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## **Unlocking work standards through systematic work observation: implications for team supervision**

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**Purpose:** Companies with routine operations often pursue team-based continuous improvement in the context of standardized work. Continuous improvement requires that work standards are periodically “unlocked”, i.e. made objects of reflection and improvement. This paper theorizes and empirically explores a method for unlocking standards which has received little attention in the literature: systematic work observation. We identify which factors constitute and promote a work observation practice that supports continuous improvement.

**Design/methodology/approach:** The paper presents an explorative, qualitative case study of an industrial company, in which systematic work observation is practised. Empirical material was collected from two principal sources: 1) company documentation and teaching material; and 2) interviews with workers, managers and work design experts from three of the company’s major plants.

**Findings:** Systematic work observation supports continuous improvement when there is genuine two-way communication between the worker being observed and the supervisor acting as observer. Through dialogue, the appropriateness of the standard procedure is reflected on. Systematic work observation is supported by frequent day-to-day interaction between supervisors and workers. Frequent interaction builds relationships of trust and a shared purpose. A necessary requirement is that supervisors are technically competent and know the details of the operating procedures. Our results also indicate that supervisors, not fellow workers, should preferably take the role as observers.

**Originality/value:** Systematic work observation as an instrument for continuous improvement has not yet been explored in a serious scholarly manner. Our findings have practical implications for companies that wish to implement systematic work observation.

**Keywords:** Continuous improvement, work observation, standardized work, team supervision.

## Introduction

In order to survive in a highly competitive, globalized economy, companies are increasingly relying on their capability for continuous improvement. Anand *et al.* (2009, p. 444) define continuous improvement (CI) as “a systematic effort to seek out and apply new ways of doing work i.e. actively and repeatedly making process improvements”. In sectors with routine operations, such as high-volume manufacturing, work processes tend to be formalized and standardized in explicit procedures, which are often referred to as “standard operating procedures” (SOPs). When work processes are standardized, continuous improvement implies a systematic effort to refine those standards (Adler and Cole, 1993; Shah and Ward, 2003). Adler (1993) coined the term “learning bureaucracy” to describe a work system in which work is standardized and the standards are objects of continuous refinement.

This idea of the learning bureaucracy raises the question of how work standards are “unlocked”; that is, what kind of events or practices trigger reflections on and possibly changes to the standard procedures. Standards may be unlocked when workers or managers experience process deviances, such as failure to deliver on time or poor product quality. The literature on total quality management recommends systematic analysis of deviance data as a trigger of improvement activity (Antony, 2004; Dean and Bowen, 1994; Fujimoto, 1999). Alternatively, standards may be unlocked based on workers’ suggestions for improved practice. The literature on human resource management and worker participation has explored how suggestions are encouraged through incentive schemes or group-based problem solving (Kim *et al.*, 2010; Wilkinson and Fay, 2011).

This paper theorizes and empirically explores an additional method for unlocking standards, which has received little attention in the literature: systematic work observation (SWO). SWO refers to a process in which task execution according to a standard procedure is carefully observed by a non-participant observer, and the result of the observation is acted on. The idea of SWO as an instrument for continuous improvement accentuates a theoretical tension. On the one hand, it seems reasonable that work observation can initiate reflections on work procedures and lead to suggestions for improved practice. On the other hand, work observation was pioneered by the Scientific Management movement as a strategy for work intensification and managerial control (Taylor, 1967). Scientific Management does not allow for workers’ active involvement in the development of work routines, and therefore contradicts the logic of modern continuous improvement (MacDuffie, 1997). This theoretical tension can be resolved by evoking the distinction between “coercive” and “enabling” forms of organizational technologies (Adler, 1993; Adler and Borys, 1996). Traditional SWO practice is coercive, and aims to promote managerial control. In an enabling form, SWO is an arena for learning and inquiry into the appropriateness of the SOP. The enabling form of SWO supports continuous improvement.

In the following section, the theoretical distinction between coercive and enabling SWO is developed. We argue that SWO, in an enabling form, is particularly relevant in work settings where the causal link between task execution and performance indicators is difficult to assess, due to high task interdependence or a high degree of automation. In the third section, we present an explorative case study of a company in which SWO is practised. The research questions guiding the case study are as follows: *What constitutes enabling SWO practice? Which factors promote enabling SWO practice? Our*

results have implications for the more practical question of how SWO should be practised in order to support continuous improvement.

The case analysis primarily focuses on micro-level factors, in particular the relationship between the worker being observed and the supervisor acting as observer. In the discussion section, we suggest how future research may proceed to construct a more complete and robust theory of SWO.

## Systematic work observation

Systematic observation of work was pioneered by the Scientific Management movement. Taylor's (1967) ambition to develop a "science of each work task" included careful observation of the motions and timings of task execution. Taylorist work observations involved two principal roles: the work study engineer (observer) and the worker (observed). Based on experiments with different tools and motion patterns, the work study engineer would calculate and prescribe an optimal method of task execution, codified in an SOP. While Taylor repeatedly emphasized that workers, when left to their own judgement, would never discover the most efficient ways of working, work observation was undoubtedly also a strategy for revealing to management improvements already made by workers (Jones, 2000).

In the heyday of mass production, work observations became the arena for intricate power games between work study engineers, supervisors and workers (Burawoy, 1979; Roy, 1952). Since work observations determined standard task times, they directly influenced work intensity. Furthermore, under piece-work regimes, these standard times influenced pay. As a result, workers would perform tasks in one way when observed by supervisors and engineers and another way when not observed. If caught withholding effort or subverting work procedures, workers would be disciplined, leading to patterns of coercive or punishment-centred forms of supervision (Gouldner, 1954).

While Taylorist techniques historically became associated with social antagonism and coercive management, Adler (1993) argues that this association is not necessary. If practised in a way that enables employees to better master their tasks or functions, Taylorist techniques may not trigger alienation and resistance. The prime example referred to by Adler (1993) is when workers themselves, through time-and-motion studies, design standard operating procedures that are efficient, but also safe and ergonomically acceptable. This enabling form of work standardization is supported by worker participation and goal alignment between workers and management (Adler and Borys, 1996). Furthermore, automation tends to promote the enabling form by eliminating labour-intensive tasks, so that conflicts over work intensity are less salient.

While Adler (1993) is primarily concerned with work standardization, his results also apply by analogy to SWO. In a coercive form, SWO is used to control for SOP compliance and administer worker discipline. Alternatively, in an enabling form, SWO is an arena for learning and inquiry into the appropriateness of the SOP. Before exploring what constitutes enabling SWO practice and which factors promote it, we briefly discuss how SWO can be part of continuous improvement efforts.

## Enabling SWO and continuous improvement

SWO, as defined above, presupposes the presence of standard operating procedures. SWO, in an enabling form, is an instrument of continuous improvement. Hence, the theory of enabling SWO can be framed as an extension of the theory of the “learning bureaucracy” (Adler, 1993; Adler and Borys, 1996). The learning bureaucracy has two distinctive traits. First, work processes are standardized and formalized in explicit procedures. The argument underlying standardization is that provided by Taylor (1967): there is “one best way” of performing a task, and the task should be performed that way regardless of who performs it. Second, the standards are objects of continuous refinement. Since the detailed knowledge of work practices and improvement potential often resides with blue-collar workers, extensive shop-floor participation is required (Kim *et al.*, 2010; MacDuffie, 1997). Structurally, the learning bureaucracy combines two kinds of team work. Direct work is performed by “online teams” headed by a team leader (Benders and Van Hootegeem, 1999; Liker, 2004). The systematic analysis and improvement of work practices are the responsibilities of “offline teams”, which are typically multidisciplinary and composed of workers and supervisors from different online teams (Anand *et al.*, 2009; Cutcher-Gershenfeld *et al.*, 1994). Offline teams may be permanent or established ad hoc to deal with specific problems (Delbridge and Barton, 2002). The online and offline teams are reciprocally dependent. Hence, the functioning of the learning bureaucracy is dependent on proper inter-team coordination between the online and offline teams (Ingvaldsen and Rolfsen, 2012). First, the offline teams require input from the online teams about current work practices, problems, deviances and suggestions for improvements. Second, improvements decided in the offline teams should in turn be implemented in the online teams.

Standard operating procedures are unlocked based on input from the online teams to the offline teams. Workers may submit proposals directly to the offline teams. Incentive schemes and identification with company goals may promote such behaviour (Bessant *et al.*, 2001; Casey, 1999). On the other hand, workers may withhold their proposals out of fear of work intensification (Ackroyd and Thompson, 1999). Modern operations management prescribes the systematic collection of process deviance data. Popular tools are total quality management, statistical process control and Six Sigma (Antony, 2004; Dean and Bowen, 1994). Based on these measurements, the offline groups can decide which SOPs to investigate more closely. Another related approach is to design the work processes so that deviances become immediately visible. The prime example of this is just-in-time assembly (Ohno, 1988). In the absence of buffers, unbalanced workloads and quality problems are brought to the surface. This makes it easy for members of online teams to spot improvement opportunities.

When tasks are highly interdependent or the degree of automation is high, these practices of unlocking SOPs become more challenging. High task interdependence makes it more difficult for the worker to see the causal link between his actions and their results (Gittell, 2001). In the absence of direct feedback from work itself, opportunities for improvement are harder to spot. Similarly, high task interdependence makes it more difficult to attribute process deviances to specific work procedures. For instance, product quality deviances may be caused by several different SOPs or subtle interactions between the different procedures. Furthermore, the immediate detection of deviances in manual assembly is hard to replicate in highly automated settings (Kern and Schumann, 1987).

In such settings, conventional techniques for unlocking SOPs may be complemented by SWO. SWO has several benefits. First, it is an opportunity to discover and resolve deviances in task execution before they create problems for subsequent work processes. This is arguably a general quality of SWO, and is also present when SWO is practised coercively. Second, SWO enables immediate feedback on task execution, which may raise workers' awareness and motivation (Gittell, 2001; Hackman and Oldham, 1980). Third, through increased awareness and feedback, SWO triggers reflections on the appropriateness of procedures and suggestions for improvements. These latter beneficial outcomes are only achieved if the SWO is practised in an enabling way. In the following case study, we explore what constitutes and promotes enabling SWO practice.

## Case study

### Methods and data collection

This study has been conducted in a light metal company as part of a national action research project concerned with work organization and operations management in Norwegian industry. Three of the company's Norwegian plants have been investigated by the same team of researchers. Plants represent separate cases, but are similar by virtue of belonging to the same company and having the same official organizational structure and operational principles. Investigating different plants in the same company serves the purpose of combining the benefits of an in-depth single case design with increased external validity achieved through the comparison of multiple cases (Voss *et al.*, 2002; Yin, 1994). The research team has worked closely with the case company for two years. The research proposal, including the decision to investigate SWO, was developed in cooperation with representatives from central management. This close collaboration enabled the research team to gain a deeper understanding of the rationale behind the work system. It also provided insight into the turbulent market situation for light metal production.

The presentation of the case plants builds on two principal sources: 1) company documentation and teaching material; and 2) interviews with workers, managers and work design experts within the company. The company documentation and teaching material describe the company's production system, including the official organizational structure and operational principles. In addition to reading and coding the company documentation for recurring themes (Corbin and Strauss, 2008), two of the authors participated in internal company courses, which included group work with company employees. At each plant, 20–30 employees were interviewed, some individually and some in groups of 3–5 persons. We deliberately sampled workers, supervisors, staff functions and representatives from the workers' labour union, in order to get multiple perspectives on the issues in question. Table 1 shows the detailed distribution of informants at each plant. Each interview lasted between 30 minutes and one hour. We asked questions about the informants' roles and responsibilities within the work system, and more specifically about improvement activity. SWO was raised as a separate topic in each interview. On the final day of each plant visit, a brief reflection session with key informants was held in order to verify and

balance the preliminary findings. Respondent validation mitigates the risk of misinformation and distortion in the empirical material (Guba and Lincoln, 1989).

The interviews were later transcribed and coded for recurring themes (Corbin and Strauss, 2008). The results of the preliminary analysis were discussed with central management, adding additional respondent validation.

	Plant 1	Plant 2	Plant 3
Total number of employees (approximations)	550	170	850
Individual interviews with workers (including labour union representatives)	5	6	9
Group interviews with workers (3–5 informants)	0	2	4
Individual interviews with supervisors and managers	6	5	5
Group interviews with supervisors and managers (3–5 informants)	2	2	3
Total number of interviews	13	15	22

Table 1: Overview of interviews

## Overview of the case company

The case plants are located in rural Norway, and are the main employers in their local communities. The production process is continuous and requires the presence of operators at all times throughout the year. The main technological transformation process of the metal takes place in large, closed furnaces. According to plant management, productivity and quality are fundamentally a function of “process stability”, meaning that the furnaces continuously produce output with sufficient quality. The main threats to operational results are machine failures and quality deviances. The operators’ main tasks are to periodically supply raw materials, remove finished products and monitor the process. Monitoring means measuring key process parameters, and taking regulatory action when deviances occur. Regulation of the furnaces is complex, since key process parameters such as temperature, pressure, voltage and volume are non-linearly related and feedback loops following regulatory actions are often very long. As one informant explained, an error in the placement of raw materials may first be observed as a process deviance 20 days after the misplacement occurred. Managers emphasized that because feedback loops are long, tasks need to be performed “right first time”, and therefore work standardization is extensive. The technological complexity demands multi-skilled workers (see Kern and Schumann, 1987) and two-

thirds of the blue-collar workers hold a formal, non-company-specific skill certificate. According to our informants, job rotation is common, but somewhat unevenly practised, since decisions about job rotation are delegated to the teams.

In 2007, the company decided to introduce a new business system, called the “metal production system” (MPS), based on the general principles of lean production (Liker, 2004). Over the following years the prices of its main products fell, and efforts to reduce costs through continuous improvement were intensified. In a formal manner, the MPS defines 1) the roles in each work team, including responsibilities for operations, maintenance and continuous improvement; 2) the interfaces between the different operational teams (volumes, quality and delivery times); 3) standard operating procedures; and 4) a toolbox for analysis and improvement of work flow.

The basic operational unit is the shift team, whose members work closely together on a day-to-day basis. Shift teams have between three and ten members, and are headed by a “team leader”. The team leader is a technical specialist who is responsible for some coordination tasks, but has no formal authority over the other team members. A group of shift teams constitutes an “area”, which is headed by an “area supervisor”. The area supervisor is the lowest managerial position. In each area, there are also one or several “technical supervisors”. The technical supervisors are experts in the different technical sub-processes and coordinate the activities of various offline teams, devoted to continuous improvement. Area supervisors and technical supervisors work in the daytime. In the evenings and at night, the plant is run in the absence of direct supervision. Operational task performance is guided by SOPs, from which operators are not allowed to depart. Especially critical (and often hazardous) tasks related to the operation of the furnaces are standardized in detail. The SOPs were initially derived as an explication of workers’ practice (cf. Nonaka, 1994), but have later been refined by the offline teams. There are two main types of offline teams: critical process teams (CP teams) and total productive maintenance teams (TPM teams). The mandate of CP teams is to standardize and improve key processes. TPM teams are concerned with production machinery and housekeeping (5S). These offline teams typically consist of one operator from each operational team, along with the area’s technical supervisor. They meet monthly or more frequently if significant production deviations occur.

## Work observation in practice

The MPS prescribes systematic work observation. In the production system documentation, SWO is presented as a means of proactively identifying deviances in task execution and initiating a discussion about both individual training needs and how the relevant SOPs can be improved. In the case company, SWO is referred to as SOP-WOC, an acronym for “Standard Operating Procedure – Walk, Observe and Communicate”. Supervisors (area and technical) are supposed to conduct a few SWOs each week. In some departments, team leaders are also expected to perform SWOs. After an SWO has been performed, a brief report is written and signed by the observer and the observed. This report provides input to the offline groups, who are responsible for continuous improvement. The SWO results are also communicated more informally through workers’ and supervisors’ cross-membership in online and offline groups.

Taken together, our empirical material indicates large variations in how SWO is perceived by our informants. At the negative end, workers describe SWO as “shop-floor surveillance”, “lunacy” and “insulting”. At the positive end, workers describe SWO as “an opportunity for learning”, and a way to “get feedback on how I do my job”. While the negative quotations point to elements of coercion (“surveillance”, “insult”), the positive quotations point to enabling SWO practice (“learning”, “feedback”). The further presentation of results identifies which factors, according to our informants, constitute and promote enabling SWO practice. The presentation is structured around three main themes resulting from the coding process (Corbin and Strauss, 2008): “supervisors should perform observations”, “frequent communication” and “technical competence”.

### **Supervisors should perform observations**

In most cases, supervisors initiate SWO and act as observers. According to several supervisors, SWO is their “managerial duty and responsibility”. One manager linked SWO directly to overall company goals: “The best thing [about the MPS] is SOP and WOC – if we do this right, then the company will make money on operations. We need to prioritize SOP-WOC.” When supervisors and middle managers were asked whether the company’s difficult market situation makes performing SWO more urgent, the answer was a unanimous “yes”. In addition, labour union representatives, who had initially been reluctant to work observations, argued that SWO is necessary to “bring down cost and protect jobs”.

The apprehension that SWO is a managerial responsibility is further illuminated by attempts to make team leaders responsible for SWO. Work design experts argued that this arrangement is desirable in order to increase the frequency of SWO, during evening and night shifts as well. As explained above, team leaders are generally not perceived to be part of management, but rather “first among equals”. At Plant 1, the suggestion that team leaders should perform SWO was rejected outright by labour union representatives and workers more generally. Responses indicated that “it should not be left to workers to discipline their peers”. A supervisor elaborated:

“Remember that this is a small community where everybody knows everybody and it takes guts to report poor performance. These guys are perhaps close friends or neighbours.”

The quotations indicate that although SWO is framed as an arena of learning, it retains an element of control. At Plant 3 and some departments in Plant 2, team leader SWO is practised. Here, a sort of compromise has been reached, in that work observations are performed, but no formal reports stating deviances in task execution are written. A team leader explained that deviances are resolved “there and then through direct feedback”. However, if the observation leads to improvement suggestions, these are forwarded to supervisors. This kind of “informal SWO” may raise awareness of work routines and lead to suggestions, but in the absence of written reports, it is not so well integrated with activities in the offline groups.

Taken together, our informants’ view was that SWO should be performed by supervisors. Furthermore, whether workers perceived SWO as a form of control or as an opportunity for learning was



dependent on the quality of interaction between supervisors and workers. The next two themes explore the nature of this interaction.

### Frequent communication

“The most important thing is to talk with people; work closely together. Discuss facts and give feedback – positive and negative. The technology is unstable, but I like the challenge and people become engaged. I go for a walk in the work area every day, and I’m often caught up in technical discussions. SOP-WOC is about reminding people about the routines, that they must be applied consistently. People like to get feedback. It is not about being strict, but to request the viewpoints of the workers.” (Technical supervisor)

“I need to make my people feel that they are important, and that their opinion matters.” (Middle manager)

“To me, it is extremely important that the supervisors listen to us. Not only the area supervisor, but technical personnel as well. If you have ideas, are annoyed or experience problems, they should be easy to contact. Tell them right away; then it won’t be a problem.” (Operator)

The three quotations illustrate one important factor with respect to making SWO an arena for learning: frequent communication between supervisors and workers. When interaction is frequent, relationships of trust are built and reinforced. Frequent interaction also promotes the building of shared goals around the SWO process. It is about “promoting process stability” and “not wasting money”, rather than “surveillance and blame”. Both supervisors and workers emphasized that SWO should be part of an “ongoing conversation” about work routines. This reference to “ongoing conversation” indicates openness to suggestions and more symmetrical relations of power. Somewhat peculiar in light of the previous theme, workers seemed to suggest that while the observer should be a supervisor, the supervisor should act less like a manager and more like a peer.

The MPS documentation prescribes that supervisors should be “visible”; that is, “be present on the shop floor”, “challenge workers” and “give clear and consistent feedback”. In practice, such idealized concepts of leadership have been shown to be hard to implement (Alvesson and Sveningsson, 2003). However, at the plants this notion of “visible leadership” has entered workers’ vocabulary as a normative expectation for supervisors’ behaviour. Furthermore, “visible leadership” is closely associated with the SOP-WOC, and in particular the “C”: communicate. Supervisors who succeed in being visible on a day-to-day basis, and are “good at communicating”, can more legitimately take on the role as an observer in SWO.

Three examples illustrate the importance of “visibility” and “communication”. In one department at Plant 1, supervisors had neglected to perform the prescribed number of SWOs during the year. Right before Christmas, they decided to make up for this, and performed SWO with intense frequency. This behaviour was denounced by the workers:

“This Christmas ritual is done at the last minute just for achieving a formal goal. [Supervisors] coming to the shop floor like a flock of sheep before Christmas is too silly.”

The other example refers to an episode at Plant 2, where a high-level manager performed a work observation. According to the labour union representative, this was not successful:

“During regular SOP-WOC, we focus on the “C”. But when people like N.N. [the manager] come by, we call the observation WO: Walk Over, because he does not communicate. For us, this distinction is crucial, and supervisors know that.”

At Plant 3 the researchers encountered another play on words. An operator ironically remarked that the supervisors in his department thought the “C” in SOP-WOC meant “conclude”, not “communicate”. The supervisors he referred to gave feedback, but were uninterested in two-way communication.

Pejorative references to “Christmas ritual”, “Walk Over” and “Walk-Observe-Conclude” show that inconsistent SWO practice and failure to engage in a real dialogue trigger resistance. Poor communication is not appreciated, but writing SWO reports without prior communication is even worse. A worker referred to this latter practice as “unthinkable; you just can’t do that”. A reasonable interpretation of this statement is that a lack of communication will severely undermine the trust relationship between supervisor and worker.

## Technical competence

“[When performing SWO], the area supervisors must be experts on the procedures. It is not enough that he observes the operation, he must know whether is it correct or not.” (Operator)

Frequent communication builds trust, but is by itself insufficient for enabling SWO practice unless the supervisors are perceived as highly technically competent. The technical competence of the supervisor is important, since a standard operating procedure is very specific about every minute detail of an operation. Once again, an example illustrates the importance of technical competence. In relation to the “Christmas ritual” at Plant 1, workers complained that the supervisors were not up to date on the operating procedures:

“Leaders came around and asked lots of stupid questions and left without communicating or responding to our thoughts. This kind of SOP-WOC could be dropped, it would be better with fewer rounds with competent people.”

The competence called for here is not necessarily theoretical knowledge, but rather intimate knowledge of the procedures and the practical challenges that workers experience. This was evident at Plant 2, where supervisors are almost exclusively former blue-collar workers. Their prior hands-on experience was unanimously perceived as a benefit when performing SWO.

## Discussion

The main findings from the case study can be summarized as follows. The core constitutive element of enabling SWO practice is genuine two-way communication between the observer and the observed. Unless observers engage in real discussions about the results of the observation, SWO is perceived as coercive. Enabling SWO practice is promoted by frequent day-to-day interaction between supervisors and workers. Frequent interaction builds relationships of trust and a shared purpose. A necessary requirement is that supervisors are technically competent and know the details of the operating procedures. Our results also indicate that supervisors, not fellow operators, should preferably take the role as observers. The rationale for this assertion seems to be that however enabling it is, SWO also retains an element of control by discovering deviant task execution. At least in the case company, employees preferred this control function to be attended to by managers, not peers.

The literature on high-performance work systems (HPWS) also emphasizes the importance of trust relationships between workers and supervisors in team-based organizations (Boxall and Macky, 2009; Evans and Davis, 2005). While HPWS models suggest that trust promotes self-management, which again makes close supervision superfluous (Evans and Davis, 2005), our findings emphasize the positive contribution of frequent interactions between supervisors and workers. Our finding that SWO success is contingent on supervisors' in-depth technical knowledge about work procedures also runs counter to models of team-based supervision in which the primary functions of supervision are social support, facilitation and encouragement of team members (Manz and Sims, 1987; Stewart and Manz, 1995). On the other hand, studies of continuous improvement under lean production have shown that technically competent supervisors play a crucial role in initiating and coordinating improvement activity (Fujimoto, 1999; Liker, 2004). It is hardly surprising that this finding is replicated in our case company, whose production system was inspired by lean production principles. However, there is no necessary connection between SWO and lean production. SWO is based on the theoretical concept of the learning bureaucracy (Adler, 1993; Adler and Borys, 1996), which includes lean production, but also other organizational forms in which standardized work is combined with continuous improvement. Hence, the boundary condition of this study is not lean production, or material production more generally, but rather organizations that comply with the learning bureaucracy model. Systematic work observations may also be applied to routine service operations.

If frequent worker–supervisor interaction and supervisors' technical competence are important factors promoting the enabling form of SWO, then it logically follows that SWO is supported by limited supervisory spans of control. Broad spans of control make interaction less frequent and make it more difficult for supervisors to keep up to date on continuously evolving operational procedures. According to Gittell (2000; 2001), narrow spans of control improve operational performance by strengthening “relational coordination” through the building of shared goals, coaching and feedback. Our findings are consistent with Gittell's general argument, and add to her causal model the importance of supervisors' technical knowledge. The importance of technical knowledge also makes the case for internal recruitment of supervisors or at least extensive shop-floor training for leader candidates (Spear, 2004).

This paper has explored SWO on a micro level, emphasizing the dyadic relationship between the observer and the observed. Hence, a limitation of the study is the relative neglect of organizational-level factors. In particular, relations of trust are likely to be influenced by the organizational climate, the nature of power distribution and worker participation more generally (Boxall and Macky, 2009). Although not explored in our empirical analysis, we propose that the active involvement of workers in the design of SOPs tends to make SWO more enabling. Future research may complement our study by discussing SWO within a broader organizational theoretical framework. We also encourage more micro-level studies of SWO that explore whether our findings have general validity across companies and sectors.

## Conclusion and managerial implications

Continuous improvement in the context of standardized work requires that work standards are periodically “unlocked”; that is, made objects of reflection and improvement. Complementing conventional quality management and employee suggestion schemes, this paper has shown how work standards can be unlocked through systematic work observation. Systematic work observation is particularly relevant in contexts where tasks are highly interdependent and the degree of automation is high. Because of its historical association with Scientific Management, work observation may be highly contested. However, in an enabling form, characterized by dialogue and joint reflection between the observer and the observed, work observation can support continuous improvement by identifying deviances in task execution and triggering reflection and suggestions.

Our findings suggest that companies that seek to implement systematic work observation should take care to build trust relationships between workers and the supervisors who will act as observers. Supervisors should be trained in the operational procedures and encouraged to be visible on the shop floor on a day-to-day basis. These success factors are supported by keeping supervisory control spans limited.

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