DE **PERFORMATIEVE** PROFESSOR

INHOUDSOPGAVE

III   Persoonlijke reflecties

A LEAN TRANSLATION PROCESS FROM AN ACTOR NETWORK THEORETICAL PERSPECTIVE

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Introduction

Lean management, a term coined by Krafcik in 1988, as a management concept is rooted in Taylor's Scientific Management tradition. Developed in the Japanese car industry in the 1970s, it aims at increasing operational performance by creating customer value and reducing waste in the production process (Ohno, 1988, Womack & Jones, 2003). Characteristic features of lean management include Value Stream Mapping (VSM), and Continuous Improvement (CI) (Womack & Jones, 2003). Since the 1980s, lean management principles have been applied and studied in many sectors of industry, manufacturing as well as service sectors (Benders & Santbergen, 2007; Van Dun, 2015).

Being rooted in Scientific Management, most research into the implementation of lean in organizations takes a rational-instrumental perspective. In this tradition, lean is a functional instrument that helps managers to design a more efficient production process to address customer demands. Implementing lean is seen as a linear process in which managers play a central role as (top down) designers, initiators and change agents (Radaelli & Sitton-Kent, 2016; Van Oss & Van 't Hek, 2009). Research in this tradition yielded insights into the adoption and diffusion of management concepts in and between organizations (Abrahamson, 1996; Czarniawska & Joerges, 1996, Van Grinsven, 2017), and success factors for successfully implementing lean (Ingvaldsen & Benders, 2016; Knol et al., 2018; Marodin & Saurin, 2015; Van Loenen, 2017).

Despite the rich results and insights into success and failure factors from this rational-instrumental research tradition, many organizations struggle with successfully implementing lean principles (Knol et al., 2018; Langstrand, 2012; Van Loenen & Schouteten, 2016). On the one hand, this can be explained by the ambiguousness

of lean as a management concept. Since the 1980s, Lean developed into a broadly applicable management tool for a large variety of sectors, promising efficiency and increased organizational performance (Holweg, 2007). As such, the concept has become rather abstract in its terminology in order to be applicable in different settings (Giroux, 2006; Heusinkveld, 2014). This interpretive viability of the concept requires actors to actively interpret and translate the concept to their own context in order to successfully implement lean into their organization (Benders & Van Veen, 2001; Van Grinsven, 2017). As a result, many different translation variations emerged, each of which works best in a different context (Nicolai & Dautwitz, 2010).

On the other hand, it is possible that research from the rational-instrumental perspective fails to acknowledge other important factors that can explain why so many lean implementations fail to be successful. Alternatively, a relational-performative perspective focuses on relations, interactions and associations in networks to describe how and why lean is being translated and transformed in its network and how lean, as an active actor itself, transforms its organizational context (Van Erp & Van der Steen, 2018; Vosselman, 2014). In this perspective, lean is not a static object, but an active actor that is affected by other actors in the network and, in return, affects the other actors in its network. As a result, the focus is not on individual decision makers and change agents and their (linear) actions in the organization, but on networks of human and non-human actors and how they interact and transform each other. The relational-performative perspective allows to study the translation processes and how they emerge and transform during such a process. Whereas lean in a rational-instrumental perspective is functional to managers and has predictable outcomes, in the relational-performative perspective, lean is an actor in a network and its effects are less predictable (Van Erp & Van der Steen, 2018; Vosselman & De Loo, 2018). While the relational-performative perspective focuses on translation in networks of relations, the use of an instrumental term as 'implementation' does not fit this perspective (Vosselman, 2011). Therefore, 'translation' is the preferred term.

Studies on what happens during a lean translation process are scant (Van Grinsven, 2017), and research into the way in which, how and why lean transforms and how lean alters its context is called for (Reay et al., 2013; Spyridonidis et al., 2016). The goal of this chapter is to present the results of a study into the way in which lean is created and what effects it sorts in its context during the translation of lean in a Dutch public sector organization. Using Actor-Network Theory (ANT) as a relational-performative lens, we describe how lean is manifested through relations, interactions, connections, inscriptions and associations of human and non-human actors, and how this results in network effects (Vosselman, 2011; 2014).

This chapter is organized as follows. First, we further explain the Actor Network Theory as our theoretical lens. In the methods section we account for the methodological choices in the study. Then we present the results, followed by a conclusion and discussion.

Theoretical perspective: Actor-Network Theory

Actor-Network Theory (ANT), also called sociology of translation (Callon, 1980; Latour, 1987; Law, 1992), is an approach to social theory that tries to explain social phenomena as social networks in which all actors – human and non-human – are equally important in creating those networks. Although ANT is called a theory, it does not explain how and why a network takes the form it does. Rather, it is a way of *describing* the network by exploring the relational ties within a network. ANT builds on empirical analyses of social structures, social relations, connections, associations, and social identities in different socio-technical contexts (Van Erp et al., in press). Applied to lean, an ANT analysis can show how lean as a management concept is being created (Pipan & Czarniawska, 2010), but also how it changes as a result of interactions between actors (Vosselman & De Loo, 2018). By (re)constructing relations, associations and connections between human and non-human actors, we can study how actors create the network and how this evolves over time. Central ANT ingredients for such an analysis include the concepts of translation, symmetry, and performativity.

Translation

Central to ANT is the concept of translation. In a process of translation, through interaction and by creating meaning, actors create a network that is recognized and valued ('worth building and defending') by the actors in the network (Callon, 1986). Translation is a continuous and iterative process, because during a process of translation, actors are constantly subject to negotiations, revolutions, disruptions and compromises. Even if lean is settled in a network and inscription took place, new interactions and connections can emerge, leading to changes or the network falling apart when actors no longer value the network (Callon, 1992; Vosselman, 2011; 2014). The process of translation emphasizes the transportation and transformation of an element, such as lean, in a network in which interaction processes between actors create and recreate meaning around that element (Callon, 1986; Latour, 1987).

In the process of translation, Callon (1986) defined four moments of translation: problematization, interessement, enrolment and mobilization of allies. These moments help to explain how a network comes together. Networks emerge around a 'problem' which is defined in the problematization phase. An initiating actor (protagonist, innovator or *primum movens*) convinces other actors to engage in the network around the problem which then operates as an Obligatory Point of Passage (OPP; Callon, 1986). In the interessement moment, other actors are locked into roles in the network to resolve the problem. In the enrolment moment, those roles are further defined and interrelated. So far, the network is rather limited. By appointing spokesmen, representative for the network, in the mobilization phase, a constrained network of interrelationships comes to speak as one (Callon, 1996).

Symmetry, agency and performativity

A distinctive principle in ANT is the equal treatment of human and non-human actors. Analytically, human and non-human actors are equal and should be described in the same way (Callon, 1986; Latour, 1987; Law, 1992). Differences between human and non-human actors should not be presupposed as they are only generated when they interact in the network of relations (Van Erp & Van der Steen, 2018). Symmetry also indicates that actors have power to assert influence (agency) over other actors and generate changes in the network (Latour, 2005). However, agency does not presuppose intentionality. Properties, such as intentionality, preferences and emotions, can only be attributed to humans (Latour, 2005). Therefore, agency is only used for human actors. The power to influence by non-human actors is called performativity (Rothfusz, 2017; Van Erp & Van der Steen, 2018).

Using ANT and its principles of (moments of) translation, symmetry, agency and performativity as a theoretical lens, we describe the translation of lean in a Dutch government institution.

Methods

The case study for this research was conducted at a Dutch government institution, employing 9,000 in several departments, geographically dispersed over the entire country. After successful experiments with lean on a local level in 2009, the management decided to implement lean organization wide in 2012. This study focuses on the shaping and development of lean in the entire organization over a period of four years, 2013-2016. Based on information from semi structured interviews, observations and documents, we searched for connections and relations between lean and (human) actors in order to map the network effects and interaction processes regarding the translation of lean.

Data

The analyses are based on the data of 38 semi structured interviews with top managers (11), department managers (6), employees (11), internal lean experts (4), external lean experts (2), members from the lean implementation team (LIT) (3) and a top consultant. All interviewees were actively involved in the lean translation process. The top managers mandatorily engaged in a course on 'lean- and serving leadership'. Department managers were supposed to support their top managers. The internal and external lean experts facilitated the change, while the members of the LIT initiated and steered the process. All interviewed employees were directly affected by the lean translation process, either as participants in lean activities, or as subjects to changes in the work processes. Some respondents were interviewed twice, because 1) the results from the first interview required further investigation, 2) the respondents changed jobs and, as a result, their relation to lean, or 3) the respondent left the organization.

On average, the interviews lasted about one hour. All interviews were recorded and transcribed verbatim. The transcripts were sent to the interviewees for comments. Additional comments were added using different colors.

Furthermore, we gathered data in eight non-participating observations. These lasted 75 minutes on average. The focus during the observations was on who actively participated in lean initiatives and their motives. During a variety of lean-related meetings (lean onboarding sessions, day and week starts, a lean exhibition), we observed the interactions, such as sense making processes, debates, and discussions over visual management boards (one of the lean practices in the organization). Additional data were obtained from documents regarding lean and the translation process on the organization's intranet, business plans, visual management boards, imagery (photographs), and lean course evaluations.

Data analysis
In order to describe the translation processes in the case organization, we started coding the transcripts according the four moments of translation (problematization, interessement, enrolment, mobilization). By making notes regarding the meaning of each code and text fragment in the translation process, we created an overview of interactions and connections creating the lean network. We were very cautious not to interpret the data in terms of explanations. We rather focused on describing the emergence of the network through interactions, relations and associations. In this way we built the *story* of the lean translation in this case, which will be presented in the next section.

The story of the lean translation
Analyzing the data offers the opportunity to present a detailed narrative on the translation of lean and the network effects that result in the creation of the network. Here we can only present a short summary. Our main finding is that the translation of lean in the case organization follows a very dynamic process. Our relational perspective shows that lean incites to act (performativity) in different ways, depending on the actors involved and the context, resulting in a variety of directions of development of the network(s). In order to present our story, we distinguish five phases in the process of creating networks around lean in the organization.

Phase 1: Problematization and initiators (2009-2012)
Two developments raised interest in the organization for the management concept of lean management. First, political and societal forces required governmental institutions to improve the efficiency and effectivity of their services. The Minister requested smaller institutions and the management team obliged by including plans to do so in the business plans of 2004-2008, 2008-2012 and 2012-2015. The latter business plan included lean management as a tool to reach these goals.

Secondly, in order solve some of the service problems in one of the departments, a pilot with a lean intervention was conducted in 2009. The department manager, as an initiator, asked three colleagues to investigate whether lean management would fit in this department. A literature review, a company visit to Scania and several discussions led to the local lean experiment. The initiators (primum movens) interested other human actors to join the expanding network. These actors recognized the problems and shared the interest in lean as a solution for the problem. Over a period of three years and after several lean projects resulting in improved organizational performance (optimization of processes), the pilot was recognized as successful by the top management and embraced as a solution for the problems in the entire organization. This led to plans for rolling out lean in the entire organization in 2012.

Phase 2: Countrywide roll out phase 1 (2012)
The successful lean experiment resulted in the establishment of a LIT, building educational programmes in lean management, and lean experts and lean practitioners. Furthermore, all kinds of activities were being organized, such as 'lean experience days', 'lean workgroup meetings', and 'lean exhibition'. Furthermore, all managers needed to participate in lean and servant leadership courses. These are examples of the performativity of the non-human actor lean. Moreover, initiators and early adopters acted as spokespersons to mobilize other actors for the network, by using their success stories as references.

The network grew steadily as more actors identified with lean as good solution to eliminate waste and create customer value by continuously improving work processes. Led by the initiators, 37 lean experts were trained to spread the lean message in all departments. With silver suitcases and colored markers they developed into lean ambassadors and facilitated management teams throughout the organization in developing brown paper sessions and visual management boards. This mainly resulted in new consultation structures, e.g. by using visual management boards.

However, the data show that only a few actors showed sincere interest in lean as a solution for the organizational problems. Critique was raised regarding the content (lean was considered a vague concept with limited applicability) and the chosen top-down and instrumental approach. Many managers only actively participated, because they were obliged to. Or they thought that participation was the best way to survive the reorganization and budget cuts. In ANT terms, a new interessement phase as moment of translation emerged: actors started asking questions and renegotiating lean as a solutions for the problems. The success of the pilot remained the only success story and lost its value as such when time passed. Especially the role of the department managers as Obligatory Point of Passage (OPP) did not happen as supposed. Along with a negative connotation towards lean as a way to cut costs, variance in lean stories and limited clarity about the (applicability of the) concept seem to result in a collapse of the initial network.

Phase 3: The fall of the first network (2013)
Due to the reorganization, as announced in the business plan 2012-2015, the human actors in the initial network were relocated to different parts of the organization and were allocated to new or different jobs and roles. Moreover, they became 'normal' employees and the network effectively ceased to exist. The lean knowledge got dispersed and was hardly used anymore. The need to use lean faded and the actors lost their interest in building and defending the network.

Phase 4: Roll out phase II (2014)
The LIT wanted to regain control over the process by making formal agreements within the organization. Some managers actively engage in a 'forced' phase of interessement and enrolment. Newly appointed managers need to participate in the course "lean and servant leadership'. Additionally, 350 improvements (as results from brown paper sessions in the first roll out phase) need to be realized. Although there is still confusion about the problem and lean as a fitting solution, managers join the network, but mostly because of other motives related to their position in the organization. By making participation in lean activities compulsory, managers hope to convince other actors to join the network. The managers act as 'forced' OPP. Additionally, by hiring new managers with a background in lean the use of lean tools such as visual management boards increased again. Nevertheless, there is still critique, especially regarding the forced participation and the lack of confidence in lean as a proper solution. So the network of relations is weak.

Phase 5: Roll out phase III: the rise of multiple smaller networks (2015)
Despite the dispersed knowledge of lean, or due to the dispersion of this knowledge, lean activities reappear to surface during 2015. Former lean experts and managers start using learned lean tools in project teams or assist managers to apply lean tools to improve performance. By this, they create new success stories that help to build new networks in which lean is being used as a solution for specific problems. Not being obliged or forced to use specific lean tools or practices, we see the emergence of smaller networks around lean for specific purposes. These smaller networks differ in content and processes. However, despite the emergence of these smaller networks, the concept of lean management seems not to be accepted on a wider scale within the organization. As an example: in November 2017, the term lean disappeared entirely from the organization's intranet, reducing its role as OPP.

Conclusion
A rational-instrumental perspective would not have generated such detailed insights about the development of lean in the organization. From a rational perspective, this lean implementation would have been labeled as a failure, because it was not imple-

mented in the way it was intended. From a relational-performative perspective, we can tell a more nuanced story. The description shows lean's performativity. As an actor in the network, lean incites other actors to act (network effects). The directions of these acts cannot be predicted. This study shows that lean translations are dynamic and not programmable, and they are subject to 'failure' (Law, 2009). Lean is not just an instrument to solve problems, but it is constructed through interrelations in the network and it co-creates the context of the network.

Moreover, this study shows that lean translations result in a variety of acts and actions. The dynamics of different translation processes lead to different and unexpected effects that can result in different lean networks in the same organization. This phenomenon is called multiplicity (Callon et al., 2011; Mol, 2002; Van Erp et al., in press).

As a result, whereas a rational-instrumental approach mainly helps to determine success factors for lean implementation, a relational-performative perspective helps to unravel the relational dynamics of the translation. As a result, both perspectives seem to complement each other. Therefore we can recommend to combine these different perspectives when investigating the processes around the translation of management concepts in real life cases.

Acknowledgement