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Lean *versus* Learning? Work Organization, Job Quality and the making of innovative workplaces in the Aerospace Industry in France and Sweden

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Abstract

This study, based on cases studies in the aerospace industry in France and Sweden, explores how work organizational designs and changes may impact on the innovative capacity of firms, with job quality playing as a mediating factor. “Lean” organizational principles were witnessed in all the cases, sometimes introduced by recent organizational changes, but there were significant differences in the way they had been implemented and were impacting on work organizations. A more “technocratic” form of Lean was dominant in the French cases, also coherent with a more hierarchical and bureaucratic form of organization, with top-down planning and control mode of organizational change management, and the domination of the Science-Technology-Innovation (STI) mode of innovation. It contrasted with the more “agile” form of Lean, compatible with the more decentralized “learning” type of organization, the process and learning mode of organizational change management, and the Doing-Using-Interacting mode of innovation, that were better illustrated by the Swedish cases. This resulted in differences in job quality outcomes, in particular in terms of autonomy and involvement and overall job satisfaction, which are important conditions for the making of an innovative workplace. Social dialogue played an important role in accounting for the differences across countries. While in the French cases, unions took on more of a defensive strategy – in line with the more hierarchical “top-down” organization and mode of management–, their Swedish counterparts were playing a more active role - by both formal and informal ways - in promoting a work organization favorable to job quality that enhanced the innovative capacity of the workers and their firms

Introduction

Innovation has become a mantra in nowadays economies. Indeed, because of fierce competition in an increasing globalised context, companies that do not innovate are threatened to disappear, or condemned to social dumping strategies, with negative effects on job quality whether in terms of compensation, job security and working conditions. Innovation is often considered as the solution to combine both economic performance and high quality jobs. At macro level, observers and policy makers tend to focus mainly on technological dimension of innovations, both in terms of product and process, and on the role of research and development (R&D). But this view is too restrictive. At company level, organizational concerns emerge as central. Many companies try to increase productivity and the overall performance by adopting *organizational* innovations - i.e. "new organizational methods in the firm's business practices, workplace organization or external relations" (OECD and Eurostat, 2005). *Work* organizational innovations, more specifically, most often intend not only to increase the *allocative* efficiency of workplaces (i.e. doing more and better with less), but also their *dynamic* efficiency (i.e. enhancing their capacity to innovate). The challenge is to generate an "innovative workplace", defined here as "*a work environment that provides a fertile ground for innovations*" (OECD, 2010: 11), i.e. where employees mobilize their knowledge and other organizational resources to contribute to the emergence of new products and services, and/or new ways of producing and/or selling them. In this line, the so-called "high performance work systems" (HPWS) (Appelbaum et al., 2000), a concept that has attracted a lot of attention in the past twenty years, are supposed to be able to reconcile economic performance and job quality, as the latter, to some extent, conditions the former Gallie (2018). However, there is an important variety in both the implementation of HPWSs and their outcomes for workers, in particular in terms of real participation to decision making and overall work satisfaction, and notably across industries, depending on structural variables such as technology and market structures. Some authors have also suggested that HPWSs outcomes, both in terms of performance and job quality, may be contingent on the national institutional context (Godard, 2004).

Even if the interest for HPWSs has emerged more than twenty years ago, the existing literature remains scarce on how precisely and under what conditions a given work organization - covering both the organization of work activities and the associated management practices - impacts positively the innovative capacity of firms. The potential mediating role of job quality (JQ) must in particular be analyzed more in depth. But to fully understand the making of innovative workplaces, the role of contextual factors shaping the "work organization-JQ-innovative capacity" nexus must be also elucidated - whether technological, economical or institutional.

To do so, we focus on a particular sector, the Aerospace industry (AeS). This industry is particularly interesting from our perspective. It is an innovation leader, at least in products and new materials, as well as in processes. Beyond research and development, developing innovative workplaces is crucial for the companies in the sector. Some specific features - such as the high average skill of the workforce (including at blue-collar level) and the high share of big companies competing on quality as much as on price - make this industry a particularly favorable ground for the adoption of HPWSs. Moreover, AeS has experienced steady growth in demand since the mid-2000s, and was much less affected by the crisis that began in 2008 than other sectors in manufacturing. The pressure for aggressive cost-cutting strategies was on average therefore much more limited. Our study relies on qualitative empirical evidence from two main sources, industry experts and in-depth case studies. The latter were carried out in companies with different positions in the global supply-chain in France (FR) and Sweden (SW). These two countries, of comparable development level, offer contrasting institutional contexts. They also both display important differences with "liberal market" economies - such as the United-Kingdom and The United-States - on which most of the existing literature has focused. It must however be emphasized that our purpose is not to provide a comparative analysis of the AeS industry in these two countries. By introducing variation in national institutional contexts, the aim is to better understand factors underlying and impacting the interplay between work organization, job quality (JQ) and the innovative capacity of firms at micro-level.

Our objective is to analyze how work organizations, but also, in a more dynamic perspective, the way they are introduced (in relation to the management of change) may impact on the innovative capacity of firms through their effects on JQ. We focus more particularly on specific JQ components related to work autonomy and discretionary learning opportunities - what Gallie (2018) labels "innovation-conducive job quality". We also assess the role of contextual factors inside and outside the entities under study, such as social dialogue, the importance of competitive pressure, and national culture, which all may condition the "work organization-job quality-innovative capacity" nexus. By doing so, we highlight some crucial mechanisms underlying the making of innovative workplaces.

Assessing the interactions between work organizations, job quality and innovative capacities

From the mid-eighties, as the decline of the Taylorist-Fordist paradigm was patent in Western countries whereas new models of organization were underlying the Japanese outstanding competitive performance, there was an increasing interest in the managerial and industrial relations literature for new forms of organizing and managing work. The issue of workers' "involvement" emerged rapidly as a potential key factor of workplace performance (Lawler, 1986). The paradigm of HPWSs gained popularity from mid-nineties, as it provided a framework for reconciling job quality - notably high workers' autonomy, commitment and satisfaction - and

performance (Appelbaum, et al., op.cit.; see also Boxall and Winterton, 2018). New organizations were not only about new forms of management promoting workers' participation ("high involvement work practices"), it was also about organizing work differently by new practices such as team work and job rotation. The "Lean" model, in particular, partly inspired by the successful Japanese Toyotism, spread from the automotive industry, at that time the leader in terms of work organizational innovations, to other sectors, including service activities starting with logistics. But criticisms about the unfulfilled promises of HPWSs in terms of *real* worker's autonomy and involvement soon appeared. Critical research on work organizational changes associated with HPWSs and partnership has focused in particular on the implementation of Lean. Lack of real workers' participation - beyond formal consultation - was pointed out, as well as, in many cases work intensification and the maintenance of tight monitoring of work. The first studies were based on empirical evidence from relatively low skill, mass production and service environments, but other studies soon highlighted similar patterns, in terms of poor real workers' involvement, in high-skilled sectors. In the Aerospace industry, the study of Danford et al. (2004) on a big AeS British firm where HPWS practices had been introduced with a strong emphasis on "workplace partnership" offers a good illustration, as it found a sharp contrast in this firm between the management's rhetoric and the formal procedures on the one hand, and the widespread workers' feeling of not being really consulted on the other hand. Overall, one lesson of this first strand of literature is that under the umbrella of the label "HPWS" can be found different patterns of work organizations and associated JQ, with potential contrasted outcomes in terms of workplace performance. As most of the empirical evidence on the gap between HPWSs and real high-involvement work organizations came from liberal market economies, some critics of the HPWSs "paradigm" pointed out the potential role of the national institutional context (Godard, op.cit.).

Another strand of literature, initiated in mainland Europe, has scrutinized more precisely on how different forms of work organizations may be correlated with different workplace innovative capacities, and what dimensions of JQ may play as a mediating factor. From a quantitative cluster analysis carried out on the European Working Conditions Survey, Lorenz and Valeyre (2005) have distinguished two types of work organizations related to so-considered HPWSs, the "lean" and the "learning" one - in addition the Taylorist type and the simple-traditional type of work organizations still dominant in many firms. Both the "lean" and the "learning" types are characterized by "strong learning dynamics" (in contrast with the other two), but they differ in terms of centralization, worker autonomy, and worker involvement. If the learning type is "*a relatively decentralised model associated with substantial employee autonomy in setting work methods and work pace*", the lean type is a "*more hierarchical model, which places emphasis on regulating individual or group work pace by setting tight quantitative production norms and precise quality standards*" (Lorenz and Valeyre, 2005: 425). The learning (and simple) types of organizations are correlated with higher degree of job satisfaction than the lean dominant types of organizations (Lorenz et al., 2004). In particular job stress (related to

“work to an intense pace”, “working to sharp delays”, “insufficient time to complete job”) is less widespread in learning (and simple) organizations than in lean organizations (Idem, p 20, table 8). The authors found that the predominance of the different types of work organization varies across industries, but also across countries - the "learning" type being more widespread in the Scandinavian countries.

Innovation modes - i.e. the way innovations are generated - are correlated to the different types of work organizations. Jensen et. al. (2007) have highlighted the key difference between the “Science, Technology and Innovation (STI-)” mode of innovation and “Doing, Using and Interacting (DUI-)” mode. The STI-mode gives main emphasis to promoting R&D and creating access to explicit codified knowledge (i.e. knowledge that is codified in signs and symbols stored in blueprints and recipes of written rules and procedures held in books or e.g. computer systems). The DUI-mode of innovation is more decentralized and greater emphasis is placed on the role played by informal communication and communities of practice as mechanisms for mobilizing tacit knowledge when problem-solving and learning - all features that are keys to the learning type of work organization. Arundel et al. (2007) found that in countries where work organization allows discretionary learning and high levels of discretion for problem solving - i.e. where "the learning" type of HWPS is more widespread - firms tend to be more active in "endogenous innovation" (i.e. innovation generated and developed in-house). Whereas in countries where those capacities are more constrained, and where workers have less discretion, firms more often innovate by absorbing innovations developed elsewhere. However, the STI- and the DUI-mode can be combined, and Jensen et. al (op.cit) found that firms using mixed strategies combining strong modes of both innovation types excelled when it came to product innovation.

Overall, both strands of literature emphasize that JQ is a mediating factor underlying the relation between work organization and the workers' innovative capacity. The effect of JQ may follow a *motivational* path (by increasing workers' motivation to be innovative) and a *cognitive* path (by enhancing workers' capacity to mobilize their abilities and skills to innovate). The overall JQ and associated job satisfaction may play a role through the motivational path¹. But the existing literature suggests that the some specific dimensions of JQ may be of particular importance for both the motivational and the cognitive paths. These are the “innovation-conducive JQ” features identified by Gallie (op.cit) - such as job security, participation in decision-making, work autonomy, task discretion and opportunities of discretionary learning - i.e. “complex problem-solving and freedom to choose or change one's work methods and pace

¹ According to comprehensive definition adopted by the *European Foundation for the Improvement of Living and Working Conditions* (see for instance Eurofound, 2017: 36-37), the European Union tri-partite agency, JQ covers seven items: physical environment of work activity, work intensity, working time quality, social environment (including social support in the workplace and quality of management), skills and discretion (including participation), employment conditions (including job security and career prospects), and earnings.

of work” (Lundvall and Lorenz, 2012:237). These features seem to be more frequent in the "learning" than in the "lean" type of organization (Holm et. al, 2010).

Our key assumption is that the interplays between work organization, JQ and the workplace innovative capacity are embedded in certain organizations, which are themselves embedded in specific institutional contexts – in particular industrial relations systems and social dialogue practices - but also cultural patterns. Our aim is to better understand how and why companies in a given industry may adopt different work organizations with contrasted outcomes in terms JQ, and associated innovative capacity. Beyond factors accounting for across firm variety, as pointed out above, the “modes of innovation / work organization” literature has highlighted important national differences, in the spread of both organization types and modes of innovation. Our objective is to go a step further, and to analyze more precisely the role of institutions in the shaping of the "work organization-JQ-innovative capacity" nexus at workplace level.

Adopting a qualitative methodology may be very helpful, to open the black box and carry out an in-depth analysis of the interplay of these different factors. Company-level analysis may also help to understand the role of other contextual factors such as market pressures resulting from the position in the supply chain, but also the type of products manufactures that may influence technological and associated organizational choices - even if focusing on one sector helps controlling for some of these variables. Case studies allow to better understand both the representations, the motives and the behaviors of the different key actors: management, the employee representatives and the employees themselves. By focusing on two countries - France and Sweden - we intend to identify the potential role of national contextual factors.

Overview of the methodology and the company cases

The sample of case studies was not meant to be representative in the statistical sense, but rather illustrative of potential varieties in situations that may influence the interplays under scrutiny. The choice of firm cases was preceded by an in-depth industry analysis based on documentary sources and interviews with experts from employers' organizations and trade unions at industry level; consulting firms, chambers of commerce and industry (see Authors et al., 2018). In this study, the firm's position in the supply-chain surfaced as an important potential explanatory factor. The nature of the product and its scale of production (i.e. mass-production of standardized products *versus* small batches of niche products) were also identified as important.

To better disentangle the potential role played by institutional contexts compared to other factors, the aim was to choose cases that were as similar as possible across France and Sweden. Unfortunately, significant barriers to access were encountered that prevented completion of the targeted number of case studies (six were planned in the first place). When access was

possible, interviews (mainly individual face-to-face interviews, but even focus group face-to-face interviews, telephone interviews and interviews during walk-arounds at the shop floor) were carried out with as many stakeholders as possible (managers, employees, employee representatives). The duration of interviews varied from twenty minutes to three hours.

Overall, five case studies based on data gathered from a total of 71 in-depth interviews were completed – in addition to a dozen of interviews with experts. The interviews were carried out during the second half of 2016 and the first half of 2017. An ethical requirement for anonymity prevents disclosure of specific details about each of the case study companies; with pseudonyms used when referring to the specific companies.

FR-Plane is a big OEM aircraft manufacturer. It is part of a large multinational group. It is an innovation leader, both in products and processes, with high activity in R&D. We focused mainly on one plant (FACT1), which was organised into different divisions (A, B, C etc.) where each division corresponded to one model of aircraft, with some specificity and autonomy in terms of organization. We also conducted interviews at a second plant (FACT2). Both plants had a workforce in excess of 2,500 employees, among which about 50 to 60 per cent were blue-collar workers. The share of temporary agency workers was high (about 20 per cent in FACT1). So was the unionisation rate (about 80 per cent in FACT1 for instance, as compared to an average of about 5 per cent in the French private sector). The two factories assembled specific segments of different types of aircrafts, that themselves are assembled in another factory of **FR-Plane**. For both FACT1 and FACT2, the activity had increased notably since 2010, with a correlative increase in the number of employees. Still, there was an important pressure to reduce costs and increase profitability. Both factories were located in the same region, and highly involved in a local cluster, with active cooperation with other companies and public institutions in the field of training and R&D.

FR-Parts 1 produces parts for OEMs – among which **FR-Plane** –, but also for other Tier 1 companies in the supply-chain. It is a member of a large group, which also has activities outside the AeS industry. We mainly focused on a plant of less than 500 employees, among which about 75 per cent were blue-collar workers. Temporary agency workers accounted for about 25 per cent of the workforce. The unionisation rate was rather low at the establishment-level. The factory was recently created (2010) after taking over an activity that was outsourced by **FR-Plane**. **FR-Parts 1** was under high pressure from its clients, with high targets in terms of annual cost reduction (about 10 per cent a year). Competition was high, as **FR-Parts 1** had to apply for tenders, and the duration of the obtained contracts with clients had decreased in the recent years. The establishments located in France was also experiencing internal competitive pressure because the company had two offshored factories (in North-Africa and South-America). **FR-Parts 1** had seen a reduced level of autonomy in terms of product innovation compared to an OEM or a “Super Tier 1” sub-contractor - i.e. a strategic subcontractor for OEMs because of the

specificity and quality of its products - as its product specifications were mostly determined by the client.

FR-Parts 2 also produces parts for OEMs – but its products are very specific, produced in small batches, in particular in composite materials, for which it is an innovation leader. It also manufactures components for propulsion systems. It is mainly a “Super-Tier 1” sub-contractor in the supply-chain, with high R&D activity. It is a subsidiary of a large multinational company that has undergone multiple restructurings during the past 15 years – including mergers and buy outs, which have affected the whole industry during the period – with several changes in trading names and perimeter. It was state-owned up until to the beginning of the 1990s and used to operate mainly in the military sector. Budgetary constraint used to be relatively soft at that time, but this was no longer the situation at the time of the research. At the time for our interviews, the establishment had more than 500 employees, among which a majority were white-collar workers (many engineers and technicians working in design-departments). There was a low rate of temporary agency workers and the rate of unionisation is rather low.

SW-Plane is an OEM of aircrafts that also produces segments for other aircraft manufacturers. The case study focused on the manufacturing of aircrafts – where there is a high level of R&D activity. The entity we studied had more than 2,500 employees. The share of blue-collar workers was approximately 30 per cent, and the share of temporary agency workers was negligible. Nearly all employees were represented by a trade union (the union density was about 90 per cent among blue-collar workers and about 85 per cent among white-collar workers). The company had undergone a lot of restructuring since the end of the 1990s, with substantial redundancies having been made up to the 2010s. It had, in particular, had to cope with reduced orders from the State (defense activities) and to find new clients abroad. However, in recent years the number of employees had begun to increase in parallel with new orders. Hundreds of engineers had been recruited in the past four years and the number of operators was expected to increase. The company was highly involved in the regional AeS cluster, as in several research and innovation programs.

SW-Parts manufactures metal parts and components for OEMs (among which **SW-Plane**). It is a family-owned company with less than 200 employees and one establishment that had undergone rapid expansion in recent years. The share of blue-collar workers in the entity was about 70 per cent and the share of temporary agency workers was very low (less than 5 per cent). Almost all white-collar workers started working in blue-collar jobs. Most of the workers were unionized, but it was only recently that union entities were created in the establishment. Until recently, the company mainly had clients from outside the AeS industry. Now, the company has taken a big step increasing its aerospace activities by becoming a Tier 1 sub-contractor of SW-plane.

Lean versus learning? Contrasted patterns of the "work organization-JQ-innovative capacity" nexus

Even if the production process in our company cases displayed important similarities in terms of technology, there were significative differences in terms of work organization. This could appear surprising at first sight, as in all our cases "Lean" principles and tools had been adopted more or less recently. Nevertheless, the way Lean was implemented differed notably across companies, both in terms of the managements' change strategies, and concerning the outcomes in terms of work organization once introduced. There was in particular a contrast between the French and the Swedish firms. The different ways of implementing Lean had a clear impact on JQ, and the induced innovative capacity of the workplaces. In France, a "technocratic" form of Lean and the associated quite bureaucratic work organization was increasingly identified by management as an obstacle to innovation. As a consequence, organizational innovations were called for and even, in some cases, experimented, to increase the innovative capacity by impacting positively on JQ. By contrast, in Sweden, the implementation of Lean was more in coherence with the "learning" type of organization already in place, and, even, by some aspects, reinforced some of its basic principles.

Diversity in Lean implementation and resulting differences in work organization

The label "lean" in Lorenz and Valeyre's (2005) typology – see above – designates a bundle of work organization features often found in workplaces where "Lean" was implemented. The concept of "Lean" refers in the management literature to both general principles such as optimization by reduction in wastes and "continuous improvements" – as well as a series of tools and procedures, such as Kanban, team organization, orderliness (5S), value stream mapping, visual management, quality control process charts etc.. Lean procedures aim at optimizing the whole supply-chain inside the company but also with suppliers, in order to reduce costs by wastes elimination, and to monitor quality with formal standards and procedures but also to be more reactive to the customers' demand. Such elements were present in all the cases, and management (and employees) referred explicitly to the concept of Lean to designate them. But the way they were implemented differed notably across cases. In all the three French cases, Lean was implemented in a quite technocratic top-down way, with very scarce employees' consultation, even at white-collar level. Lean transformation focused on the standardization and formalization of procedures, as well as on cost-cutting by suppressing support functions.

In **FR-Plane**, at company level, Lean was initially presented by top management as a big organizational innovation in the end of the 2000s, inspired by the automotive industry. It was implemented in a very authoritarian top-down way, introducing the Lean tools and procedures without considering the company specificities, with very low employee involvement. The company hired managers coming from car automobile manufacturers to do so. Even if, in a second stage of implementation there were some adaptations, the work process remained

highly standardized and formalized, as well as centralized. Similar features were witnessed in **FR-Parts 1** and **FR-Parts 2**. In the work process resulting from the implementation of Lean, the “management by indicators” was significantly increased. For instance, in **FR-Plane**, the director of Division C estimated that he had to monitor around 200 indicators to rule the activity of his Division. The result was a bureaucratic inflation due to increased reporting requirements:

Before, you just had one boss [i.e. manager] and 50 persons who worked. Nowadays, you have just one person who works, and 50 persons doing reporting! (Technician and union delegate, **FR-Parts 2**)

As a consequence, rank-and-file employees complained that first-level managers were “more and more in their office checking indicators, and less and less in the shop floor” (director of FACT1 Division C, **FR-Plane**) to respond to their questions or listen to their suggestions. Vertical and, to lesser extent, horizontal communications were more and more formalized. Daily morning meetings in the shop floor consisted mainly of running through a formal check-list to detect any problems that had occurred, so adjustments or changes could be made as quickly as possible. In **FR-Plane and FR-Parts 1**, this process was formalized by using the “SQCDP” board covering five issues (Safety (S), Quality (Q), Costs (C), Delivery (D) and People (P) -i.e. human resource indicators, in particular absenteeism) with a “fire-light” visual system (green, orange and red). Morning meetings were complemented by multi-functional meetings (i.e. meetings on production, maintenance, logistics, etc.) aimed at facilitating coordination between services/departments and promoting improvement suggestions from employees. Yet in the French cases, the workers complained that the morning meetings were mainly reduced to list checking and top-down transmission of information, and/or that only team leaders (such as in **FR-Parts 1**) participated in multi-functional meetings.

In the Swedish cases, the lean implementation appeared to be less top-down and less formal, and also more focused on learning activities and continuous-improvement, associated with higher workers' involvement, and accompanied by higher investments in training. In **SW-Plane**, it was referred to implementation of “Lean principles with an agile approach”, based on the idea that an individual worker has a lot of autonomy and discretion as long as it is exercised within the frame of the group – whether the group mean the operator teams or continuous improvement teams. The latter, i.e. the continuous improvement teams, could for instance comprise three goal steered operator teams or a group consisting of representatives of the goal steered operator teams, production leaders and the support teams. Eventually, the agile approach permeating the implementation also came to be supported by the development of the training body. The human resource manager appointed an education manager and set up the so called “Strategic education council” comprising 10 representatives from different departments dealing with competence and training questions regarding both blue- and white-collar workers. For instance, from now on it was not enough that newly recruited blue-collar production workers had a secondary education (i.e. upper secondary school, industrial upper secondary school or industrial upper secondary school with a specialization in aeronautics) or

adequate experience from other industries. They also had to pass the company's own 26 weeks full-time training course, 50 per cent theory and 50 per cent practice, and an ability test. For the time of the case studies, two classes were running. Each class consisted of about 15 trainees. They were trained by **SW-Plane's** three professional workshop teachers working full-time with vocational training. If the trainees passed the course and the ability test, they were guaranteed job security in terms of a permanent employment. The agile approach and the investments in competence development were parts of the explanation of why the employees were able to retain a high degree of autonomy and job discretion.

In **SW-Parts**, Lean was framed and translated into the organization with the help of a consulting firm. The implementation was made within the framework of the national and public supported development program "The Production Leap". At the shop floor, the workers were organized in teams participating in morning meetings taking decisions on production results, goals and staffing. Kanban systems and principles of orderliness (5S) were also discussed. Following on from the morning meetings, the **SW-Part** team leaders participated in daily steering meetings (in "the lean-room") with the production manager and technicians. By increased involvement of the employees in the production process, the aim was to introduce more standardized procedures in order to better comply with the requirements of clients both in volume and quality. At the shop floor, there were apparently some similarities with the Lean tools implemented in the French cases. Yet, in **SW-Parts**, there was no evidence of an excessive increase of formalized indicators and the corresponding inflation in reporting. Also, in contrast to the French cases, if the decision-making process in **SW-Parts** was initially much centralized, it was soon decentralized to better facilitate worker involvement in decision-making concerning problem solving and improvement activities. In particular, weekly 45 minutes brainstorming-improvement meetings with all workers were introduced to foster the bottom-up suggestions and initiatives.

Overall, the way Lean was adopted in France participates to the fact that, in terms of work organization, our French cases fall in the "lean type" (according to the Lorenz and Valeyre typology, see above), and even sometimes in between the "lean" and the "Taylorist" type². While both the Swedish cases were closer to the "learning type" of organization, but with some nuances, **SW-Parts** falling more in between the learning and lean type, as Lean was introduced in a more formal way than in **SW-Plane**. It is indeed not only, in a static way, the content of Lean (in terms of formal tools or practices) which made the difference between the cases in the two countries. It is also, in a more dynamic perspective, the way Lean was implemented as an organizational change – i.e. how this change was managed. From this point of view, the Swedish

² This was particularly the case in Division C of FACT 1 in **FR-Plane**. As in the rest of the company, strong lean procedures have been implemented. But the specificity was that a new assembly line was also introduced, to cope with the increase in production. It consists of a flow-line (a moving assembly-line called "pulse line"). According to the employees and union delegates interviewed, this new system had led to reduced job discretion, more repetitive tasks and some work intensification – the usual outcomes of Taylorisation.

adoption of Lean placed a greater emphasis on training and the “process and learning mode”, based on “continuous learning and ongoing evaluation” – as stated by Elg et al., (2015: 3) – whereby change is conceived more as an open process of learning and mutual adoption between different actors and from different perspectives. In contrast, the top-down “planning and control” mode of organizational change was dominant in the French firms.

The outcomes in terms of JQ, and the consequences for the innovative capacity of firms

A number of the implications arising from the way Lean was implemented seemed similar in France and Sweden, but the question of job satisfaction related to stress stands out. In both France and Sweden, workers experienced an increase in stress because of more focus on production flows and team-working. They felt they had become more dependent upon one another, for better or worse. The interdependence could be characterized as having induced what can be labelled a “weak link” syndrome. That is, worries about failure at the level of the individual worker because if he/she does not meet the deadlines he/she knows this will disrupt the entire production process. However, there were differences between the two countries, concerning the sources and level of stress, but also in relation with the employee's subjective perception of their own work (in terms of professional pride) and of the support they could receive from their peers and management.

In both the Swedish cases, stress was not only about Lean and work organization. In **SW-Parts**, it resulted also from an increase in all security and quality requirements because the company now were sub-contracting for an OEM aircraft manufacturer; the parts **SW-Parts** now manufactured were safety critical according to higher international standards. In **SW-Plane**, the implementation of Lean induced tougher deadlines, but stress was also induced by the challenge in terms of professional pride, as pointed out by a HRM manager:

Some employees experience stress when time is critical, because most of them have a professional pride, that “I will manage”, even though it means to stay late at work a couple of evenings. (Personnel manager, **SW-Plane**)

In France, stress and the associated job dissatisfaction was induced by important work intensification and reduction in deadliness impacting negatively on the quality of the work done as perceived by the workers, even at white collar level:

Work intensification is not only due to the decrease in staff [in particular in support functions]. It is also a consequence of the tightening of the deadlines [...]. Nowadays, the deadlines are so short, that the worker often says “OK, I sacrifice this or this in order to be able to meet the deadlines [...]”. And the workers are not happy with this. (Technician, union delegate, **FR-Parts 2**)

This feeling of doing bad quality work was particularly strong in the division of **FR-Plane** where the so-called pulse assembly line had been introduced, with a corrosive effect on professional pride:

It even happens that operators say “I am doing shit”.... More often: “I don't have time enough to make good work”; this feeling of not doing their work properly [“selon les règles de l'art”, literal

translation: “according to the craft rules”) is spreading. But management does not care: “we do not need over-quality”, as long as quality targets are met [according to the indicators]. (Operator and union delegate in **FR-Plane** FACT1 Division C)

An aggravating factor, also directly connected with work organization, was that employees often felt the lack of support from their colleagues. The "weak-link syndrome" mentioned above appeared more intense in the French companies. As expressed by one technician:

Nowadays, the failure is seen as the responsibility of individuals, whereas before the responsibility was taken at a collective level [...] you could receive more support and help from your team, but much less now, also because of the lack of time. [...] even worst, when your colleague fails you may feel a bit relieved (“it's not me, it's him!”), and you may benefit from it because the resulting delay alleviates your own time pressure. (Technician and union delegate, **FR-Parts 2**)

But the problem came also from management. As mentioned above, the inflation of indicators had partially crowded out the interactive monitoring role of managers (i.e. the human interactions with their subordinates) with some evidence of a de-humanizing effect on work organization:

Before [the new Lean based organization] we did not have all these formalized tools; we interacted more directly with the managers, the human dimension was much more important. (Team leader, **FR-Parts 1**)

In the Swedish cases no complaints emerged about the role of managers. Quite the contrary, as managers, team-leaders and operators all seemed satisfied with the new organization in terms of hierarchical relations and associated coordinated outcomes. In **SW-Parts**, employees were particularly satisfied with the implementation of the team leader position (filled with former operators) and how team leaders contributed to the Lean development. For instance, an operator and blue-collar trade union representative noted that the existence of team leaders made it:

... easier to find the person that can answer your questions. Before, it was just one person [the production leader] for all of us. Now, you can get hold of the team leader, fast, and he can take your question further, if you don't have time to chase somebody responsible for the thing you want to ask about. It's really good, I think. (Operator and trade union representative, **SW-Parts**)

Overall job satisfaction was higher in the Swedish companies - and therefore, consequently, the workers' motivation to be innovative. Beyond job satisfaction, the work organizations in the French companies tended to differ in terms of work autonomy, participation in decision making and learning possibilities - components conditioning the "cognitive path" between JQ and innovation, as mentioned above. In the French firms - more particularly in some departments of **FR-Plane** and in **FR-Parts 1**, - the work organization was clearly biased against the DUI mode of innovation. Several operators complained that that informal daily-creativity was displaced by standardization and degradation of work. As an operator and union delegate in **FR-Plane**, put it:

[In the new work organization] there is a loss in innovation [...] you don't have to think anymore, you just have to follow the instructions [...] the autonomy of workers has been reduced, and correlatively, their capacity to innovate. It's those who make the product who can contribute to

ameliorate it. It's the entire chain of competencies which is important, from the engineer to the operator [...] To compensate, monthly meetings have been introduced, and suggestion boxes [...] but it does not replace the good way: making improvements by mobilizing the workers' intelligence on his job [...] [the new process] is Taylorization [...] But they are mistaking: here [in aeronautics], it is not like the car industry. You need the know-how of workers. (Operator and union delegate, **FR-Plane**, FACT 2)

This view contrasted sharply with the one of an operator in **SW-Plane** that stated, when asked about innovation: "Well here, innovation is part of daily work". But beyond the case of operators, the problem was more general in France, and connected to the more hierarchical organization, where participation of employees to decisions making is limited. In **FR-Parts 1**, for instance, a technician complained bitterly:

Even us [technicians] are often not consulted. The message seems clear: we are not intelligent enough to understand, and we are unable to bring anything to the firm. (Technician, **FR-Parts 1**).

This may appear all the more paradoxical that French companies had invested, as mentioned in the French operator's quote, in several tools to foster employee's innovations such as suggestion boxes, and contests and awards for the "best innovation" (of any kind), while these instruments were absent in the Swedish companies³. However, despite bottom-up, the arrangements around the instruments were formalized and more coherent with the STI-mode of innovation (as innovations had to be validated and codified at central level, in a technocratic way here again), while the DUI-mode relies more on informal procedures. The use of what was supposed to be bottom-up innovation incentives was embedded in bureaucratic procedures, that, in some cases, even equated to pure formalism – evidencing the gap between, on the one hand, managerial models and rhetoric, and, on the other hand, the reality of work activity. This was well illustrated by **FR-Parts 1**: there were forms to fill-in to make suggestions, and employees were required, in their annual assessment, to have made at least two suggestions a year. So they filled the forms, even if they lacked real valuable ideas, and even if they knew it was pointless, as they rarely received feedback from management (interview with a team leader, **FR-Parts 1**). In **FR-Parts 2**, "participative innovation", as it was labeled by the firm, seemed to work better, at least at white-collar level. According to an engineer, who had worked in other companies before joining **FR-Parts 2**, "There is real promotion of innovation in this company, it is not the simple suggestion-box system with very few implementations [...]". Nevertheless, even in this case, management was more focused on STI-mode of innovation. The most valued "innovations" (and labeled as such) were those who could lead to the creation of a patent, while the informal, daily problem-solving activities, more in line with the DUI-mode, tended to be overlooked (interview with a technician, **FR-Parts 2**).

Eventually, there was a contrast across French and Swedish companies concerning another key feature of "innovative-conducive" JQ: job security. In the two Swedish companies, temporary

³ It is worth noting that In **SW-Plane**, an attempt to introduce suggestion boxes had occurred several years ago, but the tool had faded away as it was barely used according to a blue-collar trade union representative.

agency work was almost absent, whereas in the French companies its share was relatively high, in particular in **FR-Plane** (20% of the workforce), and even more in **FR-Parts 1** (about 25%, with some peaks up to 45% in the recent past). Explaining factors were diverse, but it is noteworthy that this was made possible by the fact that tasks were simpler and more standardized in the French companies and therefore required less investment in both general and specific human capital.

Looking (desperately) for innovative workplaces: organizational innovations and the promotion of JQ

The Swedish companies appeared closer to innovative workplaces than the French companies. But in the latter, there was a growing consciousness of the need to promote forms of organization and management more favorable to the innovative capacity of employees. At least at management level, the rhetoric about developing worker's autonomy and capacity of initiative was not rare. There was even sometimes an explicit reference to the English term of “empowerment”, for instance by the Director of one production unit of **FR-Parts 1**. It is striking to observe how the management discourse, in this company, sharply contrasted with workers' opinion about effective participation, how we noted above. Even if **FR-Parts 2** seemed much closer to an innovative workplace than **FR-Parts 1**, the Director of innovation and industrial performance we interviewed was convinced that deep organizational and managerial changes were required. This appeared all the more necessary that, in a context where *no radical* innovation in products nor in process had occurred in the AeS industry in the two past decades – and none was expected in a near future – *incremental* innovations were seen as crucial to maintain competitiveness. This opinion was shared by some top-managers in **FR-Plane**, and some organizational changes in that direction had taken place very recently in FACT1. The results from engagement and job satisfaction surveys that had been carried out at both company and factory levels had played an important role in the awareness of the problems:

The engagement surveys [at company level] were carried out during three successive years, from 2012 to 2014. The results were not very good [...] Employees, even managers, had the feeling they were not sufficiently listened to, that their innovative capacity, in a way, was not sufficiently taken into account [...] there was a feeling of being a bit overwhelmed by bureaucracy [...] The prevalence of some comments traumatized top management, such as, if I make it short, “I don't always understand the meaning of what I do, but, as I am asked to, I do it”. (Manager and Union delegate at company level, **FR-Plane**)

In FACT1, working groups on “quality of life at work” were put in place after the first wave of the survey, and some small changes had been carried out. But two years later, in a new wave of the survey, job satisfaction had not increased. The management realized changes had to be more profound. This coincided, more or less, with a “learning journey” organized by the local cluster in the Silicon Valley, in which the director of FACT1 participated. He was really impressed by what he had seen and when he came back he wanted to make radical organisational changes.

The initiative to use the experience clearly came from the top. With the support of the director and the HRM of the factory (FACT 1), the director of Division A took the initiative. Surprisingly he did not have the characteristics of a radical organizational innovator. He had been working in the firm for more than 20 years, had a robust legitimacy built on technical competencies and was a very good illustration of the traditional manager – very authoritarian with a top-down style of management. However, he was conscious of the limitations of existing organizations and the associated way they were managed. In particular, he became convinced that “social innovation is as important as technological innovation” (in his own words), and even more that “social innovation pre-conditions technological innovation” (idem). In addition, he was impressed by experiments implementing the "liberated company" concept⁴. The basic idea was that a high degree of decentralization and strong empowerment of employees could impact very positively on job satisfaction, on worker's involvement, and therefore, on their innovative capacity. He was convinced that it was necessary to “blow-up the codes” (idem) – i.e. to radically change the existing work organization - to reach such a result.

From the very beginning in 2015, working groups of operators and other employees, in which managers were not allowed to participate, were put in charge of making proposals on how to transform the whole work organization. Considerable changes took place. The number of managers was drastically reduced from 18 to 7, and the remaining 1st tier of management was elected by the employees. The Division was divided, according to the different stages in the labour process. The result was seven mini-factories, each with its own support functions (quality, logistics, etc.). Previously, production and support functions were separated into different divisions. Each mini-factory had their own budget and profit and loss account, and were afforded a high degree of innovation-conducive job components as autonomy in decision-making (e.g. concerning purchases, work and working time organization) in combination with democratic procedures (such as how workers should be consulted). Also a “workshop for the operator” was put in place to test directly suggestions of small process improvements..

Along the same lines, changes were also introduced in Division B. The degree of autonomy and participation in decision making increased. The daily kick-off meeting SQCDP (see above) was now managed by the operators themselves, and not by a manager in a top-down way as before. The new organization was also based on greater multi-tasking and multi-skilling, facilitated by an increase in training. A number of separate functions were merged into multi-functional teams to facilitate the co-ordination. Taken together, all these changes in Division A and B could be classified as a shift from a technocratic lean organization to more of a learning type of organization with higher degree of innovative capacity in terms of extended room for informal communication and communities of practice, using tacit knowledge in problem solving and learning - on other terms, with higher "innovation-conducive" JQ.

⁴ The concept was put forward by Isaac Geetz, a professor of management based in France.

As these changes were very recent (and were still on-going at the time of our study), their impact was not easy to assess. According to the managers in both divisions, the first results were promising. In Division A –according to its director at that time, during the first year of implementation productivity increased by 10 per cent and the number of employee initiatives increased five-fold. In both divisions, the rate of absenteeism decreased drastically (down to 1.1 per cent in Division B). Some operators expressed indeed a higher job satisfaction:

Before, we just executed; now, we think to make. (Operator, in Division A of **FR-Plane**, interviewed in the video internal to the company on the liberated company experiment)

However, some union delegates were critical. They mentioned that there were workers feeling “lost” in the new organization. In their view, the liberated company experiment was construed as just a new method to cut costs evidenced by a reduction in the number of managers, with intensifying work through requiring more engagement and through fostering peer pressure in autonomous teams.

The role of social dialogue in the making of innovative workplace

The way the "liberated company" experiment was denounced by some unions, draws the attention to another key element of differentiation between our French and Swedish cases: the role of social dialogue.

Sweden and France serve as illustrations of different varieties of capitalism, not least concerning industrial relations systems. Sweden has both a very high union density and a very high coverage by collective agreements. France has also a high collective agreement coverage (more than 90 per cent, as in Sweden), but with a very low unionization in the private sector (about 5 per cent, in sharp contrast with the about 70 per cent in Sweden). State labor law plays the dominant role in the regulation of the labor market in France (with a statutory minimum wage and the legal extension of industry collective agreements, which explains the high coverage rate), whereas in Sweden, collective bargaining is very active at local and industry level, and covers a wider scope of issues.

Though, the French AeS industry has some specificities as it tends to be more unionized than the average in the private sector, also because its many big companies – in which unionization usually tends to be higher. Trade unions were present in all of the Swedish and French cases, at both company and establishment level (even if more recently in **SW-Parts**, see below). In both countries unions have more or less the same *institutional* power -referring to national institutions such as labor market protections and collective bargaining rights supporting their bargaining power (Doellgast at al., 2018: 7). In Sweden, the Co-determination Act, stipulates that employers bound by collective agreements have to inform and consult trade unions on any important change in the company that will impact on employees. It is also mandatory to establish a health and safety committee in all companies with more than 50 employees. The

committee is comprised of representatives from local trade unions/the employees and the employer, plus locally appointed safety officers. Similarly, in France, at the establishment level, the bi-partite "Health and safety and Working Conditions" committee (which is mandatory in companies with 50 employees or more) deals with health and safety issues, and must be consulted prior to any decision likely to alter working conditions or safety – either technological or organizational change⁵. Some similarities were also due to our specific cases: **FR-Plane** (FACT1) had an estimated unionisation rate of about 80 per cent (among permanent workers) with relatively good social dialogue – i.e. features that are much more common in Sweden; conversely, up to very recently, **SW-Parts** had no union representation - which is more common in France. Still, the *associational* power of unions - based on workers' collective organization and capacity to mobilize (Doelgast et al., op.cit.) - was on average weaker in the French firms. One reason was the higher share of temporary agency workers (in **FR-Plane** and **FR-Parts 1**). Another explaining factor was, as usual in France, that the trade unions were divided, with different ideological backgrounds –at least four different unions in our three cases (five in FACT1 of **FR-Plane**).

There were key differences in social dialogue between the two countries affecting the role played by the trade unions during organizational change. Essential in the French system of social dialogue – well illustrated by the three cases of our sample – is its high degree of formalism – as both the process and content of collective bargaining is highly institutionalized by legal rules. Another associated feature is that because unions compete between themselves their behaviors tend to be strategic, some adopting radical positions to appear as the best defenders of workers' interests, putting pressure on more "reformist" unions. All these elements tend to limit informal interactions between management and unions. As a consequence the quality of social dialogue is often low - in particular when compared to Sweden - a vicious circle can emerge whereby managers try to by-pass unions because they anticipate tough negotiations and negative attitudes, but doing so, increase the lack of trust and reinforce unions' negative attitudes.

Even if the quality of its social dialogue can be considered as rather good according French standards, FACT1 of **FR-Plane** offers an interesting illustration. The human resource manager acknowledged she had not consulted the trade union delegates before launching the "liberated-company" experiment, but also that "this was maybe a mistake, because several unions felt very suspicious, and even opposed the process, as they were not really part of it [...]." (HRM of FACT1, **FR-Plane**). Union delegates refused to participate in the working groups put in place to launch changes. They even refused to attend the weekly employee debriefing meetings that were put in place to inform the employees in the early stage of the experiment. They clearly

⁵ In France, there is another bi-partite committee, the Works Council (also mandatory for companies with 50 employees or more) that must also be informed when important restructuring takes place. Since a law adopted in 2017 (after our case studies), the two committees were merged.

refused to be involved in the management of change, and adopted a defensive attitude, focusing on the negative aspects of change. This could leave with the sense that trade unions were opposed to all change, and therefore, were an obstacle to any work organizational innovation. Some employees - not only managers - shared this view.

The social relations were quite different in the Swedish cases. The arrangements for social dialogue was anchored in an industrial context characterized by a long history – at least from the beginning of the 1970s – of collaboration between the labour market parties concerning sociotechnical inspired work organization projects (see [Ahlstrand, 2013](#)). Since 1997 and the conclusion of the Industrial Agreement (updated in 2011 and 2017), the unions and employers organizations on central level also have agreed to a common understanding of industrial production systems and how industrial production systems should be developed regarding international competition, changing economic conditions, competitive strength, education, competence development, research, innovation, industrial settings and corporate productivity (Industrirådet, 2018, i.e. the latest industrial agreement). Actually, collaboration between the labour market parties, but even between these and the state is seen as a core element in “Nordic model” and important for the understanding of the development of “the good work” ([Gustavsen, 2011](#); see also [Mustosmäki, 2017:53](#)). Trust between management and workers at the local level is also perceived as a core element in the Nordic model ([Gustavsen, 2007](#)). In this context, the social dialogue developed more consensually in the Swedish AeS.

In **SW-Plane**, even if some of them expressed they would prefer to be more involved in decision making, union representatives took part in numerous official meetings, but also in many informal discussions on work organization. For example, managers and trade union representatives were actively involved in jointly adapting the implementation of Lean to the firm specificities. In favor of this collaborative approach – and in comparison, with the French cases – was that unions were not divided (even if there were separate unions for blue- and white-collar workers) and were not competing for members.

In **SW-Parts**, both blue-collar and white-collar workers felt the need to improve their working environment, in particular in connection with the implementation of the new work organization, influenced by Lean principles. In 2016, blue-collar workers created an IF Metall union club (union density: 80 per cent), and in 2017, white-collar workers similarly formed a Union club (union density: 75 per cent). The reasons for the establishment of local trade union clubs were put down to the increased workload and deterioration of the psycho-social working environment. And indeed, as soon as they were installed, the two trade unions clubs dedicated themselves to the improvement of working conditions. For instance, with support from the company, they were planning to get their safety officers to do inspections with focus on the psychosocial working environment. Another area was work life balance, as employees had difficulties relaxing outside of work because of the pressure being placed on them from management and work intensification. Overall, company expansion and organizational change

has altered relations between the employees and the company, with it becoming more formalized. Interestingly though, management was pleased about the establishment of the trade union clubs as they trusted them as important partners to facilitate employee participation in production issues and as an additional communication channel to the employees. This is further evidence of the facilitating role played by Swedish trade unions during the adoption of changes, and their potential power to help to get away from what could have been a lean organization with low worker autonomy/involvement to a more learning one with high worker autonomy/involvement and, thus, potential for higher innovative capacity.

It seems that in France, trade unions adapted to the top-down “planning and control” mode of organizational change by intervening *ex ante*, often by opposing plans, and *ex post*, by denouncing in formal arenas any decisions as dysfunctional. While in Sweden, both formally and informally, unions were more part of the “process and learning mode” of organizational change. Formally, in accordance with the law, trade union representatives were informed and consulted on any important change in the company that could impact the employees - as it was also supposed to be the case in France. Informally, the representatives – including in their roles as workers – took part in many decisions and discussions about production questions at the shop floor level, with an important focus on working conditions, on the work activity and its social environment. In contrast to the French trade unions, the Swedish appeared to play a more important role as facilitators of innovation-conducive JQ components and the development of the workplace innovative capacity.

The role of other contextual factors

Economic factors: competitive pressures, the position in the supply chain and the scale of production

Several economic factors may condition the adoption of an innovative workplace. In our study on the AeS industry, the firm's position in the supply-chain was such a factor. The margin of maneuver appeared higher in big OEMs (such as **FR-Plane** and **SW-Plane**), as well as, to a lesser extent though, in strategic suppliers such as **FR-Parts 2**, also specialized in making very specific parts. The competitive pressure appeared to be somewhat higher in **FR-Parts 1** and **SW-Parts** that had to cope with increased demands from their respective OEMs, with less bargaining power than **FR-Parts 2**. The management among these sub-contractors could perceive their possibilities for developing innovation-conducive JQ quite restricted by the economic pressures they had to cope with. **FR-Parts 1** offers a good illustration. As we noted above, there was a sizeable gap between management's rhetoric about employees' "empowerment and the reality experienced by workers, in particular the frustration of not being listened to. Part of the problem – as the union delegates acknowledged – was that the firm was under immense pressure from its clients (starting with **FR-Plane**) and faced uncertainties regarding the demand for its products. In this situation, the management chose to focus on short-term cost reduction -

including restrictive wage policy, and Lean was mainly focused on "waste hunting", whereas the corresponding organizational changes were officially presented as promoting both workers' involvement and workplace efficiency, in the line of high performance work systems (HPWS), even if this label was not used. As suggested by [Danford et al. \(2004\)](#), when the main objective of organizational innovation such as the implementation of HPWS practices is cost-cutting, "workplace participation" – meaning true (i.e. not only formal) consultation and associated higher worker's involvement and commitment – may remain just a rhetoric⁶. The argument echoes with one union delegate's remark in **FR-Plane** - in which the pressure for increased profitability had increased notably in the past decade—that "what they [i.e. management] usually call organizational innovation, we call it cost-cutting plans".

Another economic factor of importance for the development of innovative workplaces has to do with the scale of production. In many interviews, in particular with operators, the automotive industry, and its mass production, appeared as a negative benchmark. AeS is still characterized by small batch production, with more craft based work organization, in contrast with the Taylorist-Fordist organization in car manufacturing. For instance in **SW-Plane**, small batch production meant cycle times for the individual tasks that varied between 2 hours and 60 days – which was compared to an average of 2 minutes in a standard automotive Fordistic assembly line – where autonomy and discretionary learning are very limited. Among the French cases, the closest to an innovative workplace (before the very recent radical innovations in some Divisions of **FR-Plane**), **FR-Parts 2**, had clearly the smallest batch. Conversely, in Division C of **FR-Plane**, where the more "Taylorist" form of Lean was found, the assembly- (so called pulse-) line had been introduced to cope with a big increase in the scale of production.

Accounting for differences between countries: the role of cultural background

As mentioned in the introduction of this article, the aim of our study is not to carry out a systematic comparative study. Still, some country specific features have surfaced, that can be related to some background characteristics, that also contribute to shape country specific institutions. These can be referred to as general "cultural factors" – defined here as deeply rooted patterns of feeling, thinking and behaving shared by many members of a given country.

Comparative cultural studies have pointed out that France, among advanced industrial countries, is one of the countries where hierarchy and social status play the largest role, in particular in work relations within organizations (see for instance [Hofstede, 1991](#)). The difference with the Swedish culture was highlighted by [D'Iribarne \(1998\)](#) when studying the interactions between negotiating teams from two big manufacturing companies, one French, the other Swedish, that intended to merge but that finally did not. Both the functioning mode of each national team, and the way each team behaved in the bi-partite negotiation meetings

⁶ In the British AeS firm studied by Danford et al., op.cit., HPWS practices were introduced in a context of downsizing.

were contrasted. In France, vertical coordination was central, and the manager was the boss when taking the final decision. His legitimacy was derived not only from his status but also from higher technical skills, as the authority of science and technology was considered as crucial on the French side. During bi-partite meetings, the French team drew upon a large body of documents with formalized information (figures, graphs, etc). In contrast, there was a much more horizontal, decentralized and informal approach on the Swedish side. The manager played more of a facilitator role to bring about a common vision within the team and where possible, consensus decision-making was preferred. For this purpose, personal experience was more important than technical skills and the mobilization of formalized data. They had the same approach in their negotiation with the French team. But according to the Swedes, this cooperative mode of functioning was at odds with the French approach, more aggressive and authoritarian (D'Iribarne, op.cit.: 96).

These features are quite consistent with our findings. In the French cases there was a greater emphasis on the technocratic approach articulating well with the hierarchical organization and the domination of the STI-mode of innovation (i.e. more of top-down emphasis on R&D creating explicit codified knowledge). In contrast, in Sweden, the balance was more in favor of a decentralized and informal approach articulating well with the DUI-mode of innovation (i.e. more of bottom-up emphasis on informal communication correlating to innovation-conducive job quality as autonomy, task discretion and learning). This was facilitated by the higher average skill level of operators and the correlative lower skill gap with managers.

These features may be of particular relevance to our cases because of some specific characteristics of the AeS industry. In France, at least in the large companies of the sector, an elite class of engineers, graduates from the most prestigious *Grandes Ecoles* (*Polytechnique, Centrale, Supaéro*) used to play a key role, from R&D to top management positions, including CEOs, with scientific and technological skills being the most important elements of legitimacy of power and hierarchy within the organization. This has contributed to the technocratic way of functioning – for better or worse. In the recent years, because of increasing market competition, the cast engineers lost some power to financial officers and supply-chain managers; and there was also an increasing awareness that technical expertise did not imply necessarily managerial skills, inducing some changes in the requirements to become manager. Nevertheless, the functioning of these companies remains highly influenced by the culture that has been adopted by this specific group of elite engineers.

Concluding remarks

Our study explores some of the effects of work organizational designs and changes on the innovative capacity of firms - i.e. in the making of "innovative workplaces", taking the aerospace industry in France and Sweden as a field study. Relying on in-depth case studies, it sheds light on the variation in the "work organization - JQ - innovative capacity" nexus, and its underlying

mechanisms. Our findings confirm the key role of JQ as a mediating factor between work organization and innovation. They also highlight how the corresponding interactions are embedded in contextual factors.

There was important variation in work organization in our sample. "Lean" was witnessed in all our cases, sometimes introduced by recent organizational changes, but there were significant differences in the way it had been implemented and was impacting on work organizations. A more "technocratic" form of Lean was dominant in our French cases, also coherent with a more hierarchical and bureaucratic form of organization, with top-down "planning and control" mode of organizational change management, and the domination of the STI-mode of innovation. It contrasted with the more "agile" form of Lean, compatible with the more decentralized "learning" type of organization, the "process and learning" mode of organizational change management, and the DUI-mode of innovation, that were better illustrated by the Swedish cases. This resulted in differences in JQ outcomes, in particular in terms of autonomy and involvement, - which are key elements of "innovation-conducive" JQ, and overall job satisfaction, and therefore important conditions for the making of an innovative workplace.

The "technocratic" form of Lean, dominant in our French cases, has common features with the "*lean à la française*", found in other industries, characterized by centralism, the management by indicators, little workers' participation in a context of poor social dialogue (Daniellou, 2015: 18-19). Even specific cultural traits are part of the explanation, French idiosyncrasies should not be overestimated, as similar features were found in other countries - such as in the British aerospace companies studies by Danford et al. (2004). In contrast, workers involvement seems to have been taken into account considerably more in the Swedish form of Lean. Our findings are coherent with other empirical evidence. For example, based on a large sample of Swedish manufacturing firms, Eklund et al. (2015) found that there were some significant variations in the implementation of Lean, but that on average, while there was some evidence of greater stress and repetitive work, there was also evidence of improved working conditions in terms of participation, learning and development. This is in line with other Swedish studies on Lean (Brännmark and Eklund, 2013) and may explain why its implementation has raised fewer criticisms in Sweden than in other countries. An important part of the explanation could be the Scandinavian way of understanding and implementing Lean, based on a tradition of collaboration between employers and (strong) trade unions and a historical interest in the socio-technical aspects of work organization (c.f. Sederblad, 2013, Brännmark and Eklund, 2013; Eklund et al., 2015).

Our results show that it is not only in liberal market economies that so-considered HPWS models may fail to fulfill their promises, in particular in terms of real workers' involvement, and associated potential workplace performance (Godard, op.cit). They confirm, though, that beyond economic factors, institutions do matter. A key finding is indeed that social dialogue plays an important role in accounting for differences in the making of innovative workplaces.

While in our French cases, unions took on more of a defensive strategy – in line with the more hierarchical “top-down” organization and mode of management–, their Swedish counterparts were playing a more active role - including an informal way of promoting a work organization favorable to JQ that enhanced the innovative capacity of the workers and their firms.

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