Vecht is on a roll!" [original: "...is lekker bezig!"] One anaesthesiologist said to the other. The bar on the screen representing the progress in the theatre where dr. de Vecht was operating, was clearly beyond the others. This statement of 'being on a roll' implicitly reflects the idea of 'faster is better'.

Comparable quotes passed by throughout the observations. Surgeons for example prefer an anaesthesiologist who can give an epidural fast. They care less about whether someone is nice, or communicates clearly, as long as the job's been done quickly. Also in conversations about what makes someone a good anaesthesiologist with anaesthesiologists themselves, often 'time' appeared as a first quality indicator: "Someone who does the job fast, and is good at multitasking." Naturally, we have to nuance the importance of time to the extent that time only matters if the job is performed correctly; no one benefits from a quick but insufficient performance, but professionals can definitely increase their popularity by getting the job done in limited time.

To conclude, 'time' popped up as an important theme throughout the observations in the different chapters, and is in many ways intrinsically linked with the Surgical Safety Checklist routine. Time is scarce, and it therefore affects prioritization and importance (ostensive). Hence, experienced available time affects if, when, and how extensively procedures are performed (performative). This chapter shows how time is also backed in artefacts as a way to track professional performance, and 'materialize' its importance.

Figure 18: Time as a means to track performance

7.6 Main findings and reflections

In this chapter, I addressed one of the often overlooked themes when studying routines: the role that artefacts play in (re)creating routines. Since thinking of routines as dynamic practices, scholars have predominantly focused on internal routine dynamics – as I did in chapter 5 – and, recently on routine interactions – as I did in chapter 6 (see Feldman et al. 2016 for an overview). Despite the

importance of studying 'materiality' is widely acknowledged (e.g. D'Adderio, 2008, 2011; Edmondson, Bohmer, & Pisano, 2001; Howard-Grenville, 2005; Turner & Fern, 2012). studies that put artefacts at the centre of analysis remain remarkably rare (see D'Adderio 2008; 2011 for an exception). In the remainder of this chapter, I will discuss some of the key findings regarding artefacts.

7.6.1 "The artefact" does not exist

I started this chapter from artefacts that 'represent the checklist rule'. These artefacts provide sufficient starting points, as they are relatively easy to observe (D'Adderio, 2011). I soon realized however, that this was easier said than done, as I found out that there was no such thing as 'the artefact' that represented the checklist. In chapter 5, I concluded that there's no such thing as 'the checklist', in terms of guiding principle (ostensive). In addition to this, for two main reasons I can now say there's no such thing as 'the artefact'. There is no such thing as 'the artefact' (1) because of a plurality of artefacts and (2) because of the dynamic nature of artefacts.

First, 'the artefact' does not exist, because it actually is 'the artefacts'. Because of a plurality of artefacts that model the routine, I introduced the notion of an artefactual *arrangement*. Studying artefactual arrangements inherently becomes relational, as not all artefacts influence behaviour in the same way or through the same mechanisms. Cacciatori (2012, p. 1559) claimed that "we have to look at the emergence of systems of artefacts rather than at individual artefacts in isolation." The idea of affordances proved helpful in understanding how different artefacts steer behaviour in different ways. The different artefacts in the arrangement model the same routine, but have different properties, and thus different possibilities for action. The observations showed how we can only see affordances as a relational matter. The whiteboards in Plainsboro for example, were introduced as an addition to the arrangement (digitalized checklist, posters). Despite this artefact did afford some actions the others didn't (taking the checklist to the surgical table), the perceived possibilities for use remained rather limited, as it did not afford a major use that the digital artefact already did allow for: registration. Different abstract ideas of what the checklist is (plurality on the ostensive dimension as described in chapter 5) can be complicated by a plurality of artefacts. With multiple representations of the checklist rule, affording different possibilities for action, the question "What *is* the checklist?" becomes all the more complicated.

Secondly, 'the artefact' does not exist, because artefacts are constantly changing. In the literature, scholars often speak of 'the artefact' that models the routine, as objects that once they are created, are out there to model performances (Bredillet, Tywoniak& Tootoonchy, 2018; Cohen et al., 1996; Essén, 2008). The episodic observations allowed me to identify artefacts as dynamic rather than static entities. Throughout the fieldwork, not only were artefacts added, but also, they were amended. For instance by indicating responsibilities or including items in the software module to allow for continuation only when boxes are ticked. Artefacts are thus identified as items that can influence the course of routines, while at the same time they themselves are evolving. A temporal dimension is therefore important when considering artefacts as models for routines.

7.6.2 Creating workable artefacts in performance-oriented contexts is political

Artefacts are introduced to create a routine that increases performance. At first sight, creating and amending artefacts seems quite 'pragmatic'. Actants are busy creating 'workable artefacts'. The findings show however, that this seemingly pragmatic exercise actually is highly political. Two elements seem of extra importance here: *who* has the agency to amend artefacts, and *how* are they amended.

Firstly, it matters who amends artefacts. Following D'Adderio (2011, p. 198-199) who stated that artefacts are "evolving as a consequence of their appropriation by certain agencies in specific contexts", I delved into the issue of 'appropriation by certain agencies'. In this study, 'certain agencies' mostly referred to the departmental managers (without medical background), often in collaboration with frontrunning professionals that were very enthusiastic about the checklist. Most of the professionals who work with the checklist on a daily basis were not the ones who determined the appropriateness of the checklist. The question on 'workable artefacts' therefore particularly became one of: how to design artefacts in such a way that they result in compliant behaviour?

Secondly, it matters how artefacts are amended. Clearly indicating responsibilities was seen as one of the solutions to improve compliance, for instance by making changes in the software system to trace back actions to individual professionals. It has been claimed that increased control can be achieved by embedding a rule (in this case a checklist) in a machine or software, since this tends to make them more persistent and durable (D'Adderio 2008, Pentland & Feldman, 2008). The findings of this study indeed point towards reinforced feelings of

control, as clinicians feel constrained by a 'bureaucratic system' that only allows them to proceed when boxes are ticked-off. Interestingly, those who still work with "old fashioned paper", consider digitalization as a step forward and even apologize for the unprofessional paper. The findings suggest that appreciation of a checklist (ostensive) might change when professionals actually start working with artefacts.

7.6.3 Artefacts (are used to) create and overcome boundaries

The few studies that put artefacts central in analysing routines (D'Adderio 2008; 2011) focus on representations of the rule as intermediaries for routines. This study contributes by showing that rule-embedded artefacts only matter in relation to other artefacts in an arrangement, but moreover, that other artefacts are crucial to consider when one wants to understand how rule-embedded artefacts (can) affect routines. The findings show that (1) artefacts can create boundaries (2) artefacts can be *used* to create or strengthen boundaries and (3) artefacts can be used to overcome boundaries.

Firstly, other artefacts can create boundaries to use the checklist-artefact. Various devices such as sterile tables, lamps, surgical drapes and doors showed pivotal in understanding patterns of action. A poster may afford to 'look at', but other artefacts might keep it out of sight. A paper checklist may indicate responsibilities and demand an anaesthesiologist to 'walk in', but a system counting door openings might keep him from doing so.

Secondly, artefacts might be used to create boundaries. That artefacts are politicized rather than pragmatic, 'neutral' entities, also becomes visible through the boundary work of different professional groups. The concept of boundary work was first raised by Gieryn (1983) who analysed how scientists attempted to distinguish their 'scientific' activities from 'non-scientific' activities as a means to defend their status and privileges. The results from this chapter show how surgeons show similar strategies in maintaining their dominant position in the team. By explicitly refusing the whiteboards, they demonstrate that this 'extra' registration is not part of their surgical activities. Surgeons reclaim the boundaries of their profession by increasing member awareness of boundaries; "This is not something we as surgeons do." Faraj and Yan (2009) referred to this strategy as 'boundary reinforcement'.

Thirdly, artefacts might be used to overcome boundaries. Interestingly, nurses use the exact same artefact to strengthen their position in the team to ultimately

create social connections. In contrast, not by *refusing* the artefact, but by taking it on as their 'duty'. Dingwall (1977) already noted how difficult it is for professions like nursing to establish themselves when there is a 'dominant' profession in their environment. Nurses seem to gratefully use the whiteboards to generate a more prominent role in the team; by incorporating the artefact in their repertoire, their role in the team becomes more visible.

In her study on occupational boundaries, Bechky (2003) observed that different occupational groups continuously negotiate boundaries and frequently use organisational artefacts to reinforce their boundaries and maintain power and legitimacy. In this case, the whiteboards representing the checklist can be identified as boundary object (Star & Griesemer, 1989) for the negotiation of power relations between different professional groups in the team.

7.6.4 Technology is a tool, not a panacea

Lastly, in studies on artefacts, 'technologies' seem to dominate. How new technologies (might) transform or even diminish professional work is hot topic (Susskind & Susskind, 2017). The findings of this study suggest that a dominant focus on technologies invites researchers to overlook other artefacts that still determine many of the patterns of action. Yes, technology increasingly plays a role in professional work, and abstract notions reflect other types of artefacts to be 'outdated' and herewith even 'unprofessional'.

The data show however, that technological artefacts at the most interact with other artefacts, and do not determine patterns of action alone. Moreover, in St. Sebastian 'old fashioned paper' was the sole representation of the checklist, and practices did not always match abstract ideas. Despite that actants stipulated the checklist as 'outdated' and 'unprofessional', it mostly did stimulate mindful patterns of action, with focused attention by the team.

Future research should therefore focus on how technological artefacts mediate routines, but not in isolation (see also Cacciatori, 2012). If we want to improve our understanding of artefacts as 'models for routines' we have to consider the multiplicity of artefacts in an arrangement.

7.7 A model for artefacts in professional contexts

The figure below translates the key findings of this chapter into a model for how artefacts influence routines in professional contexts. The model visualizes 'artefact' not as singular, static entity influencing routines, but as dynamic artefactual arrangements. Within an artefactual arrangement, different representations aim to model the same routine. Different artefacts however, also have different possibilities for use. The findings suggest that material and temporal affordances matter for ideas about how artefacts can be/ought to be used (ostensive) and the performances they generate, but moreover, that these affordances are relational. If artefacts do not afford additional actions compared to the other artefacts in the arrangement, ostensive aspects point toward no additional value, and hence it won't be incorporated in practices.

Besides a focus on the artefacts that aim to model the routine, other artefacts are important intermediaries for checklist routine performances. Despite the team checklist strives for connections among team members, other artefacts in the theatre such as the surgical table or the surgical drape can function as physical boundaries to cross social boundaries, and thus establish connections. In studying routines, a comprehensive framework that moves beyond rule-embedded artefacts that directly intend to create a routine is feasible.

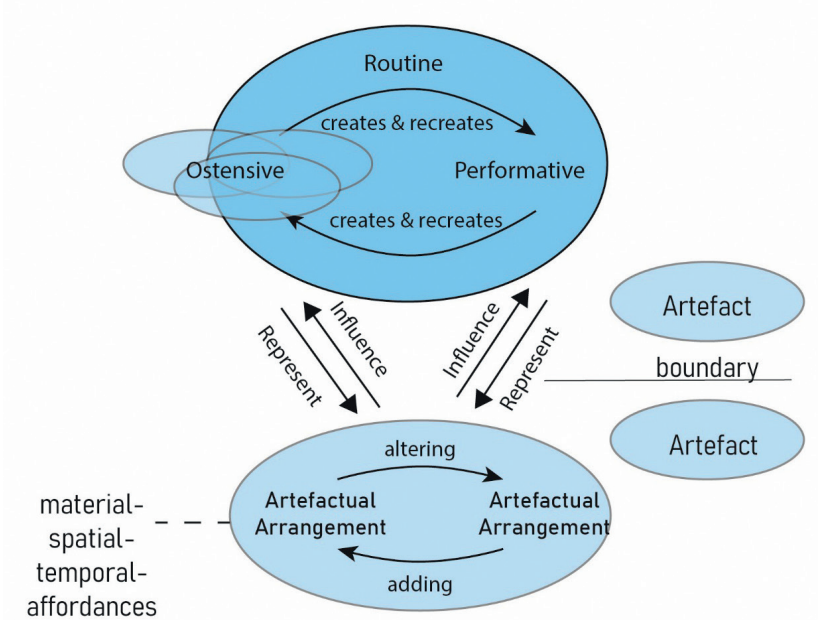


Figure 19: A model for routines and artefacts in professional contexts

7.8 To conclude

This chapter focused on the question: *"How do artefacts affect how standards work in medical teams?"*

Hospitals are urged by for instance inspectorates and accreditation boards, to implement standards that enhance quality and safety of service delivery. They do so by introducing a multitude of artefacts that represent these standards. The findings of this chapter illustrate that these artefacts form a dynamic arrangement, in which artefacts are constantly changed. The process in which artefacts are added and changed to improve compliance is political. Only a few – and usually not those who work with the checklist at the frontline - have the power to amend artefacts that prescribe how work should be conducted and where responsibilities lie.

Although artefacts are introduced as representation of the envisioned routine, the various dynamic artefacts with their various possibilities and limitations for use, make a collective understanding of what the checklist is all the more complicated. Rule-embedded artefacts influence or strengthen ideas in different directions, for instance 'bureaucratic software tools' that enhance notions of the checklist as an organisational burden, or a paper checklist that enhances the idea of a *check*list rather than a tool for memory support. Besides, other artefacts mediate routines. The setting and furniture in the operating theatre act as boundaries to actively incorporate the checklist as a team effort.

Hence, routine dynamics and interactions cannot be fully understood without a focus on the material that actively shapes behaviour in complex settings. Building on the previous chapters, the findings of this chapter urge for a shift from the instrumental implementation of artefacts to a consideration of the social and situated performances of routines, to ultimately be able to introduce artefacts that better correspond with professional practice and actually support professionals in increasing patient safety. Nonetheless, creating workable artefact proves difficult. Working with artefacts should be a matter or 'trial and error' to see what works best in specific contexts, in specific times.

Intermezzo

Intermezzo: 'The reflexive professional'

Together with my first and second supervisor, I am in the office of the first supervisor to discuss an intermediate version of this dissertation. I am curious what they will think. A lot has changed compared to an earlier version, and on my own initiative I wrote personal intermezzos with additional reflections, as I felt they would add to the research and my personal development as a researcher. "What do you think about the intermezzos?" I finally ask myself as both didn't start about them (that can mean a couple of things…) After a few seconds of silence, one of them replies; "Well actually, for me you don't have to do it" [original: "Voor mij hoeft het niet zo.."] To which the other supervisor replies: "Really? I loved it. They need some revision and extension, but they are interesting and perfectly fit".

Writing a dissertation is all about showing that you are capable of designing, conducting and writing up scientific research. You have to design and manage your own project, and also 'manage' your supervisors every now and then. With this dissertation, I did strive to live up to academic standards, but in doing so also take the liberty to be creative and original, and deliver a dissertation that completely feels like 'mine.'

I did experience this PhD research a personal learning experience, it therefore not only has theoretical or methodological implications, but also implications for the researcher that I have become and want to be. At first, I did insert these personal implications in the concluding chapter, but this apparently was too far from 'mainstream' academic work, so the negotiated outcome is that they ended up here.

Ethnographic research is a labour-intensive activity. Dixon-Woods (2010) argued that it is a type of research only some personality types are suited for. What *kind* of types remains unclear. I would not describe myself as a specific 'type' of personality, but let me reflect on some of the skills an ethnographic researcher should have, informed by my own experience.

First of all, as an ethnographer you should have high levels of flexibility. You should be able to adapt to all kinds of circumstances, different personalities, and changes in the course of events. You should be able to get close to your research participants, show empathy and understanding, but remain distanced at the same time. Especially when the participants have strong ideas ("registration

is a bad thing!") as a researcher you should avoid being mistaken as the friend or spokesperson of those observed. Secondly, you need to have perseverance. It takes time to gain access, you have to put time and energy in it. Once you're in the field, it takes time to collect data, to see patterns, start make sense of them, and even turn them into comprehensible texts. If you're in for a 'quick win' go seek salvation in something else.

This PhD project might have been a 'once in a lifetime opportunity'. It will not be easy to conduct time consuming research like this again. In a time in which you, especially as a young scholar, really need to think about your 'research profile' (which predominantly means 'generate impactful publications', and preferably a lot) doing ethnographic work may strategically be not your best option. As said, it takes time to access the field, get to know the field, gather your data, think about it, think about it some more, to finally be able to write comprehensive texts about it. To me personally, it's still one of the most inspiring ways to conduct research, as it will allow you closest to what you are investigating. I would therefore encourage other young scholars to feed their curiosity and start conducting ethnographic research!

The personal implications of this study are not confined to future (types of) research. After getting to know the medical domain better and better, I do see valuable future collaborations, for example in the development of training modules for young physicians. In a minor course on policy I have been teaching throughout the years, every now and then medical students signed up because they were interested in how policy 'works'. I do see possibilities here to develop courses on policy and organising more refined to the medical context. There is a lot we can learn from the medical world, and there is a lot they can learn from us.

I think ethnographic research (like all other types of research, but maybe even more) requires continues reflection-in-action. As a researcher, you are a professional yourself. In order to act in complex demanding environments, be responsive on the spot, and learn, you have to constantly reflect on your performances. These intermezzos have helped me to do so.

A few months later, I am back in the office with my supervisors. Today we will discuss yet another version of the manuscript. I rewrote some of the intermezzos and added new ones. This time, before we discussed anything else and before I even have to ask for it, the supervisor who was a bit hesitant says: "You got me on board, I loved reading them!" I am glad they are in.

Chapter 8

Conclusion

8.1 Introduction

This theoretical and empirical study focused on an important topic that has drawn worldwide attention: patient safety. Every now and then, journalists report so called 'miracle operations': The separation of conjoined twins, an operation on a premature baby's spine to prevent disability, or an open-heart surgery on a young boy. These reports generate astonishment over the success of such highly complex, innovative team efforts. At the same time however, we read about 'preventable' surgical mistakes regularly: mixed up patient identities, wrong-side surgery, missing out on known allergies, and so on. A field that is capable of performing innovative, complex, and life-saving surgeries damages its own reputation by making preventable mistakes.

The past few years, there have been many attempts to do something about failures in care delivery. The American Institute of Medicine (IOM) report *To Err is human* (1999) instigated a worldwide debate on patient safety and quality of service delivery. In the aftermath of its publication, standardization of practices was seen as one of the solutions. Standards endorse making elements of healthcare processes or outcomes transparent, uniform, comparable, and based on scientific evidence. Furthermore, because of increased complexity of cases, the demand for far-reaching specialization and collaboration go hand in hand. Therefore, some standards explicitly standardize team processes. Examples of standards in medicine are medication protocols, practice guidelines and team checklists. Both scholars from various disciplines and practitioners from the medical field have concentrated on the question how to effectively implement such standards in practice.

Implementing standards proves a daunting task. Scholars from different fields aim to produce knowledge on this matter. In the medical field, studies tend to focus on the *outcome* of standards: Do standards reduce mistakes? Do in-hospital mortality rates drop? Other perspectives focus on effective implementation: How can standards effectively be implemented so that professionals *comply?* 'Implementation gaps' are regularly reported though. Scholars aim to identify factors that explain why standards are not (fully) incorporated into practice, distinguishing between for example individual factors and system level factors.

In Sociology of Professionalism literature, the academic debate mostly concentrates around the 'reconfiguration of professionalism'. Some scholars argue that professionals have become victims of all kinds of societal, political

and technological forces, hence, through standardization they become 'de-professionalised'. Others have typified professionals as strategic operators that actively aim to maintain or restore their position, for example by resisting or manipulating standards. A more recent theorization does not see an organisational logic (with values like objectivity and transparency) and a professional logic (with values like autonomy and collegiality) as inherently opposed to each other. Rather, hybrid professionalism theorizes blending logics– even to the extent that this feels 'natural' for professionals. How hybridization unfolds in practice needs further empirical investigation.

With this study, I respond to recent calls to study on a micro-level how professionals within organisational environments actually give shape to new standards in the everyday course of their work (e.g. Denis, Ferlie and Van Getsel, 2015; Wallenburg et al. 2016; Waring & Bishop 2013). The purpose of this thesis is to contribute to new knowledge of these issues through an ethnographic study of a specific standard, a surgical safety team checklist, in two hospitals. The rationale behind this thesis was that we know little about the everyday work with standards. I decided to take a different perspective than outcomes or implementation, by asking the question how standards actually 'work' in practice. Put differently, in this dissertation I studied how patient safety is 'done', focusing on a safety checklist for surgical teams.

Routine Theory was used to develop a research perspective. Based on the conceptual model by Feldman and Pentland (2003;2005;2016) I argue that standards are about making connections at different levels. First of all, a surgical team checklist aims to make connections between professionals in the performance of the checklist. Secondly, the performance of a checklist has to connect to existing practices in order to 'fit' in the organisation of professional work, and thirdly, representations of the checklist like posters or whiteboards, I call them artefacts, have to connect with practices to stimulate mindful practices.

The central question to this dissertation is: *"How and why do professional standards work in performance-oriented medical practices?"* With this dissertation I contribute to an improved understanding of how standards work in surgical care, and also contribute to the development of theories on the reconfiguration of professionalism and organisational routines. Although this dissertation departs from a different perspective than 'implementation', insights into how standards work might be inspirational for theories on how to, or not to, 'implement' standards in organisations.

In the final chapter of this dissertation, I provide overarching conclusions and implications. First, I argue how we can interpret the findings of this ethnographic study in surgical care. After that, I will answer the research questions that were central to this dissertation. The conclusions from the chapters are used to provide some general reflections. In this chapter I ultimately aim to answer the final question of this dissertation: "How can connective routines be established?" Based on the research findings, I describe ways in which connective routines can be established, both in terms of professional practice and in terms of development of theories. Besides these practical and theoretical implications, I will discuss the methodological implications of this study. At the end of this chapter I will look back and forward by discussing some limitations of this research and some prospects for future research.

8.2 Why care about surgical care?

In this dissertation I ethnographically studied how a safety team checklist works at two research sites, which I fictively called Plainsboro Teaching Hospital and St. Sebastian's Hospital. Ethnographic research is particularly suitable to capture locally embedded knowledge and unravel situated routines. Indeed, by shadowing various professionals working in surgical care, I familiarized myself with their work routines. I got to know how they work with standards, but also how they perform operations, handover patients, conduct team meetings, and chat over a cup of coffee (or two, or three). As I underline the situatedness of routines - and thus the situatedness of the findings, the issue of generalizability of substantive findings from this in-dept study to wider settings becomes a pertinent one. For example, what can other hospitals learn from this situated study? Or even, what can other professional fields working with standards learn from this study?

First of all, there are certainly problems that are common to all surgical departments, because of the population that they treat and the tasks they have to perform. This inevitably in a wider societal context in which there is an emphasis on performance, with transparency of actions and accreditation as important matters. Different hospitals face similar tasks and challenges. As I conducted research in two different hospitals, I have been able to further reflect on commonalities and differences. The findings show commonalities for example in how professionals talk about and perform safety checklists, but also interesting differences for example in how artefacts (are used to) influence behaviour, and how team compositions matter. Interestingly, the findings of this

study suggest that differences not necessarily occur between hospitals, but rather between surgical teams. Practices by a thoracic surgery team in Plainsboro were more similar to practices by a surgical team in St. Sebastian's, than to a general surgery team in Plainsboro. The frequency of team interactions appeared as a vital matter, both in terms of creating shared understandings and sustaining a pleasant work atmosphere. At the same time, the artefactual arrangements led to differences at the hospital level, as the hospitals adopted different artefactual arrangements and different strategies to improve those. Hence, the situated findings cannot be 'transferred' to other contexts one-to-one, but a discussion of how things are done 'here' provides professionals an opportunity to reflect how they are doing things 'there'. In the section on practical implications in this chapter I will go further into this matter of reflexivity.

Secondly and taking it a step further, I introduced surgical care as an exemplary case in the first chapter of this dissertation. This ethnographic study allows me to make inferential generalizations (Mortelmans, 2007) that go beyond the field of surgical care and capture 'standardization in professional services.' In public professional service delivery at large, there is an urgent call for quality, efficiency and collaboration, due to external pressures such as cost constraints, client demands and risks. With the introduction of a business-like logic in public domains, the standardization of practices to make them more objective, rational, and uniform became an influential mechanism to reform professional service delivery (Timmermans & Almeling, 2009; Timmermans & Berg, 2003; Zuiderent-Jerak, 2007). Given that medicine is widely recognized as a profession with distinctive characteristics and composed of different segments each having their own taken-for-granted ways of acting and talking, the changes that have occurred in this domain are likely to be indicative of what is also happening in professional organisations in other fields like law and education. I took standardization in surgical care as a case, since this case was likely to "yield the most information and have the greatest impact on the development of knowledge" (Patton, 2001, p. 236).

Thirdly, I would argue that the constructs I developed in this dissertation, such as the strategy to 'work on it' (chapter 5), are not merely strategies that are adopted by professionals in surgical care, but also by other professionals that face conflicting demands in the executing of their everyday work routines. Also the notion of an 'artefactual arrangement' for instance, could very well apply to other professional domains like law or education. I therefore can make

theoretical generalizations that have explanatory power for other settings as well (Mortelmans, 2007).

In short, this dissertation might be of interest to those who are particular interested in surgical care and patient safety, but also to those who have a wider interest in standardization of professional work.

8.3 Answering the sub research questions

The research questions of this dissertation were answered by means of ethnographic research. At the start of my research, I conducted explorative conversations with key actors. These extensive conversations allowed me to gain a broad overview of the work in surgical care, and the issues and challenges that were identified by professionals themselves. The research questions are formulated based on a review of the literature, and in interaction with the research field. I then 'zoomed in' on working with a team checklist by shadowing various medical specialists in two hospitals.

Shadowing allowed me to develop a comprehensive picture of standards 'in action'. During shadowing, I focused on ostensive aspects (how professionals talk about standards and how they refer to it), their performances (what they do, at specific moments, in specific places), and artefacts (the representation of the checklist, the design of the operating theatre and so on). The empirical chapters (5,6, and 7) are based on the same ethnographic data, but they all have a different analytical focus (figure 1).

In this section I will first answer the research questions one by one, to thereafter answer the main question. The first three questions have a theoretical focus. Question four has an analytical focus. The fifth question is about the research design. Questions six, seven, and eight are empirical questions, and the final question is about the implications of this study.

"What are professionals and what is professional work, and what transitions can be identified? (chapter 2)

The first theoretical question concentrated on the specific nature of professional work. From the literature, I concluded that professional occupations can be distinguished from other occupations on three dimensions: a cognitive

dimension, an ethical dimension and a regulatory dimension. In the well-known traditional model of professionalism, professionals possess specialized knowledge acquired through enduring training, they are devoted to serving the public good according to ethical norms and values, and they have control over the content of their work and the leeway to make decisions about individual cases. Because of their cognitive and ethical base, the professions are granted autonomy and trust.

However, because of various developments that occurred in- and outside of the professions, this traditional model has come under pressure. For instance, cases have become more complex, clients more critical and demanding, technologies transform work practices, and incidents raised public attention. Trust is in the professions is therefore no longer guaranteed, and performance constantly has to be proved and accounted for. In addition, increasing complexity and multi-problem cases direct professionals towards and collaboration beyond their professional borders.

These developments have led to new conceptualizations of professionalism, in which scholars point toward different directions. Some have identified processes of 'de-professionalisation', in which professionals have become victims of managerial pressures and their professional characteristics become eroded. A less pessimistic direction is that of a 'new professionalism' in which professionals strategically operate to maintain or restore their position as professionals. A third and more recent conceptualization points toward 'hybrid' or 'organised' professionalism. From this perspective, professions and organisations are not inherently opposed to each other. Rather, values like objectivity, efficiency, autonomy, and empathy become interwoven. Hence, organising becomes part of professionalism.

"What are standards and medical checklists, and what is their (intentional) professional usage?" (chapter 2)

This theoretical question was posed to demarcate the core concepts 'standard' and 'checklist'. A review of the literature indicated a clear tendency towards standardization in professional work settings, championed by the medical domain. The underlying reasons for standardization are multiple, though the most reported impetus for standardization is 'quality improvement', which is then referred to as making practices more efficient, reducing variability in service delivery, and dealing with increasing complexity and uncertainty (Timmermans

and Berg 2003; Timmermans and Epstein, 2010). The most generic definition of standardization is "a process of constructing uniformities across time and space, through the generation of agreed upon rules" (Bowker and Starr, 1999). A standard can be considered "the outcome of standardization."

Different types of standards can be distinguished from the literature. There are for example design standards and terminological standards. This dissertation specifically focuses on the category of procedural standards; standards that define work processes. Within this category however, there is a whole 'jungle' of standards in itself, since procedural standards for example differ in how 'stringent' they define work processes. In this dissertation I explicitly focused on checklists. These standards are particularly interesting since they consist of "sharply defined action items" (Davidoff 2010, p.206) that prescribe how actions should be performed.

Even further specified, the Surgical Safety Checklist that is central to this dissertation, is an example of a 'static sequential' checklist that requires verification and conformation (Romig et al., 2016; Winters et al., 2009). Such checklists are generally introduced in team-based settings where the various tasks are done by various team members. The intentional use of a static sequential checklist, is that a designated actor reads out the items on the checklist, and each responsible party verifies completion of this specific task. For the Surgical Safety Checklist this would for example imply that the surgeon verifies the patient's identity, the procedure and surgical site and asks about availability of equipment. The nurse assisting the operation would confirm the information. Subsequently, the surgeon will ask about the patient's medical condition and the availability of blood to which the anaesthesiologist would respond. Multiple interactions are required to complete the checklist. Various other objectives besides 'reducing medical mistakes' like 'improving collaboration' and 'improving communication' have therefore been identified (e.g. Winters et al., 2009).

"How can we conceptualize linkages between professionals and standards?" (chapter 2)

The final theoretical question covers the relation between the core concepts. There is scholarly agreement *that* checklists (can) transform professional work. However, there is a sharp contrast in how different disciplines view checklists as 'entity', let alone in how they consequently reason how such standards transform professional practice. From the different bodies of literature I identified four

different perspectives on checklists as entity; as (1) technical instrument, as (2) legitimizing tool, (3) as performance facilitator and/or indicator, and (4) as organised response, and their (hypothesized) effects on professional work and professionalism.

In the field of healthcare and implementation science, scholars mostly approach checklists as 'technical instrument'. Standards like checklists are seen as simple and cheap instruments that are easily transferrable to various settings. Most focus is on the outcomes of standards, that are assumed to automatically follow after implementation.

Scholars that study professional occupations have mostly adopted quite the opposite perspective. In Sociology of Professions literature, there are predominantly accounts of procedural standards as complex social interventions, rather than simple technical interventions. Different theories on how professional work evolves through standardization developed from this perspective.

On the one hand, standards are seen as 'legitimizing tool'. Evidence based standards are argued to increase the status and self-esteem of the professions. From this perspective, checklists are seen as tool to gain legitimacy and further professionalise. On the other hand, these same standards are by sociologists identified as performance facilitator and/or indicator. Despite checklists might be helpful in dealing with complexity, they open the doors to outside control. The creation of checklists creates a window of opportunity to assess professional practice, as outsiders can monitor adherence to checklists and compare performance.

Lastly, checklists can be considered an organised response to new service realities. In this view, checklists are 'inescapable' as professionals need to take organising patient safety seriously. Safety is no longer about taking care of individual patients, but about responding to increasing complexity and information, risks, and demanding clients and society at large. As argued earlier, theorizations of 'hybrid professionalism' and 'organised professionalism' move beyond the idea that formal standards focusing on efficiency and accountability are unnatural for professionalism. From this perspective, safety checklists are inherent part of professional work. Classic professional values like personal case treatment and solidarity are maintained, while new demands like effectiveness and efficiency are simultaneously taken into consideration (Noordegraaf, 2011,

2015; Postma, Oldenhof & Putters, 2014). From this perspective, checklists can be considered the embodiment of mingled logics.

This dissertation adds to current debates on the reconfiguration of professionalism, by offering an empirical analysis of how standards (reflecting an organisational logic) 'work' in a highly professional work domain. In order to do so, I needed an analytical toolkit.

"What are organisational routines and how can they be used to study (professional) work and its standardization? (chapter 3)

I have used theories on organisational routines to develop a research perspective to study standardization in professional work as a hybridization of logics. Over several decades, a considerable body of research has been built up around the idea that routines are a crucial part of how organisations accomplish their tasks (March and Simon 1958; Cyert and March 1963; Nelson and Winter 1982; Cohen et al. 1996). Routines are a way to structure work in organisations, by enabling and constraining interactions among organisational members. Routines contribute to stability across time in organisational work, help to socialize new organisational members, and reduce conflict about how work gets done and who has responsibility for what (Cohen & Bacdayan, 1996; Feldman, 2000; Feldman & Pentland, 2003). Organisational routines thus are a key component of everyday life in organisations.

A contemporary perspective on organisational routines defines them as "recognizable, repetitive patterns of interdependent actions carried out by multiple actors". The key assumption is that change in organisations does, or does not, happen in and through daily work practice. On the one hand, routines consist of abstract, generalized ideas of the routine, used to refer to a certain activity or justify what people do. These are the ostensive aspects. On the other hand, routines consist of "actual performances by specific people, at specific times, in specific places" (Feldman and Pentland 2003, p.94). These are the performative aspects. In other words, the ostensive dimension is the idea, the performative dimension is the behaviour. Thirdly, artefacts are identified as the material aspects that enable or constrain elements of routines. Artefacts can take on various different forms, such as written text, furniture or the physical setting. Many artefacts are representations of a certain rule to steer a routine, like a checklist.

Organisational routines thus can be conceptualized as practices with internal dynamics. A routine perspective is a convenient lens to study how standards work, since this perspective allows for a micro-level view on how routines evolve and change through daily interactions. A routine perspective does justice to both structure and agency, and explicitly conceptualizes work as a collaborative matter.

The developed routine perspective explicitly focuses on internal routine dynamics, routine interactions, and the role artefacts play. The perspective I developed is further informed by literature from for example the Sociology of Professions to take account of the specific nature of professional work, and science and technology studies to take into account the specific nature of standards (resulting in figure 2).

"How can professional standards in performance-oriented medical practice be studied?" (chapter 4)

An ethnographic approach best fits the research question central to this dissertation. The research process is characterised by the activities headwork, fieldwork and textwork, that were performed in an iterative manner. Intensive fieldwork in which I conducted observations with a shadowing technique, held various formal and informal conversations, and collected different artefacts, allowed me to *see* how standards work in practice.

"How do standards work out in medical teams?" (chapter 5)

In the first empirical chapter of this dissertation, my analytical focus was on the internal dynamics of the checklist routine and drew four main conclusions.

A first intriguing finding was that "the checklist" does not exist. The envisioned checklist routine is often portrayed as pretty straightforward, but the findings show that "the routine in principle" does not exist. Understandings of what the checklist is and should be are not only multiple, they are also contested. Some ostensive aspects are shared, for example when it comes to its importance regarding accreditation. The idea of the checklist as a tool to reduce mistakes on the contrary, is contested; whether the checklist is actually 'evidence based' and reduces mistakes is highly debated. These different ostensive aspects present both within and across professional groups.

Secondly and building on this, I found role taking, hierarchy, and connections as important mechanisms that mediate routine dynamics. These are helpful in explaining how some ostensive aspects translate into performances, while others do not, and how performances translate into the ostensive dimension. Firstly, role taking matters. Role taking is important for aligning tasks and structuring interactions in the performance of the checklist, but professionals often stick to their own role rather than anticipating on others and aligning their practices with other participants. Professional judgment and notions of "my patient" hinder consultation of other professionals in the team. Performances then are individual rather than connected. Secondly, hierarchical positions matter. The hierarchical position of individuals in the team enables or constrains opportunities to amend abstract patterns. An anaesthesiologist is more able to amend the abstract pattern of the checklist routine by starting new performances, while for scrub nurses, who have a lower hierarchical position, it is more difficult to start performances that fit their abstract understanding. Different hierarchical positions imply differences in professional agency. Thirdly, connections matter. This chapter has shown that connections do not so much result from standards but are a prerequisite for using standards. They can be better considered as 'effortful accomplishments' (also Feldman et al. 2016), rather than 'automatic outcomes' of artefacts. There must be some 'connective potential' when standards for making connections are used. Surgical teams who frequently interact, such as specialized surgical teams in Plainsboro and general surgery teams in St. Sebastian's, rely on firmer connections than teams who have less interactions, such as general surgery teams in Plainsboro. Interestingly, these shared understandings ('knowing' what to do and how to go about it) might also prelude the ongoing need for coordinated action. In these teams, informally checking safety items is more the routine than systematic use of the checklist. In general surgery teams where team compositions fluctuate, teams are more inclined to use the checklist. Adding to this, high-ranked professionals play important 'frontrunner' roles in order to exploit connective potential. When they set the tight tone and stimulate others to collaborate, checklists are used differently, both in terms of ideas and actions. Professionals themselves rather than checklists establish collaboration, but checklists are important devices for actually using such connective potential.

Thirdly, hybridity is not yet 'natural'. The observations did show how professionals are working with broader 'organisational themes' like patient safety, also directly linked to accreditation. Nonetheless, in daily practice, they tend to focus on individual case treatment, emphasized with notions of "my patient", and herewith neglect the overarching organisation of surgical care.

Whereas conceptualizations of hybrid professionalism coin 'organising' a central ingredient of professional work, this study found nuance empirical evidence.

Fourthly, creating and understanding routines is beyond the scope of internal routine dynamics. The findings of this chapter are helpful for understanding routine dynamics, but also point towards factors that are beyond internal dynamics. For instance, artefacts (i.e. document 'soup protocol') that 'wander around' the surgical department visualize and strengthen ideas about organisational control, and prioritization of routines hint on the consequences of interacting routines. Hence, a focus on routine dynamics offers valuable, but partial explanations of how standards work.

"How does a (new) checklist routines relate to existing routines?" (chapter 6)

In the second empirical chapter of this dissertation, my analytical focus was on the interactions between the (new formed) checklist routine and existing professional routines. I drew three main conclusions.

Firstly, practicalities can cause segmentation instead of collaboration. I found the interdependence with conflicting routines to be an explanation for variability in checklist routine performance. The routine connections as intended by the checklist are often not that straightforward and even lead to incompatible demands for professionals, and ultimately, segmentation. The findings show how irritations caused by practical matters, for instance because people simply have to wait for one another, ultimately reinforce more fundamental notions like 'us' and 'them'.

Secondly, implementation and (measuring) compliance are contextualized activities. It proves difficult to organise implementation processes in highly professional contexts that are characterised by multiple interacting routines, and participants that enter and leave the settings at different points in time. Even though meetings were organised to disseminate information about the checklist – that was considered 'basic' and straightforward, practicalities hindered attendance. Hence, creating shared understandings about the checklist was also practically difficult. This might have caused a situation in which so many different understandings (chapter 5) could emerge already from the beginning. After implementation, there is firm emphasis on measuring 'compliance'. The findings of this study underline that strict compliance is not a feasible outlook

in professional contexts with multiple interacting routines. Not attending the checklist might very well be the outcome of mindful consideration and coping with multiple demands.

Thirdly, professionals work on it, around it, and without it. Working with multiple routines requires prioritization, constructing emergencies and negotiating responsibilities. Rather than standardized responses, incompatible demands require responsiveness. I derived three overarching responses professionals have developed to deal with incompatible demands: work on it, work around it, and work without it.

Work on it reflects the strategy to try to manage two conflicting processes anyway, for instance when one routine participant is required to participate in two different routines simultaneously. In such situations, professionals do *not* prioritize one routine over the other, and to their best to be at two places at the same time. The result however, is often considered disappointing as both demands aren't met. Where in other domains 'work on it' might mean work overtime to get things done, in the surgery department the conflict often arises because actions have to be performed at the exact same time.

Work around it reflects the strategy to work around formal procedures and adjust to situated routine demands. This strategy of workarounds is often reported in the coping literature. In this study workarounds involved completing tasks at different moments than formally demanded in the artefact, for example by registering tasks before they have been executed. Work around might also mean outsourcing tasks to other routine participants that formally do not have the responsibility to execute those.

Work without it reflects the strategy to explicitly making a choice for one routine over the other, thus prioritizing tasks to deal with incompatibility. Work without it might mean working without the checklist, but it might also mean working with a checklist but thereby casting aside other tasks.

These responses often entail 'on the spot' decisions; there are no formal routines for prioritization and professionals decide on the spot whether they are going to work on it, around it, or without it. Professionals have to negotiate who is responsible for the various tasks and 'Emergency construction' becomes a powerful game for prioritization.

Building on the findings of chapter 5 the findings of chapter 6 show how the internal routine dynamics can be altered through the interaction of routines. For example, because of a conflict between existing routines and the checklist as an envisioned routine, ostensive aspects of the routine might change from a 'helpful tool' into 'a distraction' and thereby affect performances. Professionals might see the checklist as a burden, not so much because of the checklist itself, but because it comes on top of other procedures. How professionals value the checklist routine is thus not so much about the checklist itself, but about its (mis) fit with existing routines.

"How do artefacts affect how standards work in medical teams?" (chapter 7)

In the third and final empirical chapter of this dissertation, my analytical focus was on artefacts as models for routines. In this chapter, I drew four main conclusions.

Firstly, "the artefact" does not exist. The starting point of this chapter were the representations of the checklist, and how these affect routine dynamics. At the two research sites, different artefacts were employed to model the routine. Building on the argument that 'the checklist' (as a guiding principle) does not exist; so doesn't 'the artefact' representing the checklist. I introduced the concept of an 'artefactual arrangement' in which different artefacts that model the same routine. Drawing from Gibson's (1977;1979) notion of affordances, I illustrated how different artefacts afford different actions, which makes them inherently relational. Perceived and actual possibilities for action not always align; paper is often portrayed as 'old fashioned' but affords a firm connection between the artefact and the routine, whereas 'modern' software systems allows for bureaucratic control, and not storage of clinical data.

Secondly, creating workable artefacts in performance-oriented contexts is political. Rather than pragmatic, static entities, artefacts should be considered dynamic and political entities. Those who have the power the amend artefactual arrangements, for instance by introducing additional artefacts or by embedding responsibilities in software systems to make them more persistent, aim to force control over professional work.

Thirdly, artefacts (are used to) create and overcome boundaries. Professionals use artefacts to (re)negotiate roles and responsibilities, for example by refusing

artefacts and accompanying tasks, or the other way around, by incorporating artefacts to visualize the professional role in the team. For instance, while surgeons perform boundary work by refusing an artefact that is not 'part of their job', scrub nurses take on the very same artefact to visualize and strengthen their position in the team. Further, other artefacts like furniture or equipment can create boundaries between routine participants. For instance, when sterile tables literally put professionals apart, connecting in the checklist performance becomes difficult.

Fourthly, technology is a tool, not a panacea. Technological artefacts are increasingly adopted to create new routines. Participants even referred to other artefacts (i.e. a paper checklist) as 'outdated' and 'unprofessional'. The data show however, that technological artefacts at the most interact with other artefacts, and do not determine patterns of action alone. Moreover, even though actants called the paper checklist 'outdated' and 'unprofessional', it mostly did stimulate mindful patterns of action, with focused attention by the team. On the contrary, technological artefacts offered less flexibility and enhanced feelings of control. The affordances of the various artefacts in the arrangement should therefore be taken into consideration.

"How can connective routines be established?"

The final sub question of this dissertation is about the implications of this study. How do the findings matter, and what did we learn about connective routines? In the section on implications I will provide answers to this question, differentiating between practical, theoretical, and methodological implications. A discussion of the personal implications of this study can be found in the final intermezzo 'the reflexive professional.'

8.4 Answering the central research question

The previous section presented the conclusions of the various chapters one by one. This section takes the conclusions from these chapters together to provide an overarching answer the research question:

"How and why do professional standards work in performance-oriented medical practices?"

Professional standards work if they are actively made to work. Standards work if connections already exist and are brought into existence, both in teams, in workflows and by way of workable artefacts. Professional standards are dynamic; both in terms of ideas, performances, and the artefacts that represent them. Standards require responsiveness, rather than 'standardized responses.' Working with standards requires on the spot decisions; they only work when professionals deal with multiple, sometimes conflicting demands, set priorities and tailor solutions.

In performance-oriented contexts, there is much emphasis on transparency and accountability. Standards work to account for actions, and gain legitimacy and accreditation. In practice however, this leads to two different activities within the same routine. Neat registration of the checklist serves the purpose of accountability, while flexible performances work to 'do patient safety' at the frontline. The two are usually disconnected: how standards 'work' differs from how they are 'recorded' to work.

Artefacts can support working with standards, but creating workable artefacts is a complex, political matter. If artefacts limit flexibility, they will reinforce feelings of 'controlled professionalism'. If artefacts afford (too) many and different options for use, their purpose remains unclear and they will be left untouched. Although artefacts are introduced in professional contexts to model a new (safety) routine, professionals also actively use them to restructure social connections, for instance by actively using or refusing them. Hence, they are powerful tools rather than technical instruments.

'Implementers' often hold the assumption that implementing standards leads to outcomes that are comparable, uniform, and transparent. From an instrumental perspective, standards such as checklist might be seen as (re)organising work and establishing new connections, as they become new routines for treating cases.

This thesis has shown that it is much more, and different than that. New professional standards not 'automatically work'. This means that 'hybridity', a natural interweaving of an organisational logic with a professional logic, is no automatic outcome of a standard to improve performance and reduce mistakes, but an ongoing context-dependent process. When talking about routines on a daily basis, people easily state "That work is routine". From this study I would conclude quite the opposite: "That routine is (hard) work."

8.5 A model for routines in performance-oriented professional contexts

The figure below integrates the key findings of this dissertation into a model for routines in professional contexts. This model is based on the initial routine model by Feldman and Pentland (2003, 2005). Based on the theoretical review and empirical findings of this dissertation I expanded and amended the initial model to make it fit for routines in highly professional contexts like medical care. Hence, the models of chapter 5,6, and 7 (figures 12, 14, and 19) are integrated into one model that visualizes their interrelatedness.

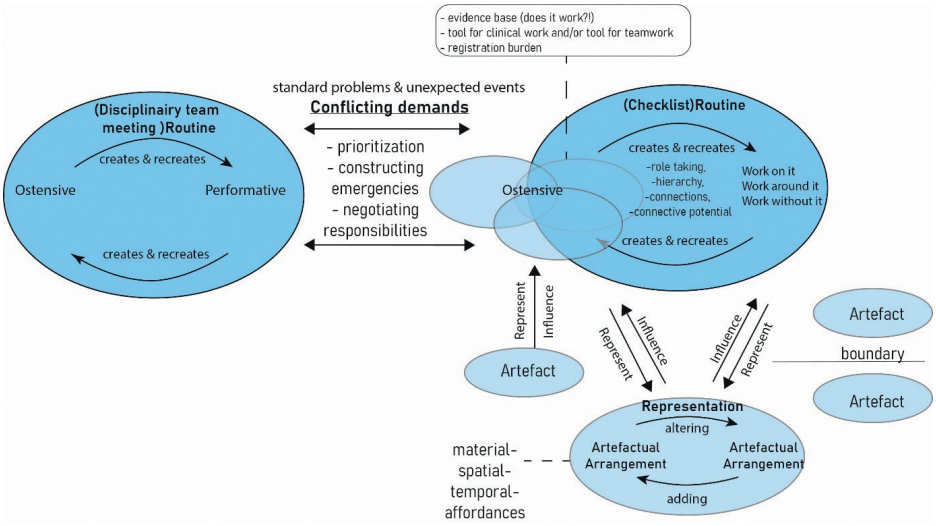


Figure 20: A model for routines in performance oriented professional contexts

The model shows the complex interrelation of routine dynamics, routine interactions, and artefacts.

The circle at the upper right visualizes the safety checklist routine, with its internal dynamics consisting of ideas about the checklist, and its actual performances. Ideas about what the checklist is and should be differ both within and across professional groups (i.e. a helpful tool, a burden, redundant et cetera). In the visual, different arrows point toward the ostensive dimension, influencing and enforcing these ideas.

Artefacts representing the organisational idea of the checklist are introduced to model the routine. The findings showed how these artefacts actually are

artefactual arrangements consisting of different artefacts that have different possibilities and limitations for use. Moreover, these artefactual arrangements are constantly changing because artefacts are added or altered. They therefore allow for various (contesting) understandings of what the checklist is, rather than one collective understanding.

Besides the artefactual representations of the checklist, other artefacts influence the checklist routine. Equipment, furniture, and the physical setting influence how artefacts can be used, for example by putting up a physical barrier. Besides, there are artefacts that represent some of the ostensive aspects at the frontline, for instance that the checklist is there to control professionals. By visualizing these ideas in a document, they become more easily shared and feed into the collective understanding.

Still, how all these various ideas translate into practice is not a matter of mere ideas, but actually mostly a matter of practical circumstances. The checklist routine is introduced as 'hub' that connects various professional routines, but these connections do not come easily. Various standard problems and unexpected events cause conflicts in performing routines, for example because professionals are expected to be at two places at the same time or have to wait for one another. In dealing with these complex demands, professionals have to prioritize, construct emergencies and negotiate responsibilities. The idea that the checklist is a burden (on the ostensive dimension) thus does not originate in fundamental resistance, but in practicalities.

The performances of the checklist routine are recognizable as a routine, though their individual occurrences varied. Some performances involved all team members, while others didn't. Some performances systematically covered all items, while others didn't. Some performances incorporated one or more artefacts, while others didn't.

These performances of the checklist are a product of the ostensive dimension (as guiding principle) and practical considerations of what is feasible and safe in complex performance-oriented environments. Three behavioural strategies reflect the varying performances: work on it, work around it, work without it. Some individuals are more powerful in translating their guiding principle into practices than others. Role taking, hierarchy, and connections are important explanatory mechanisms for performances.

High-ranked professionals have the agency to translate their ostensive into practice, while for lower-ranked professionals this is less the case. For example, if an anaesthesiologist thinks the checklist facilitates teamwork but he is also expected to place a local anaesthetic, he will try to work on it and perform both tasks anyway. Another example, if a surgeon thinks the checklist is not evidence based, and he also has to attend his disciplinary handover, he will prioritize the latter and work without the checklist. Even though the scrub nurse in the team *does* think the checklist is evidence based, he/she has less agency to translate this idea into (connected) performances.

If connections already exist, it becomes more easy to develop collective understandings and practices. High-ranked professionals play important frontrunner roles in using such connective potential.

In sum, a (checklist) routine is a dynamic process. Though recognizable as 'routine', as recurring pattern, the routine is anything but static. Different ostensive ideas steer different practices, which are strongly affected by real-life circumstances. Through a routine, social relations are re-negotiated and reinforced. Artefacts that are introduced to create a stable pattern, actually allow for diversity as they direct behaviour in different and changing ways.

8.6 Implications of this research

In this section, I will discuss the implications of this study. I will discuss the theoretical contributions to the different bodies of literature, and I elaborate on the added value of combining these bodies of literature, and what we can learn from it. Secondly, I will discuss the methodological implications. Thirdly, I will discuss the implications for professional practice. I will start off with recommendations for those who I shadowed; the professionals who work with checklists in their daily work. Next, I will discuss the implications of this study for hospital boards and those who consider themselves 'frontrunners' or 'implementers'. Thirdly, supervisory and accreditation boards are important stakeholders for professional practice. I will give some recommendations for 'measuring' safety practices. Fourthly, some suggestions for medical educators will be provided. And finally, I will again broaden the scope and discuss some implications for other professional services in for instance law or education. In doing so, I will answer the final sub question of this dissertation: *"How can connective routines be established?"*

8.6.1 Theoretical implications

For this study, I used different bodies of literature to construct an analytical perspective to study how standards work in medical practice. I will argue how this dissertation contributes to three bodies of literature (1) Sociology of Professions literature, (2) Routine Theory, and (3) Implementation Science, thereby focusing on what bodies of literature can add to one another. The theoretical strength of this dissertation mostly lies in the cross-fertilization of bodies of literature.

Sociology of Professions

The reconfiguration of professionalism

In the introduction of this dissertation, I mingled into the debate on the 'reconfiguration of professionalism'. There is no doubt various forces from both within and outside professional worlds, are changing professionalism. The direction of these changes remains disputed. Are professionals de-professionalised victims of standardization? Are they strategic operators trying to safeguard their autonomies and privileges? Are they hybrids naturally combining different logics in their work?

Based on the empirical work of this study, I would say all is somewhat true. In some instances, medical doctors indeed portrayed themselves as 'victim', especially when it comes to registration of the checklist. Interestingly, medical doctors particularly have been depicted as 'powerful' professionals who have successfully safeguarded their autonomies (Freidson, 2001; Abbott, 1998). Although in many respects they demonstrate creative ways to cope with complex and often conflicting demands, medical doctors do not show the *agency* to do something about what they call a 'registration burden'. They complain about it, detach it from their professional identity, but at the same time they are obedient in registration. It is "something they have to do", and therefore they do it. Overall, professionals in this study did not show the capabilities to twist the debate about performance measurement into a for them favourable direction.

This dissertation only finds limited evidence for the 'professional as strategic operator' thesis. Strategic work predominantly applies to boundary work safeguarding or strengthening a position in the team. Whereas scholars have been pointing to professionals as strategic operators manipulating standards to relief pressures from the 'outer world' (e.g. Levay & Waks, 2009), the chapter on routine interactions explicitly showed that first and foremost, decisions at the frontline are not 'strategic decisions' but rather ways to pragmatically cope with

conflicting routine demands. Despite good intentions, the nature of medical work and surgical care in particular, make standardization problematic. In this case, 'responsive operators' better applies than 'strategic operators'.

A more recent theorization pinpoints towards a 'hybridization' of professional work – and beyond, arguing that a mixture of organisational and professional logics increasingly becomes 'natural' in professional work (Machin, 2017; McGivern et al., 2015; Noordegraaf, 2007, 2015). The results of this study suggest that this theorization at most applies to a few self-proclaimed 'frontrunners', who demonstrate a particular interest in optimizing organisational processes and see organising "as part of their job" (Noordegraaf 2015, p.16). These 'hybrid professionals' are often checklist project leaders who specifically opted for this task, and mostly get limited recourses (time) to work on the job.

For the most however, 'hybrid professionalism' seems to reflect in ideas more than in practice. On an abstract level, professionals talk about organisational issues. They are aware of the bigger debates around patient safety, and the role of powerful stakeholders like inspectorates, accreditation boards and the news media. Doctors portray patient safety as an inherent part of their work, as "something they always have been doing", but from a professional logic, they define it in different ways than how patient safety is defined from an organisational logic; standardized and thus transparent and uniform. For professionals, 'doing patient safety' still is something that is first and foremost inspired by experience and professional judgment.

Despite their awareness of 'organising' and organisational issues, in daily practice, treating patients is at the core of most doctors' work. There are tight schedules and severe time pressures, and professionals try to do what's best for 'their patients'. In doing so, they seem to overlook the bigger picture every now and then (organisation, coordination, prioritization). Surgeons for instance, are motivated to finish their program, and lack overview of what's going on at the departmental level. They focus on finishing operations, but sometimes they go by on ordering blood or the next patient.

Lastly, hybridity is associated with reflexivity. Professionalism is not about 'solving competing demands' as such, but about the development of the reflexive capacity to deal with them (Noordegraaf, 2015). When facing compatible demands, the results of this study point towards three strategies to cope with conflicting demands. A prominent strategy was to 'work on it', to try to make the

impossible possible. While in some cases professionals demonstrated responsive towards competing demands by working around formal standards, they also often lacked a reflexive overview.

When talking about reflection, noteworthy is the development of the debriefing as a fourth part of the Surgical Safety Checklist. When I was conducting the fieldwork, 'project debriefing' was in development. The idea was to make debriefing a routine concluding each operation. "How did it go?" "What can we improve?" "Who wants to share feelings?" should become standard questions evaluating the procedures. Still, debriefing is not part of the observations as reflected in this study. In the very few instances one of the team members tried to initiate a debriefing by asking: "Who would like a debriefing?" none of the other team members responded positively. Hence, no debriefing was observed. Especially in dynamic domains and when schedules are tight, it proves difficult to organise reflection-in-action (Schön, 1983).

Coping

The results obtained in this study may have implications for understanding coping. In street level bureaucracy literature, the question how frontline workers (i.e. professionals) cope with work pressures is often the central question (Lipsky, 1980; Tummers et al., 2015; Tummers & Rocco, 2015; Zacka, 2017). Coping is about behaviour, about what actors do at the frontline when executing policies (Tummers et al., 20015; Tummers & Rocco, 2015). As I observed frontline doctors facing conflicting demands, I can contribute to the coping literature.

'Workarounds' are frequently observed in studies on coping. In this thesis, I found doctors bending rules to produce desirable outcomes. Besides, 'work without it' or 'rule-breaking' as defined in coping literatures surfaced, but on a smaller scale. A less known strategy that was repeated several times throughout this research, was the strategy I called 'work on it'. When confronted with conflicting demands, many professionals in this study did not decide to bend or break rules, but to unite the 'impossible'. They were trying their best to make things work on the spot anyways. As one can assume, wasn't the most fruitful approach. Although studies on coping depart from the assumption that professionals adopt creative and, if necessary, rule-breaking strategies to deal with pressures, this study underlines the possibility that professionals not only work around or work without procedures, but actively work on policies striving to make the impossible possible.

It is important to mention that in situations in which professionals decided to work around or without the checklist, they still considered that they thought was best and most safe for the patient. In their responses to incompatible demands, they relied on experience and professional judgment to work patient centred. This is in line with Tummers and Rocco (2015) who observed that professionals in rule-bending behaviour are moving towards clients rather than moving away from them.

Routine Theory

In this dissertation, I used Routine Theory to build an analytical framework to study how standards work. Although my main aim was to improve our understanding of how standards work in professional domains and I used routines as a lens to study these processes, the empirical findings allow me to further the literature on routines on three key aspects: (1) routine dynamics, (2) routine interactions and (3) the role of artefacts.

Routine dynamics

Ever since Martha Feldman and Brian Pentland conceptualized routines as systems with internal dynamics (2003), scholars focused on the question how routines generate both stability and change. Naturally, the model conceptualizing an ostensive and performative dimension is a simplistic representation of reality that serves the purpose of analysis. Nevertheless, a major shortcoming of this model is that is portrays the ostensive dimension as a single level of reality, which is "flat", thus dismissing the existence of different (contesting) versions of the abstract dimension. The idea of "the ostensive dimension" inherently reflects agreement, whereas the findings of this study have showed the ostensive dimension in a stratified fashion.

Indeed, the findings of this study are partly in line with the work by Dionysiou and Tsoukas (2001) who posited that a "single" ostensive dimension can be shared across actors. Ostensive aspects regarding 'accreditation' were firmly shared across actors and thus indeed show a single understanding. In later work, Pentland and Feldman (2005) acknowledged that the ostensive "may not be the same from person to person, from event to event or over time. Indeed, multiple and divergent understandings are probably more the norm than the exception" (Pentland & Feldman, 2005,p. 797). The findings of this study show that this is exactly the case, since there are different, and even contested understandings both within and across professional groups. This study contributes to the

theorization of the ostensive, by producing a finer-grained understanding of the mechanisms underlying this stratification.

A first explanation for stratification is hierarchy. Especially in highly professional domains such as surgical care, hierarchy is important for a clear division of tasks and responsibilities in executing professional work (Abbott, 1988; Diefenbach & Sillince, 2011; Freidson, 2001). Hierarchical relations in the surgery department are firmly grounded in a multitude of professional routines. During multidisciplinary handovers for instance, residents are asked to discuss the patients in a standardized way. Their supervisors pose critical questions as to educate novices, and interns quietly sit at the back row (see also Witman, 2008). The checklist routine envisions a team effort in which all participants speak up whenever needed, which is at odds with existing conversational routines. Hierarchical relations that are firmly embedded in existing routines make that different professionals have different agency, also when it comes to speaking up. Residents, interns and nurses have less agency to express their ideas, which means that some ostensive aspects at least become more 'prominent', which doesn't necessarily imply that they are also shared. Ironically, it shows that especially those individuals that are considered highest in hierarchy, medical specialists, play frontrunner roles in breaking through these patterns and making the checklist a team effort.

A second explanation can be found in the related notion of role taking (Mead, 1934). Especially in this professional setting, role taking demonstrated difficult. Role taking is important in forming joint action, as each individual has to align his or her action to the action of others by identifying the social activity in which they are about to engage and by learning what those others are doing, or what they intend to do (see also Blumer, 1969). The empirics of this study show that for medical specialist who were trained within professional segments, it might be difficult to place themselves into the roles of other team members to align tasks. In deciding whether or not to consult others, doctors work from their disciplinary perspective - their perspective on "their patient" - while role taking could be helpful in consulting others through a checklist routine.

A third mechanism explaining stratification on the ostensive dimension is 'connective potential' and the possibility to construct shared understandings. The findings from this study for instance show that the frequency of encounters matters. Interestingly, in this case of a *checking* routine, frequent encounters seemed to facilitate shared understandings. However, the firmer these shared

understandings, the more this unified abstract patterned moved away from 'checking' into 'informal coordination'. While shared understandings are often depicted as a requisite for routine performances, this study shows that in case of a checking routine, shared understanding might ultimately hamper the routine.

Routine interactions

From a dominant focus on routine dynamics, scholarly interest seems to shift to routine interactions. Recent studies have illustrated how interacting routines can be *complementary* (Danner-Schröder & Geiger, 2016; Spee et al., 2016b). Spee Jarzabkowski and Smets (2016) for instance observed how professionals capably acknowledged pressures from intersecting routines, oriented toward one ostensive pattern and then reoriented the performance of the routine. The empirics of this dissertation however mostly pointed towards *conflicting* routines and unravelled the strategies professionals developed to cope with conflicting routine demands. This study and herewith answers to D'Adderio's call to study "the micro-level dynamics by which goals confront one another" (D'Adderio, 2014, p. 1348).

In this study, conflicts not so much presented in the goals of routines, but rather in their demands regarding timing. The multiplicity of routine demands make prioritization difficult, especially since these routines often require action 'at the same time'. It shows that there are no fixed routines for prioritization. Professionals have to be responsive. This is also where 'games' for prioritization occur, for example concerning the social construction of emergency.

With intersecting routines also come intersecting responsibilities. The matter of responsibility became a more vital and complex issue throughout the chapters. In the literature, routines are claimed to reduce conflict about how work gets done and who has responsibility for what (Cohen & Bacdayan, 1996; Feldman, 2000; Feldman & Pentland, 2003). In practice, although routines indeed aim to do so, it is not always clear or shared where responsibilities lay.

First of all, throughout the chapters, the observation notes demonstrate that different individuals (take the lead in) perform(ing) the routine. Sometimes it is the anaesthesiologist, sometimes the surgeon, and sometimes the surgeon in training. It remained rather unclear who is responsible for the performance and/or registration of the checklist. An widely shared understanding was that the responsibility for the patient lays with the surgeon, often referred to as "my

patient", but how this formal responsibility translates to the checklist procedure remained rather vague.

Things started to become more complex when in chapter 6 the focus was on routine interactions. The strategy to work around procedures was used to deal with conflicting routine demands. Anaesthesiologists for example outsource the performance of the time-out to the in-room nurse anaesthetist as they can't be at two places at the same time. Still, formal responsibilities are with the medical specialist who is then not present, but supervising. In the performance of the time-out, individuals are involved that have no formal responsibility for the patient or operational procedures. When responsibilities are scattered throughout intersecting routines, what these responsibilities actually are and to who they belong, becomes more complicated.

Artefacts

In Routine Theory, the role of artefacts increasingly draws attention (e.g. Pentland and Feldman 2008; D'Adderio 2011; 2014), scholars seem to have overlooked their social identity as being a property of the organisational routine as a whole rather than its participants (Runde et al., 2008). By borrowing from Actor-Network Theory (e.g. Latour, 2005) and Gibson's (1987) notion of affordances, I have been able to identify artefacts as actively constructing the social world. The focus on affordances flows from the idea that artefacts are neither 'things' that determine human behaviour (deterministic view), nor are they things that are what their users make of them (social-constructivist view), but artefacts do set limits on what is possible to do with, around or via the artefact (Hutchby, 2001).

This perspective allowed me to identify artefacts as objects that (re-)negotiate roles and responsibilities. On the one hand, medical specialists tended to put aside new artefacts, herewith drawing a strong boundary of what does, and what does not belong to their professional activities. On the other hand, scrub nurses incorporated these very same artefacts to visualize their position in the team. The very same artefacts are thus used for different purposed by different actants.

A second observation is that while artefacts are most associated with stability (D'Adderio, 2011) they demonstrated rather fluid in this study. Artefacts were amended throughout the observations, for instance by more explicitly stating responsibilities. Artefacts thus not only change routines, they are dynamic and change as well. 'Optimizing' artefacts proved a daunting task, 'what works best for now' seems a matter of trial and error, but the findings suggest that a strategy

to employ more artefacts to model the routine not per se is the most desirable one.

Implementation Science

Finally, even though this dissertation did not focus on 'implementation', the findings of this study might be of interest for implementation scholars.

First and foremost; checklists are not simple tools. Therefore, developing an implementation strategy is not easy. Though it might be worthwhile to distil factors that influence implementation processes, scholars should not overlook that they are interrelated in many complex ways. Individual factors cannot be understood without a consideration of social relations for example.

Next, this study makes a plea for a more holistic research design when studying 'effective implementation' of standards. In the theoretical section on routine interactions (3.4.3) I discussed how many studies on the implementation of the Surgical Safety Checklist focused on 'compliance' and how these empirical studies were confined to either registration numbers, or isolated observation of the checklist performance. By considering the multiplicity of routines, I have been able to answer questions like: Why wasn't the anaesthesiologist there? Why did the surgeon already start with the briefing? Questions that would otherwise have remained unanswered. By observing just the performance of the checklist in the operating theatre, and herewith neglecting the interaction with other routines, these instances would have been reported as 'non-compliant'. A focus on interacting routines makes me conclude that the term 'non-compliance' has too much weight in talking about patient safety. Compliance is closely associated with strict rule-following behaviour, while the complex nature of surgical care requires professionals to be responsive to (conflicting) routine demands.

Thirdly, general lessons like: "A system that holds people accountable for improper behaviour or use of the initiative should be considered" (Russ et al., 2015, p.89)" will always remain general lessons. In looking for ways to make standards 'work', implementation should not be seen as a linear process, but a constant and dynamic process in which what works best is tight to specific contexts and will only gain meaning through contextualized actions.

8.6.2 Methodological implications

This dissertation makes a case for ethnographic sensibility in both Public Administration and healthcare/patient safety research. I started this dissertation

with the objective to gain a fine-grained understanding of how checklists work. An ethnographic study from a routine perspective allowed me to see individuals acting within teams, and to see their agency within organisational structures. Ethnography offered a rich, in-depth and holistic approach to studying the dynamics between (shared) assumptions, beliefs, values, objects, and everyday practices. In this sense, ethnography allowed me to *see* things other methods cannot reach (Walshe & Boaden, 2005). In comparison to other ways of working, such as doing surveys, structured interviews or even a combination of interviews and document gathering, the typical advantage of 'being there' is that as a researcher you are able to observe all different kinds of occasions and watch actors interact (Van Hulst, 2008).

The ethnographic observations involved more than merely describing actions. A routine perspective allowed me to recognize patterns of action, and subsequently analyse why patterns occur as they do, and what the underlying meanings for professionals are. By looking at (inter)actions, I have been able to elucidate how professional routines work to enhance or weaken the checklist routine. For instance, the experienced authority of the surgeon can make it difficult for other team members to speak out when checks are being missed, or the collegial norms in specialized teams foster informal checks instead of systematic checks. As this thesis is about routines; the everyday inter(actions) that constitute surgical work, I decided that a narrative style was most suitable to represent these everyday experiences, and let the reader take a look in the surgery department for his/herself.

An ethnographic approach fits the research problem. Still, the approach taken and the choices made have some backdrops and require critical reflection. I will discuss four main points, and argue how some of the limitations create venues for future research.

The professionals' perspective

First of all, this dissertation explicitly took the perspective of professionals (medical specialists) working in surgical care. By focusing on their perspective, it might come across as if other perspectives - patients, hospital boards, inspectorates – are less relevant. Although I do believe that other perspectives are relevant to consider, the choice to focus on (frontline) professionals, was purposefully and mindfully made. In taking the professional perspective, I answer to studies taking a managerial perspective asking question as how to make professionals *comply* with standards (e.g. Weske, 2019). Especially in

the medical domain, a focus on top-down implementation of standards proved dominant (Close et al., 2017; Mahmood et al., 2019; Sendlhofer et al., 2015) thereby going by on what is actually happening on the work floor. As fieldwork is very time consuming, I decided to focus on medical specialists as 'archetypical professionals' (Etzioni, 1969; Fox, 1992; Freidson, 1970) in particular, as the dynamics between professional and organisational logics are assumed to become most visible here. Through the observations however, I got to see their interactions with other (semi-)professionals like nurse anaesthetists and scrub nurses, and I was able to converse with them and include their perspective in the analysis as well. I purposively sampled professionals that were known as 'resistant', and professionals that were as 'frontrunners' involved with or took a lead role in developing the Surgical Safety Checklist at their institute. This latter 'type' sometimes had a formal role in the 'checklist project', and generally had more believe in the checklist. Logically, people are inclined to get involved in things in which they see value. The hybridization of professional roles creates avenues for future research, as it might be worthwhile to more explicitly delve into the hybridization of professional- and organisational roles, and how this affects working with checklists.

The limitations of an analytical framework

Secondly, I used the initial routine model by Feldman and Pentland (2005) to construct an analytical framework. This frame proved useful to study practices, and helped me to gather and analyse data in a systematic way. It also caused some difficulties. In the complex reality of professional work, the 'boundaries' between abstract ideas and behaviour are blurred, and their representation therefore to a certain extent always involves (artificial) categorizations by the researcher. The three empirical chapters each focused on a specific part of the analytical frame (dynamics, interactions, artefacts), but these analytical 'parts' showed interrelated in many complex ways. Artefacts already made their entrance in the chapter on routine dynamics, and in order to understand the routine dynamics, findings on routine interactions proved indispensable. Further, the routine model explicitly focuses on the collective level, which makes questions about the relation between the individual and collective level particularly relevant. As discussed in chapter 5, both within and across professional groups, abstract ideas about the checklist proved rather heterogenous. Hence, the idea of 'the ostensive dimension' does not do justice to the plurality on this dimension. Especially the finding that actors occupy different hierarchical positions which implies differences in *agency,* makes questions about the relationship between routines and individual skills and competencies all the more relevant. Work

that treats routines as collective entities relies on analogies between routines as organisational level constructs, and individual skills, but provides very little analysis of their links (Felin & Foss, 2009; Salvato & Rerup, 2011). Concepts from the Sociology of Professions literature like socialization and hierarchy proved helpful in understanding collective processes, but future research could focus more on how individual ideas and skills play out at the collective level.

Lack of longitudinal data

Thirdly, routines are about stability and change. I conducted episodic observations at different points in time, which allowed me to see change. For instance, when I returned at Plainsboro after a while, the whiteboards representing the checklist had been introduced and I could observe how this new artefact found its way into practice. However, gradual change was difficult to see. A longitudinal study might be worthwhile to closely see how routines evolve over time. Besides, as routines are argued to be "stable for now" (Feldman et al., 2016; Pentland & Feldman, 2008) we should be aware that the patterns observed in this study, might have evolved into different patterns today.

Multiple research sites

Fourthly, for this study I conducted fieldwork at two research sites. I would like to underline that every case is unique, and that the aim of this study was not strict comparison. Rather, I used data from two research sites to generate a more comprehensive understanding of the research phenomenon. Data collection was not equally divided among the research sites. I started off with observations at Plainsboro, and later on decided to move to St. Sebastian's to look for overarching storylines, and thought-provoking differences. This dissertation shows that many of the mechanisms (re)creating routines hold for both research sites. There clearly are bigger storylines, for example when it comes to how professionals deal with conflicting routine demands. As said, differences were often more clearly visible at the team level than at the organisational level, for example when it comes to entrusting team members. The most evident difference between the research sites, was the way in which artefacts were used to model the routine. Chapter 7 therefore most clearly differentiates between the research sites. Despite artefacts' different affordances, similar patterns of action could emerge, for example ticking off boxes in the software system our drawing a continuous line across the items on paper. In making sense of similarities and differences that occurred, it proved helpful that some of the research participants 'appeared' at both research sides. For educational purposes, residents for example worked in St. Sebastian's after they had worked in Plainsboro, so we could discuss what was going on at both

research sites. For future studies, it might be relevant to more explicitly focus on differences in settings. In this study, I looked for what these hospitals had in common; geographical area, training novices, research, complex interventions. Besides the differences in size - Plainsboro is a remarkably larger institution - it might be worthwhile to study research settings that are very different to more clearly see different mechanisms at work.

8.6.3 Practical implications

I conclude this dissertation by discussing what those working in professional domains can take from this study. As a Public Administration scholar, I value both theoretical development *and* sharing knowledge about the social phenomena tremendously. I will discuss recommendations for professionals, hospital boards ('implementers'), supervisory organisations, educators and other professional services.

Recommendations for professionals:

Take notice of hierarchical relations and reflect upon them
Engage in policymaking

In this study, I focused on professionals. Therefore, I'll start off with implications for those operating at the frontline. Ethnographic research is an exceptionally powerful tool for self-reflexive learning, as it provides a mirror in a social world in which opportunities for self-reflection are limited. Professionals usually do not *see* what they do. The narratives in this dissertation might function as mirror, reflecting their practices in context. Ethnography can thus be used both as a 'model of' and a 'model for' change (Dixon-Woods & Bosk, 2010). This work suggests that getting clinicians to watch and reflect upon their work practices provides them with input for creating connective routines. Two specific points resulting from this study are relevant to consider.

Firstly, hierarchical relations clarify roles and responsibilities in this highly complex and dynamic domain. Interestingly, whereas the professionals in this study often assumed shared understandings about responsibilities, ideas actually were more scattered. Despite hierarchy is valued for accomplishing complex (Abbott, 1988; Ackroyd, Kirkpatrick, & Walker, 2007; Diefenbach & Sillince, 2011; Freidson, 2001), it might be worthwhile for professionals to be more reflexive about these processes, especially when tasks – like the Surgical Safety Checklists – require opposite patterns like 'speaking up'. The conversations with

scrub nurses and residents particularly demonstrated the perceived central role of the surgeon in the team. The way in which the surgeon positions him/herself really mattered for the actions taken by the other team members. Surgeons who took the lead and centralized their position, downplayed the efforts and feelings of equity amongst other team members. If the surgeon on the contrary, managed to create a sense of an 'equal team', others were more inclined to speak up. Ironically, those considered highest in the hierarchy, are the ones to break through these patterns. Professionals in these positions, (senior) surgeons and/or anaesthesiologist, should draw each other's attention to their role and status in the team.

Secondly, the findings of this study suggest that professionals may be more proactive when it comes to policy making and execution. Throughout the research process, I did find that professionals often do have (firm) opinions; they think, they feel, they struggle. Especially with regard to the registration of procedures they mention the burden it causes, while the gains remain limited. At the same time, they are obedient. They do things because they 'have to'. Anonymized artefacts like the 'soup protocol' are wandering around the hospital and show professionals' discomfort, but it stops there. I would suggest professionals to take a more proactive role in organising their work practices. Policies are not just induced from above, they are also for a large part what professionals make of them. The results of this study show how professionals try to be responsive on the spot and find creative ways to make policies 'work'. Still, if they would more actively engage in constituting policies through ongoing conversations and trial and error, organising will increasingly become inherent part of their work, and less something 'out there' to deal with.

Recommendations for hospital boards (i.e. 'implementers'):

Watch, see, and talk
Look for local solutions

This study also provides some recommendations for those who consider themselves administrator, policy maker or implementer. First of all, this dissertation promotes a sensitivity for the dynamics that are going on at the work floor. A great deal of the dissatisfaction clinicians show towards the checklist, is instigated by the feeling that only registration matters. In a complex play field with demanding stakeholders, registration numbers gain prominence. My advice would be: watch and see. Watch what people are doing, engage in conversations,

just like I did. It will be more time consuming for sure, but it will provide 'thicker descriptions' than a software system can ever give you.
Secondly, I showed how the checklist is a socially embedded construct with internal dynamics, which is in turn affected by the bundles of routines it is part of. This finding has implications for implementation. There is no 'one size fits all'. This work cannot be captured in abstract, general principles, but only becomes visible and tangible in and through practices. Adding to this, there are implications for 'artefact design'. The findings of this study show that more is not always better. It might be worthwhile to move beyond everyday notions like 'paper is outdated', and consider the different affordances artefacts have. They might complement and supplement each other, but they might also work against each other. In theory and practice, behavioural insights – combining insights from PA and psychology - are gaining prominence (e.g. Grimmelikhuijsen, Jilke, Olsen & Tummers, 2017). In designing artefacts, designers are looking for ways to 'nudge' users into the right behaviour. Despite of these interesting new directions, I would underline that team dynamics will always be vital. I would therefore argue that if we want to equip professionals to deal with complex work demands, we should not merely focus on introducing (more) artefacts, but on enhancing their skills, capacities and overview, and thus *consciously* change their behaviour.

Recommendations for educators:

Develop a minor in Public governance, management, and organisation
Rethink training and evaluation as collaborative practices

A 'conscious change of behaviour' brings me to two recommendations for professional educators. The first one should be relatively feasible to carry out, while the second is more fundamental and requires a longer time span to realize.

Firstly, including a minor in *Public Governance, Management, and Organisation* in the curriculum would be a feasible way to make medical students more aware of organisational processes and train them to be more 'organising professionals'. Naturally, clinical knowledge and experience are crucial in becoming a doctor, but this dissertation shows how organising capacity are of utter importance. Some sensibility of workflows would support them in dealing with complex cases and conflicting demands at the frontline. As collaborations between various university faculties already exist, this 'connective potential' should be used to create collaborative educational projects.

Secondly, medical education already is in transition. There are many efforts to improve students' skills and competency, for instance through competency based frameworks that explicitly incorporate 'teamplayer' as professional role (Frank & Danoff, 2007). Next, there is attention for so called 'Entrustable Professional Activities' (ten Cate, 2005, 2013) that aim to contextualize professional training and focus on 'activities', thus professional work in context, rather than skills. Nonetheless, these competencies and activities are still trained within professional segments, and supervised and evaluated individually. Is this professional a team player? Can we entrust this individual to perform a certain (clinical) task? If we want to diminish notions of 'us' and 'them' and train professional teams with a shared responsibility for work processes, we should break through these borders already in education. For example, I could imagine that young surgeons are involved in multidisciplinary training modules in which they are trained together with anaesthesiologists, nurse anaesthetists and scrub nurses, and they also evaluate each other's performance and discuss together what is 'good practice'. Curricular development takes time, but it might be worthwhile to consider different ways of training and evaluation that do justice to the collaborative practices young professionals are expected to engage in.

Recommendations for Supervisory boards (i.e. Inspectorates and accreditation organisations):

Focus on the qualitative
Start the conversation

Another recommendation is one for health care inspectorates and accreditation organisations. I should be careful in this though, as their perspective is only little included in this study. Still, from a professionals' perspective, there are a few things to say on accountability measures.

During the fieldwork, I encountered one unannounced visit of the Health Care Inspectorate. Recommendations are thus based on a single observation, but supported by multiple perspectives of frontline professionals. Observations are difficult to conduct. As an observer, you should focus your observations to be able to see, but at the same time you should not be blinded by this. Quantitative observations are valuable; if people wear hats and caps does provide us with valuable information. Those quantitative measures are also the most easy ones, because you know what you want to see. My recommendation is that inspectors should focus more on qualitative observations. Concentrate field visits more

on *how* a checklist is being performed, start conversations with actors in the field exchanging ideas on how checklists should be performed, rather than counting how often performance is registered. It might be valuable to look for new accountability measures that exceed 'ticking the boxes' and do justice to the complex reality of surgical care. I would suggest that in developing such measures, professionals themselves would be involved. It is not so much a matter of 'trust in professionals', but of entrusting them in co-creating accountability.

Other professional services:

Strive for standardization through flexibility
Consider the embeddedness of routines
Co-create workable artefacts

In this dissertation, I took surgical care as a suitable field to study standardization of professional work. As this study allowed me to make theoretical generalizations that have explanatory power for other settings as well (Mortelmans, 2007), I can also discuss some implications for other professional fields. Still, I explicitly claimed that there are no 'general lessons', as practices are always contextualized and gain meaning through practices. Hence, the implications for other professional fields remain on a rather abstract level.

A first general implication for professional fields is that although standardization might be valuable in dealing with complexity and creating stability patterns, one should never strive for rigidity. This thesis has convincingly shown that professional practice is characterised by tasks that are hardly standardizable, and that professionals pragmatically cope with complex, sometimes conflicting routine demands. It might be worthwhile to rethink the notion of 'compliance' to do justice to the demanding and unpredictable nature of professional work. Sometimes, working around or working without standards might be the best solution at hand. Therefore, I would recommend to strive for standardization while allowing for flexibility.

Secondly, this thesis has shown how practices are inherently interwoven. In 'implementing a new standard' there shouldn't be isolated focus on that specific standard (is there an evidence base? does it work?) thereby neglecting the multiple professional routines that constitute work in professional domains. A new standard usually is just one of many (new) standards, and working with standards is all about its fit within workflows.

Thirdly and finally, this thesis has shown how artefacts are employed to create a new routine, without awareness of how these artefact can work out in practice. Artefacts like software systems or paper checklists are not 'technical instruments', but they are political and can be used strategically. Professionals should therefore engage in conversations (with IT-developers and managers) about workable artefacts. Obviously, there is no blueprint for 'what works', but what works for now should be a matter of 'trial and error', in which this thesis emphasizes that 'more artefacts' to model a routine is not necessarily better.

8.7 Connective Routines

In this dissertation I examined the standardization of surgical safety processes as the embodiment of an organisational logic in professional care. The central question focused on how standards *work*, thereto tracing on a micro-level how a professional standard embodying organisational values like rationality, objectivity and comparability finds its way in a professional working domain characterised by values like autonomy, collegiality and informality. Hence, this study shows what hybridity actually *looks like*.

Creating connective routines proved a mindful, complex task. Surgery is, like other complex work activities, characterised by the constant emergence of contingencies that require ad hoc and pragmatic responses. It is difficult therefore, to strictly comply to 'the rules of checklists'. Unpredictable flows of events make the connections between individuals, intersecting routines, and artefacts a continuous balancing act, that requires adaptability and decisions on the spot. Creating connective routines is thus not about 'compliance' but about responsiveness. Creating connective routines is hard work.

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Summary

Background and Research Question

This thesis focuses on standardization in healthcare. While medical doctors make it to the newspapers every now and then because of so-called 'miracle operations', they also regularly damage their professional reputation by making preventable mistakes like wrong side surgery or mixed-up patient identities. This leaves us with the question why 'simple' procedural tasks go wrong, while complex, innovative procedures succeed. This dissertation analyses if and how standardization is a means to reduce mistakes, and improve the quality of service delivery.

The context of professional service delivery has changed drastically in recent years. Care delivery has become more complex, for instance because of multi-morbidity, new technologies, and evidence based knowledge that has to be translated into treatment plans for individual patients. Besides, trust in the professions and their services is no longer guaranteed. Publicly exposed incidents prompted both a political and public demand for more transparency and accountability. On top of this, these increasingly complex cases have to be treated in a policy context characterised by budgetary restraint and collaboration beyond professional borders. In short, various developments put professionalism under pressure.

New professional standards like guidelines, protocols, and checklists have been implemented as simple and cheap solution to reduce medical mistakes and improve the quality of service delivery. However, the professional reality at the frontline proves more complicated. Checklists not automatically become new professional routines. The medical field sees itself confronted with a so-called 'implementation gap'. Still, how standards *actually work* remains unknown.

The standardization of professional work is being studied from multiple disciplines, and with varying research perspectives. Standards and their effects are approached differently from each of these perspectives. In the medical domain and the field of implementation science, standards are mostly seen as technical instrument that if implemented well - will lead to desired effects. From a sociological perspective, standards are seen as complex social instruments that will affect existing relationships. At first, professional standards were seen as a way to further professionalize and gain legitimacy. However, standardization makes practices measurable and comparable, and herewith allows for external

control. Standardization then becomes part of an 'organisational logic' with values like objectivity, efficiency and measurability, that is at odds with a 'professional logic' with values like autonomy, altruism, and empathy. Standards can then even become 'dangerous', as they transform medical practice into 'cookbook medicine'. Hence, professionals will resist and/or manipulate standards to protect their position.

A more contemporary perspective does no longer see organisations and professions as dichotomous. From the perspective of hybrid or organised professionalism, the introduction of new professional standards is seen as organised response to new challenges, in which organisations and professions are no longer inherently opposed to each other, but in which organising becomes a natural part of professional practices. Standards are then not seen as 'danger' or strategic instrument to protect the professional position, but as a way to deal with new service realities.

In short, the relation between standards and professionals is disputed. Multiple perspectives exist, and we should study 'how it really works'. The micro-perspective in particular requires further attention; how so-called 'frontline professionals' work with standards in their daily work. By combining various theoretical perspectives (that are extensively discussed in **chapter 2**) with empirical investigation, this thesis contributes to current debates on the 'reconfiguration of professionalism'. The central research question is:

"How and why do professional standards work in performance-oriented medical practices?"

The research question is answered by means of a study in surgical care. This domain was chosen, firstly, because surgical professionalism is considered as 'archetypical' classic professionalism with firmly embedded professional values, and secondly, because the medical field can be considered the precursor in standardization. The complexity of medical conditions has significantly increased in this environment, and standards are employed to deal with such complexity. Besides, external forces like the news media pressure towards far-reaching standardization and accountability. Hence, the effects of standardization on professional practice will become highly visible.

This study focuses on a surgical safety checklist, that requires confirmation of important checks like patient identity, intervention, and surgical side during

the operative process. Such checklists are known as 'static sequential checklist' as they require confirmation of checks by various actors in the team. Therefore, surgical safety checklists are not only associated with reducing mistakes, but also with improving 'performance' or improving teamwork and collaboration.

Research perspective and design

To study 'how standards work', a research perspective that does justice to professional practices within organisational structures is needed. The development of this research perspective is the subject of **chapter 4**. Literature on *routines* offers vantage points to study how medical teams work with standards on a daily basis. A relatively new perspective within routine theory approaches routines as "recognizable, repetitive patterns of interdependent action carried out by multiple actors." This perspective sees a routine as a dynamic system, that consists of an *ostensive* dimension (the abstract guiding principle, ideas of what the routine is) and a *performative* dimension (the actual performances by specific people, at specific times, in specific places). Further, *artefacts* are the material aspects that enable or constrain elements of routines.

A safety checklist for surgical teams can be seen as a professional routine. The ostensive dimension consists of the ideas that participants have about the checklist; What is it? How should it be used? What is its purpose and value? These abstract ideas steer actual performances; how surgical teams *work with* the checklist. The ostensive and performative dimension influence each other. Artefactual representations like posters, the checklist on paper, or the checklist embedded in the software system aim to model the routine.

From this perspective, a surgical safety checklist is seen as a dynamic system, that changes through its recurrent enactment. The way in which surgical teams recurrently perform the checklist, influences how this pattern (gradually) changes over time. From here flows the idea that a new standard (embedded in an artefact) not automatically results in the envisioned behaviour. By combining insights on organisational routines with ideas from the sociology of professions and science and technology studies, **chapter 3** presents a theory-informed perspective that allows for a micro-level study of standards, with a focus on team behaviour and interactions.

Three types of connections are central to the developed research perspective, as reflected in the title of this dissertation, 'Connective Routines'. Firstly, *social* connections are crucial; connections between people. This thesis holds the

assumption that individual behaviour only can be understood and matters in relation to others. The performance of a checklist routine is a collective effort and is thus all about how individuals connect in the performance of a checklist routine. Secondly, it is all about connections between *routines*. A surgical checklist routine does not stand on its own, but is part of a complex web of routines that constitute surgical work. Moreover, a surgical safety checklist explicitly strives to connect workflows from different professional disciplines. In order to understand the checklist routine, it has to be studied within its context. Thirdly, connections between *artefacts* and professional practices are essential. Artefacts are used to model and optimize the routine. Hence, connections between systems and professional realities at the frontline must be developed. In the **chapters 5,6 and 7,** the analysis is focused on each of these types of connections.

To study a surgical safety checklist as routine, ethnographic research was conducted in two (mid)large hospitals within the same educational and geographical area in the Netherlands. Fieldwork predominantly consisted of observations, using a shadowing technique. Eighteen professionals from various disciplines (both anaesthesia and various surgical sub specialties) were shadowed for one or multiple full working days. In doing so, a comprehensive overview of the multiplicity of routines in which professionals engage on a daily basis (the context), and how the surgical safety checklist is part of that, could be sketched. During the observations, many conversations have been held with – besides those who were shadowed – various anaesthesiologists and surgeons (in training), scrub nurses, nurse anaesthetists, head of departments, managers and an inspector of the Health Care Inspectorate. Finally, various artefacts have been collected, including representations of the surgical checklist, policy documents, internal memos and e-mails. The research design is extensively discussed in **chapter 4.**

Main findings

Chapter 5 focuses on the internal dynamics of the checklist routine, in which the connections between people showed of crucial importance. Even though the checklist has been heralded for its simplicity in literature, there is no such thing as 'the checklist' in practice. What the checklist is and should be is ambiguous, and therewith anything but simple. The collective ostensive dimension consists of a variety of abstract ideas that are sometimes even conflicting. While the importance of the checklist with regard to accreditation is widely shared, ideas about the effects of the checklist on the reduction of mistakes, its evidence base

and effects on teamwork are highly debated. These diverging abstract ideas result in two separate patterns of action. On the hand, registration of the checklist is consistently done for the sake of performance measurement. On the other hand, the actual performance might deviate from what has been registered. In practice, the performance is more 'loose' than the checklist prescribes. For instance, items are covered in a varying order, the checklist is often performed from memory, and different professionals take the lead and initiative in performing the checklist.

Chapter 5 offers explanations for varying routine performances. Surgical teams are characterised by clear hierarchical structures. Those professionals with a high-rank in the team, like (senior) surgeons and anaesthesiologists, are able to translate their ostensive aspect into collective performances. Those lower in hierarchy, like scrub nurses and nurse anaesthetists, show less able to bringing their individual ideas to a collective level. Scrub nurses for instance show aware of disruptions in the routine performance, but they are inclined to perform actions individually, rather than they speak up about it. Besides, the *'connective potential'* proves of crucial importance. *Checklist do not create connections between people. Rather, connections are a requisite to make standards work in practice.* Actants in a high position play a key role in utilizing and further developing social connections. Notably, firm social connections, for example present in highly specialized teams, might ultimately undermine the 'checking' nature of the checklist. If people in the team entrust one another on 'how they work' this might prelude systematic checking of safety items.

Chapter 6 focuses on connections between routines. These do not emerge easily. Even though the checklist has been introduced to form an important 'hub' in which various professional routines connect, the complex, dynamic context of surgical work makes it hard to establish connections. In practice, the combination between expectations aroused by the checklist, *and* expectations aroused by a multitude of other professional routines leads to almost *'impossible situations'* for professionals. This chapter distinguishes between 'standards problems' and 'unexpected events' that lead to conflicts between routines. Professionals constantly have to set priorities, construct emergencies, and negotiate responsibilities. In this chapter, three *strategies* that professionals use in an attempt to meet all these expectations are presented. A first strategy is to *'work on it',* which can be best described as 'as trying to unite the incompatible anyway'. This strategy proves the least fruitful, but most stressful for professionals. A second strategy is to *'work around it',* in which professionals work around formal rules because this seems the most favourable and safe option to them. Delegating

tasks is common within this strategy. The third strategy is to *'work without it',* which can both refer to working without the checklist, and working without another routine. In such situations, professionals clearly prioritize one routine at the expense of the other.

Chapter 6 concludes that professionals predominantly pragmatically cope with checklists amidst high-paced circumstances. The patients' interest is decisive in on the spot considerations.

Chapter 7 focuses on the connections between the checklist routine and artefacts. This chapter shows how artefactual arrangements are used to model the checklist routine, in which different artefacts with various possibilities for use are employed to steer professional behaviour. The artefacts reflect the organisation's ostensive aspect. In an attempt to 'optimize' work processes, new artefacts are introduced, or existing artefacts are amended. These strategies are fuelled by pressures for more accountability, in which artefacts mostly focus on measurability and responsibilities.

Artefacts are not 'automatically' translated into professional practice. Professionals experience various possibilities and constrains in using artefacts. A digital artefact embedded in the software system for example, is considered a 'bureaucratic system', and a paper checklist as 'unprofessional' and 'outdated'. Nonetheless, these experiences not always align with actual connections artefacts can (help) create. For instance, the observations show how a paper checklist can be physically embedded in the routine, as it is easily transferrable. Still, the affordances of artefacts should always be considered in relation to each other. Despite a whiteboard can be incorporated into the process and allows for ticking off checked boxes, this artefact does not afford ticking off boxes as a matter of registration. In this way, this newly introduced artefact does not have added value compared to artefacts that already were part of the arrangement. Lastly, this chapter shows how artefacts (are used to) change social connections within routines. Surgeons for example leave a new artefact untouched as it is 'not part of their professionality', while scrub nurse take on the very same artefact to visualize their position in the team.

All in all, chapter 7 shows that artefacts *are not instrumental tools* that lead to desired effects, but political tools that professionals *pragmatically* use, but that can also visualize and reconfigure social connections. Creating workable artefacts therefore is a constant, dynamic process that requires 'trial and error'.

Conclusion

All things considered, the answer to the research question is that professional standards work if they are actively made to work. Standards work if connections already exist and are brought into existence, both in teams, in workflows and by way of workable artefacts. Professional standards are dynamic; both in terms of ideas, performances, and the artefacts that represent them. Standards require responsiveness, rather than 'standardized responses.' Working with standards requires on the spot decisions; they only work when professionals deal with multiple, sometimes conflicting demands, set priorities and tailor solutions.

New professional standards not 'automatically work'. This means that 'hybridity', a natural interweaving of an organisational logic with a professional logic, is no automatic outcome of a standard to improve performance and reduce mistakes, but an ongoing context-dependent process. When talking about routines on a daily basis, people easily state "That work is routine". From this study I would conclude quite the opposite: *"That routine is (hard) work."*

Implications

This thesis has implications for both theory and practice. An extensive discussion of the implications, in which also methodological implications are covered, can be found in **chapter 8.**

First of all, this research contributes to current debates about the *reconfiguration of professionalism*. This thesis has shown that professionals are first and foremost *'pragmatic operators',* more that helpless victims or strategic operators. Professionals pragmatically cope with complex and conflicting demands that manifest in their daily work. In making on the spot decisions, 'what's best for the patient' is decisive in their consideration. This thesis herewith paints a modest picture of the 'organising professional'. Despite their awareness of 'organising' and organisational issues, in daily practice, treating patients is at the core of most doctors' work. There are tight schedules and severe time pressures, and professionals try to do what's best for 'their patients'. The results of this study suggest that this theorization of an 'organising professional' at most applies to a few self-considered frontrunners, who demonstrate a particular interest in optimizing organisational processes and see organising as 'part of their job'.

Secondly, this thesis contributes to *routine theory*. By adding the notion of connections, this thesis provides new insights into routine dynamics, interactions, and artefacts. Through this study conducted in a highly professionalized domain,

the social mechanisms that mediate ostensive aspects and performances, become highly visible. This thesis herewith shows how variation on the ostensive dimension translates into collective behaviour. Where studies on the connections between routines predominantly focus on conflicting goals, this study mostly shows conflicts in the organisation of workflows. Lastly, this dissertation illustrates artefacts as political instruments, that can reconfigure social connections. This all happens within 'real life' contexts. Despite this dissertation makes only limited use of implementation theory, it makes a plea for more *context sensitivity* in implementation studies. Whereas studies in implementation science aim to unravel 'factors', this thesis underlines the importance and value of contextualizing.

Finally, this thesis has some implications for professional practice. Professionals themselves might reflect on their own role and social patterns, and take a more active role in policy making. Further, there are some implications for other relevant *stakeholders,* such as hospital boards, accreditation organisations and inspectorates. 'Watch' and 'conversate' are key components in the recommendations to them. This study conducted in surgical care also has implications for other domains where standardization manifests itself. This thesis has convincingly shown that standardization of professional practice should never aim for rigidity. Standardization might be helpful in reducing complexity and accounting for professional practices, but to do justice to the demanding and unpredictable nature of professional work, standardization should always leave room for responsiveness.

Samenvatting in het Nederlands (Summary in Dutch)

Achtergrond en onderzoeksvraag

Dit proefschrift richt zich op standaardisatie in medisch professionele domeinen. Daar waar medische professionals in staat blijken technisch complexe, innovatieve 'wonderoperaties' te verrichten, schaden zij tegelijkertijd met regelmaat hun professionele reputatie door vermijdbare fouten te maken, zoals het verwisselen van patiënten of het toedienen van verkeerde medicatie. De vraag is dan waarom 'simpele' procedurele taken misgaan, terwijl complexe ingrepen slagen. Dit proefschrift analyseert of en hoe standaardisatie een manier is om procedurele missers te voorkomen, en de kwaliteit van dienstverlening te verbeteren.

De context waarbinnen professionele dienstverlening plaatsvindt is de laatste jaren drastisch veranderd. Zorgverlening is complexer geworden, bijvoorbeeld door een toenemend aantal patiënten met multi-morbiditeit, door nieuwe technologische mogelijkheden en door 'evidence based' informatie die vertaald moet worden naar geschikte behandelingen voor individuele patiënten. Mede door in de media breed uitgemeten medische missers wordt professionele dienstverlening niet zonder meer als legitiem gezien. Artsen moeten transparant zijn over hun handelen en verantwoording afleggen. Bovendien kenmerkt de bredere beleidscontext zich door bezuinigingen, nadruk op bedrijfsmatig werken en samenwerking over professionele grenzen heen. Kortom, verschillende ontwikkelingen zetten professionaliteit onder druk.

Nieuwe professionele standaarden vinden hun weg in professionele praktijken als antwoord op deze uitdagingen. Standaarden in de vorm van richtlijnen, protocollen en checklists hebben massaal hun intrede gedaan om medische missers te reduceren en professionele dienstverlening te verbeteren. Dergelijke procedurele standaarden worden geroemd om hun eenvoud. Checklists werden geïntroduceerd als simpele en goedkope manier om professioneel werk te herstructureren. De praktijk is weerbarstiger. Checklists worden niet automatisch routine. De medische wereld ziet zich geconfronteerd met een 'implementatieprobleem'. Maar, hoe standaarden wel kunnen werken is onduidelijk.

Standaardisatie van professioneel werk wordt vanuit verschillende disciplines bestudeerd, met wisselende perspectieven. Standaarden en hun effecten

worden dan steeds anders benaderd. In het medische domein en het veld van 'implementatie wetenschap' worden standaarden veelal vooral gezien als technisch instrument dat, wanneer juist geïmplementeerd, tot de gewenste effecten zal leiden. Vanuit sociologisch perspectief worden professionele standaarden juist gezien als complex sociaal instrument dat bestaande relaties zal beïnvloeden. Daar waar professionele standaarden aanvankelijk gezien worden als een manier te professionaliseren en legitimiteit te verkrijgen, worden praktijken makkelijk meetbaar en vergelijkbaar, en worden de deuren geopend voor controle van buitenaf. Standaardisatie wordt dan een onderdeel van een organisatielogica, die met waarden als objectiviteit, efficiëntie en meetbaarheid haaks staat op een professionele logica, die zich juist vooral kenmerkt door waarden als autonomie, altruïsme, empathie. Standaarden kunnen dan zelfs 'gevaarlijk' worden, omdat zij medisch handelen reduceren tot 'kookboek geneeskunde'. Professionals zullen zich verzetten en/of standaarden manipuleren, om hun positie te beschermen.

Een meer hedendaags perspectief ziet organisaties en professies niet langer als dichotoom. Vanuit het perspectief van hybride of georganiseerde professionaliteit wordt de komst van nieuwe professionele standaarden gezien als georganiseerde reactie op nieuwe uitdagingen, waarbij organisaties en professies niet tegenover elkaar worden gesteld, maar organiseren een natuurlijk onderdeel wordt van professioneel handelen. Standaarden worden dan niet gezien als 'gevaar' of strategisch middel om de professionele positie te beschermen, maar als een manier om te kunnen omgaan met nieuwe uitdagingen.

Kortom, de relatie tussen standaarden en professionals wordt betwist, waarbij meerdere perspectieven bestaan en we moeten uitzoeken 'hoe het echt zit'. Vooral het micro-perspectief vraagt om aandacht, hoe zogenoemde 'frontline' professionals dagdagelijks werken met standaarden. Door de combinatie van verschillende theoretische perspectieven (die uitgebreid worden besproken in **hoofdstuk 2**) en empirisch onderzoek levert dit proefschrift een bijdrage aan actuele debatten over de herijking of 'reconfiguratie' van professionaliteit. De hoofvraag van dit onderzoek luidt:

"Hoe en waarom werken professionele standaarden in prestatiegerichte medische domeinen?"

De hoofvraag wordt beantwoord middels een studie in de operatieve zorg. Dit onderzoeksdomein is gekozen, ten eerste, omdat chirurgische specialismen het boegbeeld van klassieke professionaliteit met bijbehorende professionele

waarden, en ten tweede, omdat de medische wereld gezien kan worden als de koploper in standaardisatie. Zeker binnen de chirurgische zorg volgen veranderingen elkaar in rap tempo op, en worden nieuwe standaarden aangewend om ontwikkelingen te kunnen bijbenen. Daarnaast is externe druk, bijvoorbeeld door de media, een belangrijke motivator voor verdere standaardisatie en verantwoording. De uitwerking van standaardisatie op professioneel handelen is zodoende goed zichtbaar.

In dit onderzoek ligt de nadruk op een veiligheidschecklist voor operatieteams, waarbij op cruciale momenten in het operatieproces belangrijke items zoals identiteit van de patiënt en juiste operatiezijde moeten worden gecontroleerd. Dergelijke checklists staan bekend als 'static sequential checklist' omdat zij controle en bevestiging van verschillende actoren in het team vereisen. Veiligheidschecklists worden daarom niet alleen geassocieerd met het verminderen van vermijdbare fouten, maar ook met het ofwel versterken van de 'productie' of juist verbeteren van teamwerk en communicatie.

Onderzoeksperspectief en aanpak

Om te kunnen onderzoeken hoe standaarden werken, is een onderzoeksperspectief nodig dat recht doet aan professioneel handelen binnen organisatieverbanden. Het ontwikkelen van dit perspectief staat centraal in **hoofdstuk 3**. Literatuur over *routines* biedt aanknopingspunten om te bestuderen hoe medische teams dagdagelijks werken met standaarden. Een relatief nieuwe stroming binnen routinetheorie beschouwt routines als "herkenbare, herhalende patronen van afhankelijke taken die worden uitgevoerd door meerdere actoren." Dit perspectief ziet een routine als een dynamisch systeem, bestaande uit een *ostensieve* dimensie (ideeën over wat de routine is, het 'sturingsprincipe') en een *performatieve* dimensie (het daadwerkelijke gedrag, dat wat mensen doen). Daarnaast worden *artefacten* onderscheiden als materiële representaties die de routine modelleren.

Een operatieve veiligheidschecklist voor operatieteams kan gezien worden als professionele routine. De ostensieve dimensie bestaat uit de ideeën die individuen in het operatieteam hebben over de checklist; wat is het, hoe moet het gebruikt worden, wat is de waarde ervan? Deze abstracte ideeën sturen de daadwerkelijke gedragingen; hoe teams werken met de checklist. De ostensieve en performatieve dimensies beïnvloeden elkaar. De materiele artefacten die dienen als 'model' voor de routine zijn bijvoorbeeld posters die de checklist visualiseren, de checklijst op papier, of representaties van de checklijst in softwaresystemen.

Vanuit dit perspectief wordt een veiligheidschecklijst beschouwd als dynamisch systeem, dat al dan niet verandert door de herhaaldelijke uitvoering ervan. De manier waarop de veiligheidschecklist keer op keer uitgevoerd wordt, bepaalt hoe deze al dan niet (gradueel) verandert. Hieruit vloeit de idee dat een nieuwe standaard (vertaald in een artefact) niet automatisch leidt tot de voorgestelde gedragingen. Door inzichten over organisatie routines te combineren met inzichten uit de sociologie van de professies en science and technology studies, ontstaat in hoofdstuk 3 een theorie-geïnformeerd perspectief dat het mogelijk maakt om op microniveau te kijken naar standaarden, met nadruk op teamgedrag en interacties werkvloeren.

Binnen het gehanteerde onderzoeksperspectief staan drie typen verbindingen centraal, weerspiegeld in de titel van dit proefschrift, 'Verbindende Routines.' Allereerst zijn *sociale* verbindingen essentieel; verbindingen tussen mensen. Dit proefschrift stelt dat individuele gedragingen enkel van belang zijn en begrepen kunnen worden in relatie tot anderen. Het gebruik van een veiligheidschecklist draait om interactie en de mate waarin professionals sociale verbindingen kunnen creëren en benutten. Ten tweede gaat het om verbindingen tussen *routines*. Een veiligheidschecklist staat niet op zichzelf, maar verhoudt zich tot een complex web van professionele routines die bij elkaar 'professioneel werk' behelzen. Bovendien poogt een veiligheidschecklist werkstromen van verschillende disciplines te verbinden. Om te checklistroutine te kunnen begrijpen, moet deze moet dus in context bekeken worden. Ten derde is de verbinding tussen *artefacten* en professioneel handelen essentieel. Artefacten worden ingezet om professioneel handelen te sturen en de routine te optimaliseren, hiertoe moeten er verbindingen worden gerealiseerd tussen deze systemen en de professionele realiteit op de werkvloer. In de **hoofdstukken 5,6 en 7** richt de analyse zich steeds op een van deze typen connecties.

Om een veiligheidschecklijst als routine te bestuderen is *etnografisch* onderzoek uitgevoerd op het operatiecomplex van twee (middel)grote ziekenhuizen in dezelfde (opleidings)regio. Het veldwerk bestond hoofdzakelijk uit observaties, gebruik makend van een schaduwtechniek. Achttien professionals van verschillende disciplines (anesthesie en verscheidende snijdende specialismen) zijn geschaduwd voor één of meerdere volledige werkdagen. Op deze manier kon een volledig beeld worden geschetst van de routines waar professionals gedurende hun werkdag in participeren (de context), en hoe de veiligheidschecklist hier deel van uit maakt. Tijdens de observaties zijn vele gesprekken gevoerd, met – naast de geschaduwden – anesthesiologen en chirurgen (in opleiding),

operatie assistenten, anesthesie medewerkers, afdelingsleiders, managers, en een inspecteur van de IGJ. Tot slot zijn artefacten verzameld, waaronder representaties van de checklist, beleidsdocumenten, interne memo's en e-mails. De onderzoeksaanpak wordt uitgebreid besproken in **hoofdstuk 4**.

Belangrijkste bevindingen

In **hoofdstuk 5** staat de interne dynamiek van de checklijstroutine centraal, waarbij de verbindingen tussen mensen essentieel blijken. Hoewel checklists in de literatuur vaak worden geduid als 'simpel', blijkt er in de praktijk niet zoiets te bestaan als '*de* checklist'. Wat de checklist is en zou moeten zijn, is niet eenduidig, en daarmee zeker niet simpel. De collectieve ostensieve dimensie bestaat uit een variëteit aan denkbeelden, die zelfs kunnen conflicteren. Hoewel het belang van de checklist ten aanzien van accreditatie breed wordt gedeeld, lopen opvattingen over de werking van de checklist (en de wetenschappelijke basis ervan) evenals de bijdrage aan teamwerk sterk uiteen. Deze abstracte ideeën leiden tot gedragingen die een tweedeling laten zien. Enerzijds wordt het uitvoeren van de checklijst consistent geregistreerd ten behoeve van 'performance measurement', terwijl anderzijds die daadwerkelijke gedragingen af kunnen wijken van hetgeen wordt vastgelegd. In de praktijk is de uitvoering veel 'losser' dan de checklijst voorschrijft. Zo worden items behandeld in wisselende volgorde, gebeurt dit vaak uit het hoofd, zijn verschillende personen betrokken, en nemen verschillende professionals hierin het voortouw en de leiding.

Hoofdstuk 5 biedt verklaringen voor deze diverse uitvoeringen van de checklijst. Binnen operatieteams zijn er duidelijke hiërarchische verhoudingen, waarbij teamleden met een hoge hiërarchische positie, zoals (senior) chirurgen en anesthesiologen, in staat zijn om hun ostensieve aspect te vertalen naar de collectieve gedragingen. Zij die een lagere hiërarchische positie bekleden, zoals operatieassistenten en anesthesiemedewerkers, blijken minder in staat hun individuele ideeën naar een collectief niveau te brengen. Zo merken operatieassistenten bijvoorbeeld dingen op in de uitvoering van de checklijst, maar zijn zij eerder geneigd individueel actie te ondernemen, dan dat zij de verbinding aangaan en dingen bespreekbaar maken. Daarnaast blijkt het *'verbindende potentieel'* van essentieel belang. *Checklists zorgen niet voor verbindingen tussen mensen, verbindingen zijn juist voorwaarde om checklists te laten werken.* Professionals hoog in de hiërarchie zijn van doorslaggevend belang in het benutten en verder versterken van verbindingen. Daarbij moet gesteld worden dat sterke sociale verbindingen, bijvoorbeeld in specialistische teams, uiteindelijk het 'checkende' karakter van de checklijst

kunnen ondermijnen. Wanneer teams door frequente interacties vertrouwen op 'hoe zij werken', kan dit ten koste gaan van het systematisch checken van veiligheidsitems.

In **hoofdstuk 6** ligt de focus op de verbindingen tussen routines. Deze blijken niet zondermeer tot stand te komen. Hoewel de checklijst is geïntroduceerd om een belangrijke 'hub' te vormen waarin verschillende professionele routines bijeenkomen, is het in de dynamische, complexe context van operatief werk moeilijk om deze verbindingen tot stand te brengen. In de praktijk leidt de combinatie van verwachtingen voortkomend uit de checklijst én verwachtingen uit een veelheid van andere professionele routines tot welhaast *'onmogelijke situaties'* voor professionals. Dit hoofdstuk onderscheidt 'standaard problemen' en 'onverwachte situaties' die leiden tot routine conflicten. Professionals moeten continue prioriteiten stellen, noodgevallen 'construeren' en onderhandelen over verantwoordelijkheden. In dit hoofdstuk komen drie *strategieën* naar voren die professionals gebruiken in een poging om aan al die verwachtingen te voldoen. Een eerste strategie is *'eraan werken'*, die zich het best laat omschrijven als 'alles eraan doen om het onverenigbare te verenigen'. Deze strategie blijkt stressvol en leidt vaak tot ongenoegen. Een tweede strategie is *'eromheen werken'*, waarin professionals om de formele regels van de checklist heen werken omdat dit hen de meeste gunstige en veilige optie lijkt. Het delegeren van taken kan hier onderdeel van zijn. De derde strategie betreft *'er niet mee werken'*, wat kan terugslaan op zowel de checklijst of een andere professionele routine. Professionals prioriteren dan duidelijk een routine ten koste van de ander.

De conclusie van dit hoofdstuk is dat professionals voornamelijk pragmatisch omgaan met, *'copen'*, met alles wat er op hen afkomt. Het belang van de patiënt blijkt doorslaggevend voor het maken van een afweging.

In **hoofdstuk 7** staat de verbinding tussen de routine en artefacten centraal. Dit hoofdstuk laat zien dat er gebruik wordt gemaakt van arrangementen, waarin verschillende artefacten met verschillende gebruiksmogelijkheden worden ingezet om de checklijstroutine te modelleren. Het artefact is de vertaling van het ostensieve aspect van 'de organisatie'. In een poging om werkprocessen te optimaliseren worden nieuwe artefacten geïntroduceerd, of artefacten verder aangepast. Deze strategieën worden gevoed door een verantwoordingsdruk, waarbij de artefacten vooral inzetten op meetbaarheid en verantwoordelijkheden.

De artefacten worden niet 'automatisch' vertaald in de praktijk. Professionals zien verschillende mogelijkheden voor gebruik; zo wordt een digitaal artefact in een softwaresysteem gezien als een 'bureaucratisch systeem' en een papieren artefact als 'gedateerd' en 'onprofessioneel'. Echter, deze beelden doen niet altijd recht aan de verbindingen die artefacten (kunnen) maken. Zo laten de observaties zien dat een papieren checklist daadwerkelijk kan worden ingebed in de routine doordat deze makkelijk verplaatsbaar is. De gebruiksmogelijkheden van een artefact moeten echter altijd worden bezien in relatie tot andere artefacten in een arrangement. Hoewel een klein *whiteboard* kan worden ingevuld tijdens het checken met de patiënt en het team, biedt het geen mogelijkheid voor registratie. Er is dan geen meerwaarde van dit artefact ten opzichte van andere artefacten in het arrangement. Tot slot laat hoofdstuk 7 zien hoe artefacten worden aangewend om de sociale verbindingen binnen een routine te veranderen. Zo laten chirurgen een nieuw artefact bewust links liggen om te laten zien dat deze taak 'geen deel uitmaakt van hun professionaliteit', terwijl operatieassistenten zich hetzelfde artefact juist toe-eigenen om hun positie binnen het team te visualiseren en versterken.

Al met al laat hoofdstuk 7 zien dat artefacten *geen instrumentele tools* zijn die tot de voorgestelde effecten leiden, maar politieke entiteiten die professionals *pragmatisch* gebruiken, maar die ook sociale verhoudingen zichtbaar kunnen maken en herijken. Het creëren van werkbare artefacten is daarmee een constant proces dat vraagt om 'trial and error'.

Conclusie

Alles overziend luidt het antwoord op de hoofdvraag dat standaarden werken, als er actief aan wordt gewerkt. Standaarden werken, vooral als er al verbindingen bestaan en als ze verder worden ontwikkeld in teams, werkstromen en werkbare artefacten. Professionele standaarden zijn dynamisch, zowel wat betreft ideeën, gedragingen, als de artefacten die ze representeren. Dat betekent dat standaarden vragen om actieve responsiviteit, in plaats van passieve werkwijzen. Ofschoon de standaarden er 'zijn', werken ze niet direct door; daar moet men wat voor doen. Het vraagt vooral om het maken van afwegingen en praktische beslissingen, 'in het moment'. Standaarden werken vooral als professionals kunnen omgaan met meerdere en vaak onverenigbare verwachtingen, als zij prioriteiten kunnen stellen en maatwerk kunnen leveren.

Nieuwe professionele standaarden werken dus niet 'automatisch'. Dit betekent ook dat hybriditeit, een samenkomst van een organisatie- en een professionele

logica, niet zo maar volgt na de implementatie van een nieuwe professionele standaard om fouten te verminderen en dienstverlening te verbeteren. Het realiseren van hybriditeit is een continue, actief en contextafhankelijk proces.

In dagelijks taalgebruik heeft men het al snel over 'dat werk is routine', verwijzend naar gedachteloos en simpel werk. Dit proefschrift concludeert het tegenovergestelde door te stellen, *'zo'n routine, dat is hard werken!'*

Implicaties

Dit onderzoek heeft implicaties voor theorie en praktijk. Een uitgebreide bespreking van de implicaties, waar ook methodologische implicaties aan bod komen, is terug te vinden in **hoofdstuk 8**.

Allereerst draagt dit onderzoek bij aan actuele debatten over de herijking of *'reconfiguratie'* van professionaliteit. Dit proefschrift heeft laten zien dat professionals vooral *'pragmatic operators'* zijn, veel meer dan hulpeloze slachtoffers of strategische operatoren. Professionals zijn voornamelijk bezig met het pragmatisch omgaan met veeleisende en tegengestelde verwachtingen, die zich manifesteren in hun dagdagelijkse werk. Bij de beslissingen 'in het moment', is het belang van de patiënt het voornaamste uitgangspunt. Hiermee toont dit proefschrift een bescheiden beeld van de 'organiserende professional'. Hoewel professionals zich zeker bewust zijn van organisatieprocessen en de context waarbinnen zij functioneren, zijn zij op de werkvloer nog voornamelijk bezig met het behandelen van 'hun patiënt'. Een overstijgende organiserende capaciteit is voorbehouden aan een aantal voorlopers.

Ten tweede draagt dit proefschrift bij aan *routinetheorie*. Door de toevoeging van verbindingen, levert dit proefschrift nieuwe inzichten over routine dynamieken, interacties en artefacten. Door deze studie uitgevoerd in een professioneel domein, worden de sociale mechanismen zichtbaar die bepalend zijn in de dynamiek tussen ostensieve aspecten en gedragingen. Hiermee laat dit proefschrift zien hoe diversiteit op de ostensieve dimensie zich vertaalt in collectief gedrag. Waar studies over de verbindingen tussen routines zich veelal richten op conflicterende doelen, laat dit proefschrift vooral conflicten zien in de organisatie van werkstromen. Tot slot illustreert dit proefschrift artefacten als politieke instrumenten, die op hun beurt de sociale verbindingen kunnen veranderen. Dat alles gebeurt in 'real-life' contexten. Hoewel dit proefschrift slechts bescheiden gebruik maakt van implementatietheorie, biedt het een pleidooi voor *contextgevoeligheid* in implementatiestudies. Waar in de

implementatie wetenschap veel nadruk ligt op het uitkristalliseren van 'factoren', laat dit proefschrift juist het belang zien van contextualiseren.

Tot slot biedt dit proefschrift implicaties voor de professionele praktijk. Professionals zelf kunnen reflecteren op de eigen rol en sociale patronen, en actiever deelnemen aan beleidsvormingsprocessen. Daarnaast zijn er aanbevelingen voor andere relevante *stakeholders*, zoals ziekenhuisbesturen, accreditatie organisaties en inspectie. In de aanbevelingen aan hen zijn 'kijken' en 'het gesprek aangaan' belangrijke terugkomende elementen. Deze studie uitgevoerd binnen de operatieve zorg, heeft ook implicaties voor andere professionele domeinen waar standaardisatie zich manifesteert. Dit proefschrift heeft overtuigend aangetoond dat standaardisatie van professioneel werk zich nooit mag richten op rigiditeit. Standaardisatie kan bijdragen aan het reduceren van complexiteit en het verantwoorden van professioneel handelen, maar om recht te doen aan de complexe en onvoorspelbare aard van professioneel werk moet standaardisatie in professionele praktijken altijd ruimte bieden voor 'inspelen op' – voor ruimte voor responsiviteit.

Appendix

I. Research log

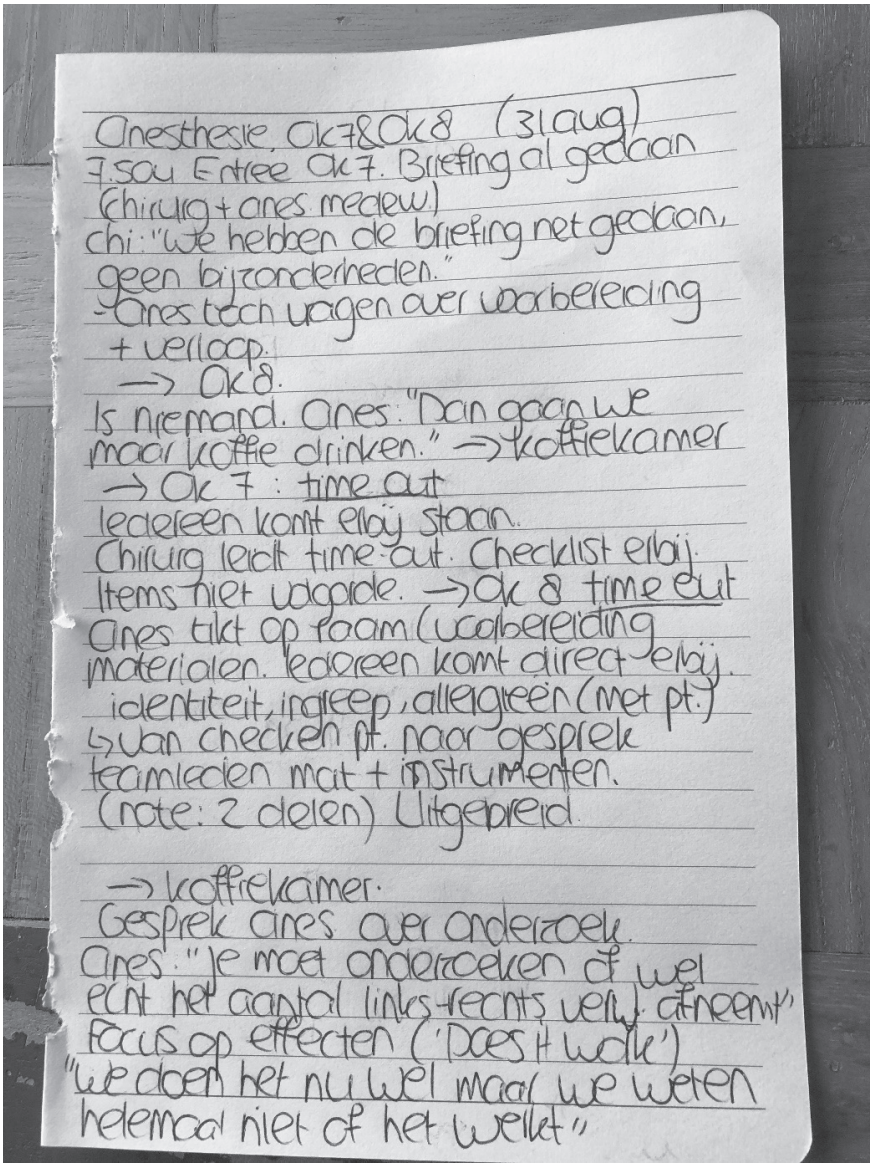
Overview of the data collection in chronological order

Research Site 1		
Date	**Activity**	**Contact person(s)**
12 June 2014	Conversation (acquaintance/ exploratory)	Gate-keeper
16 June 2014	Observations (shadowing)	Gate-keeper
17 June 2014	Observations (shadowing)	Gate-keeper
19 June 2014	Observations (shadowing)	Gate-keeper
15 January 2015	Conversation (reflective/progress)	Gate-keeper
10 February 2015	Open interview (implementation SSC)	Anaesthesiologist 1
24 February 2015	Observations (shadowing)	Anaesthesiologist 2
25 February 2015	Observations (shadowing)	Anaesthesiologist 2
26 February 2015	Observations (shadowing)	Anaesthesiologist 3
15 April 2015	Conversation/analysing video footage SSC	Quality&Safety1
27 Mei 2015	Conversation (formalising appointment)	Anaesthesiologist 4
5 June 2015	Conversation (reflective/progress)	Gate-keeper
26 August 2015	Conversation (progress/formal appointment)	Quality&Safety1
11 October 2015	Conversation (acquaintance/ exploratory)	Gynaecologist1
13 November 2015	Conversation (acquaintance/ exploratory)	Vascular Surgeon1
1 December 2015	Participation/observation (compulsory) activity for new employees (Module Quality&Safety)	Not applicable
1 December 2015	Conversation (acquaintance/ exploratory)	Orthopaedic surgeon1
3 December 2015	Conversation (acquaintance/ exploratory)	Gynaecologist2
7 December 2015	Conversation (acquaintance/ exploratory)	Trauma surgeon1

Research Site 1		
11 December 2015	Observations (shadowing)	Orthopaedic surgeon1
16 December 2015	Conversation (acquaintance/ exploratory)	Cardio-thoracic surgeon1
12 January 2016	Observations (shadowing)	Gynaecologist1
25 January 2016	Observations (shadowing)	Cardio-thoracic surgeon1
27 January 2016	Observations (shadowing)	Gynaecologist2
4 February 2016	Observations (shadowing)	Vascular surgeon 1 **visit Inspectorate*
9 February 2016	Observations (shadowing)	Trauma surgeon1
10 February 2016	Observations (shadowing)	Orthopaedic surgeon1

Research site 2		
Date	**Activity**	**Contact person(s)**
23 March 2016	Conversation (acquaintance/ exploratory)	Anaesthesiologist 1, Anaesthesiologist 2
7 June 2016	Conversation (formalising/ practicalities)	Anaesthesiologist 1
5 July 2016	Observations (shadowing)	Anaesthesiologist 3
30 August 2016	Observations (shadowing)	Anaesthesiologist 1
5 October 2016	Observations (shadowing)	Anaesthesiologist 4
12 October 2016	Observations (shadowing)	Orthopaedic surgeon1
18 October 2016	Observations (shadowing)	E.N.T. surgeon 1

II. Excerpt fieldnotes


Anesthesie, Ok7&Ok8 (31 aug)
7.30u Entree Ok 7. Briefing al gedaan
(chirurg + anes medew.)
chi: "we hebben de briefing net gedaan,
geen bijzonderheden."
- Anes tech vragen over voorbereiding
+ verloop.
→ Ok 8.
Is niemand. Anes: "Dan gaan we
maar koffie drinken." → koffiekamer
→ Ok 7 : time out
iedereen komt erbij staan.
Chirurg leidt time-out. Checklist erbij.
Items niet volgorde. → Ok 8 time out
Anes tikt op foam (voorbereiding
materialen. iedereen komt direct erbij.
identiteit, ingreep, allergieën (met pt.)
↳ van checken pt. naar gesprek
teamleden mat + instrumenten.
(note: 2 delen) Uitgebreid

→ koffiekamer.
Gesprek anes over onderzoek.
Anes: "je moet onderzoeken of wel
echt het aantal links-rechts verk. afneemt"
Focus op effecten ('Does it work')
"We doen het nu wel maar we weten
helemaal niet of het werkt"

31 augustus schaduwen [...] (anesthesioloog)

OK7 en OK8

7.50u. Wij komen binnen op OK7. De Briefing is al gedaan, door de chirurg en de anesthesie medewerker. “We hebben de briefing net gedaan, geen bijzonderheden” aldus chirurg. Vervolgens heeft anesthesist nog wel vragen over de voorbereiding en het verloop van de operatie.

Vervolgens enkele minuten later door naar OK8. Daar is nog niemand. “Dan gaan we maar even koffie drinken”.

Na het koffiedrinken door naar OK7 voor de time out: Iedereen komt er direct bij staan als de time out wordt gedaan. De chirurg doet de time out met het formulier erbij. De volgorde van de items wisselt.

Daarna door naar OK8 voor de time out daar. De anesthesist tikt op het raam (de OK verpleegkundigen zijn de operatie en de materialen aan het voorbereiden). Iedereen stopt wel direct met de andere werkzaamheden en komt de OK binnen voor de time out. De anesthesist doet in dit geval de time out, daarbij lijkt de time out te bestaan uit twee afzonderlijke delen, waarbij het eerste deel de time out is met de patiënt (identiteit, ingreep, allergieën), terwijl het gesprek zich daarnaast verplaatst naar overleg met de teamleden, zoals of de instrumenten gereed zijn. Erg uitgebreid.

9.48uur Koffiekamer: gesprek met andere anesthesist die in de koffiekamer zit. We praten wat over mijn onderzoek en hij stelt: “Je moet onderzoeken of wel echt het aantal links-rechts verwisselingen afneemt.” Duidelijke focus op effecten; does it work? “We doen het nou wel, maar we weten helemaal niet of het werkt.”

Dankwoord (Aknowledgements)

"I love it when a plan comes together"- Colonel John "Hannibal" Smith, the A-Team

Als jong meisje keek ik geregeld met mijn vader – tot onbegrip van mijn moeder - naar 'The A-team', een populaire Amerikaanse TV serie uit de jaren 80. De serie gaat over vier ten onrechte veroordeelde Vietnamoorlogveteranen, die op spectaculaire wijze hebben weten te ontsnappen uit Fort Bragg en het helpen van hen die onrecht wordt aangedaan tot hun nieuwe missie hebben gemaakt. Ondanks de ontelbare explosies, stunts, kogelregens en vuistgevechten, is de afloop altijd goed en vloeit er niet één druppel bloed. De 'schurken' trekken keer op keer aan het kortste eind, omdat de A-Team er zonder uitzondering in weet te slagen hun plan feilloos in praktijk te brengen. Hannibal concludeert steevast met zijn lijfspreuk "I love it when a plan comes together". De simpliciteit van de serie was vermakelijk, al moet ik bekennen dat vooral de memorabele begintune indruk heeft gemaakt.

Met dit proefschrift heb ik laten zien dat (beleids)plannen zich niet automatisch vertalen naar de professionele werkpraktijk. De context waarbinnen nieuwe professionele standaarden worden geïntroduceerd is weerbarstig en complex, wat vraagt om creativiteit en flexibiliteit van hen die beleid vertalen in professionele routines. De realiteit van professionele praktijken staat dus mijlenver af van de geschetste realiteit in blockbusters uit de jaren 80 zoals 'The A-Team'. Hetzelfde geldt voor het schrijven van een proefschrift. Het vergt flexibiliteit, creativiteit en doorzettingsvermogen om het (onderzoeks)plan te verwezenlijken. Een onbedwingbaar enthousiasme voor andere activiteiten (zoals onderwijs geven, paardrijden, studenten begeleiden, en zitting nemen in commissies en besturen), een appendicitis, een gebroken sleutelbeen en een pandemie zijn slechts een aantal factoren, groot en klein, die het plan van een proefschrift kunnen vertragen of verstoren. Zelfs toen het proefschrift écht af was, zorgde de Covid-19 pandemie ervoor dat 12 juni alsnog 28 oktober werd… Een aantal personen in het bijzonder is van onschatbare waarde geweest in het realiseren van dit plan. "I love it when a plan comes together", maar zonder hen was dat zeker niet gelukt. Ik wil dan ook graag mijn dank en waardering uitspreken.

Allereerst **Mirko**, ik ben je enorm dankbaar, niet alleen voor het vertrouwen dat je me gegeven hebt door samen dit avontuur aan te gaan, maar bovenal voor de ruimte en inspiratie die je mij geboden hebt. Onder jouw begeleiding

heb ik mij kunnen ontwikkelen als professional én als persoon, en dat is me zeer dierbaar. Door jouw persoonlijke begeleiding keek je veel verder dan alleen het proefschrift, en is het gelukt al mijn ambities en motivaties in balans te houden. Misschien was voorzitter van de feestcommissie in het laatste jaar van mijn proefschrift 'niet heel handig', maar wel 'heel waardevol'. Ik hoop dat dit proefschrift slechts het begin van onze samenwerking is.

Lars, jij hebt het aangedurfd om met je komst naar Utrecht in de 'begeleidingstrein' te stappen, ook al waren er al meerdere stations gepasseerd. Ik waardeer de manier waarop je die rol hebt ingevuld. Je hebt me de ruimte gegeven om een heel 'eigen' proefschrift te schrijven - ook al stond het soms ver af van jouw benadering - , en tegelijkertijd heb je me voorzien van hele scherpe, constructieve en soms pragmatische feedback. Ik heb veel geleerd van jouw 'hands on' mentaliteit. Jouw begeleiding was een hele welkome en passende aanvulling die het proefschrift verbeterd heeft.

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Ook buiten het departement Bestuurs- en Organisatiewetenschappen is er een aantal personen die direct of indirect een belangrijke bijdrage hebben geleverd aan dit proefschrift.

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About the author

Marlot Kuiper (10 August 1990) studied Public Administration at the Utrecht School of Governance (BA), and Research in Public Administration and Organizational Science; a collaborative program of the Utrecht School of Governance, Erasmus University Rotterdam and Tilburg University (Research Master, MSc). Thereafter, she conducted her PhD research 'Connective Routines' that was funded by the Dutch Research Council (NWO, Talent Grant).

Currently, Marlot is assistant professor at the Utrecht School of Governance, where she is teaching in various courses on public management, policy implementation and (qualitative) research methods at bachelor, master and executive level. Besides, she works as postdoctoral researcher for the EU Horizon-2020 funded project 'COGOV' on engaging professionals in the strategic renewal of public agencies across Europe at TIAS School for Business and Society, Tilburg University.

Marlot has a keen interest in the reconfiguration of public professionalism, thereby mostly focusing on micro-level practices using qualitative research methods.


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