RAISING WAVES IN THE MANAGEMENT AND TRAINING OF SECURITY CHECK OFFICERS

Hannele Kerosuo[1]
hannele.kerosuo@helsinki.fi
University of Helsinki, Finland

Päivikki Lahtinen
paivikki.lahtinen@helsinki.fi
University of Helsinki, Finland

AnnaMari Leinonen
annamari.leinonen@aviacollege.fi
Avia College, Finland

This is a first draft; do not quote without the permission from the authors.

Abstract: The aim of this study is to advance the training and competence building of the security check officers on the practice level. The task of the research is to uncover the challenges and a search for solutions in the work and training of the security check officers. Our research questions are: What are the main challenges experienced by security check officers in their work? In which circumstances and why are these challenges emerging in the work of security check officers? How are these challenges worked out in the meeting of supervisory board?

---

[1] Corresponding Author: Dr. Hannele Kerosuo, PL 9, 00014 University of Helsinki, Finland. Dr. Kerosuo is responsible for the chapters 1 to 3 and 6 to 7. Chapters 4 and 5 are based on Päivikki Lahtinen's master's theses. AnnaMari Leinonen has acted as the commentator of the paper.

1 INTRODUCTION

State-owned enterprises such as maintainers of airport have recently become corporations that are acting under business logic. The organization and management of air travel is a complex array of horizontal, vertical, and lateral linkages between multiple levels of government, corporations, contractors, and unions (Frederickson & LaPorte, 2002). Besides maintaining airports and securing civil aviation from global risks airport maintainers are increasingly acting as service providers for air carriers and passengers. As a consequence their activity is not only driven by laws and regulations that assure the safety of civil aviation but also by competition and globalized business activity.

The development of airport services becoming a business has impact on sub-activities of airport services. For instance, security control is outsourced to sub-contracting companies in many European airports. Together with challenges related to customer-orientation the out-sourcing of security control makes it necessary to re-assess the training and competence of security check officers. In our study, we focus on local challenges as an indicator for the renewal of competence and knowledge in security control. We analyze competence as a historically changing phenomenon. The task of managing competence and knowledge is different in diverse historical forms of work (Ahonen, Engeström and Virkkunen (2000). The current challenge for management is not only to assure skills of individuals but also to take into account knowledge that is embedded and constructed in collective practices (Brown and Duguid, 2001). Knowing in organizations is considered "as social, processual, materially and historically mediated, emergent, situated, and always open-ended and temporary in character" (Nicolini, Gherardi and Yanow , 2003, p. 26).

We have chosen the security check of a northern European airport maintainer to our focus of study. The airport maintainer in question is responsible for the functioning of a network of 25 airports and the air navigation system covering the entire country. The aim of the corporation is to provide and develop a safe, competitive airport and air navigation services that support commercial operations and meet internationally high standards. Air traffic safety is the primary concern of the airport maintainer that is provided by skilled professionals in cooperation with its network partners. Local challenges related to security check relate to service carried out by many providers, various training organizations being involved in the training of security check officers, collaboration between actors being scarce when tight collaboration is needed, for instance, in adopting new regulations to security control. The competence of security check officers has been improved by the reform in their training, by the implementation of web-based learning environment and simulator, and by exploiting the results of a research on client experience on security check. The airport maintainer has also created a supervisory board for training based on collaboration and networking on the managerial level in the security check activity. The supervisory board involves representatives of the airport maintainer, two sub-contracting companies and training organization.

The aim of this study is to advance the training and competence building of the security check officers on the practice level of the network activity. The task of the research is to uncover the challenges and a search for solutions in the work and training of the security check officers. We are especially interested on the impact of business and competition as well as customer-orientation in security check and how the challenges raised by the new waves in airport security are worked out in the supervisory board

activity. Our research questions are: What are the main challenges experienced by security check officers in their work? In which circumstances and why are these challenges emerging in the work of security check officers? How are these challenges worked out in the meeting of supervisory board?

Recent discussions in practice-based approaches and knowledge creation in organizations provide promising starting points to study knowledge management and organizational learning in complex work settings (Nicolini, Gherardi and Yanow, 2003; Miettinen, Samra-Fredericks and Yanow, 2009). Among the discussed approaches, cultural historical activity theory (CHAT) emphasizes the socially and historically mediated character of knowledge (Engeström, 2001). The methodology of the study is developmental work research (DWR) that is based on cultural-historical activity theory (Engeström, 1987). DWR has been applied in a variety of work life settings and other activities involving research-assisted interventions (Engeström, Lompscher and Rückriem, 2005). In this study, the methodology enables the study of the complex work setting on the micro level of social practices as well as on the macro level of change. The data of the study includes interviews of security check officers, documents describing the development of security check in Finland, and data of one meeting of the supervisory group. In the meeting, the results of interviews were "fed back" to the supervisory group to raise discussion on challenges and solutions of the security check activity.

The methods of interview analysis are phenomenography (Marton, 1981; Åkerlind, 2005) and DWR. Phenomenography is a qualitative research methodology that investigates the discursive manifestations of actors' experiences, understanding and meaning-making of the world around them. Outcomes of a phenomenographic analysis are often presented as a number of qualitatively different "categories of description." In DWR studies, these categories of description are related to the developmental context of the focused activity. The contextualization enables the specification of the categories of descriptions to their development and history. In our analysis, the phenomenographical analysis uncovers the challenges of security check activity in relation to security-centered, customer-oriented and business-oriented work practices. We will also present the impact of feeding back these results in the supervisory group of security services. In conclusions, we will summarize and discuss the potential solutions to the current challenges in competing and customer-oriented airport maintenance.

## 2 METHODOLOGY AND MAIN CONCEPTS OF THE STUDY

The main concept is *activity* in cultural historical activity theory (figure 1). Activity is mediated by tools and signs that are developed during the social and cultural history of a society. Tools do not only refer to concrete tools but also for instance to imaging devices and models that direct their use. The activity is oriented towards objects that are meaningful and purposeful for the subjects. For instance, the object of security check activity is to manage the threats of civil aviation. The activity is also mediated by social elements of a community, rules and division of labor. An individual human being or a group can be a subject of an activity. An activity is often depicted as an activity system in developmental work research.

Figure 1. An activity system (adapted from Engeström, 1987)
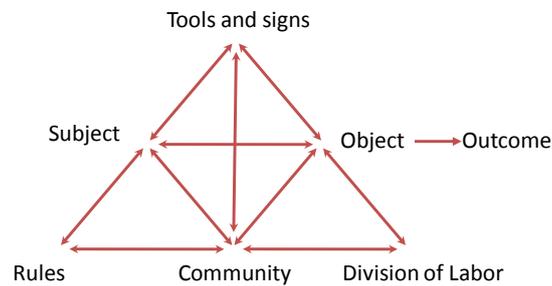
Until recently an activity was often analyzed as a unit of one activity system (Engeström, 2001). In this study, the unit of analysis is a network of activity systems that includes the activity of the Finnish Transport Safety Agency, the airport maintainer, security service of the airport maintainer, an education institute owned by the airport maintainer, and the sub-contracting company 1 and 2 providing the actual security check. The security check is described as a network of activity systems in figure 2.

Figure 2. The security check as a network of activity systems in civil aviation
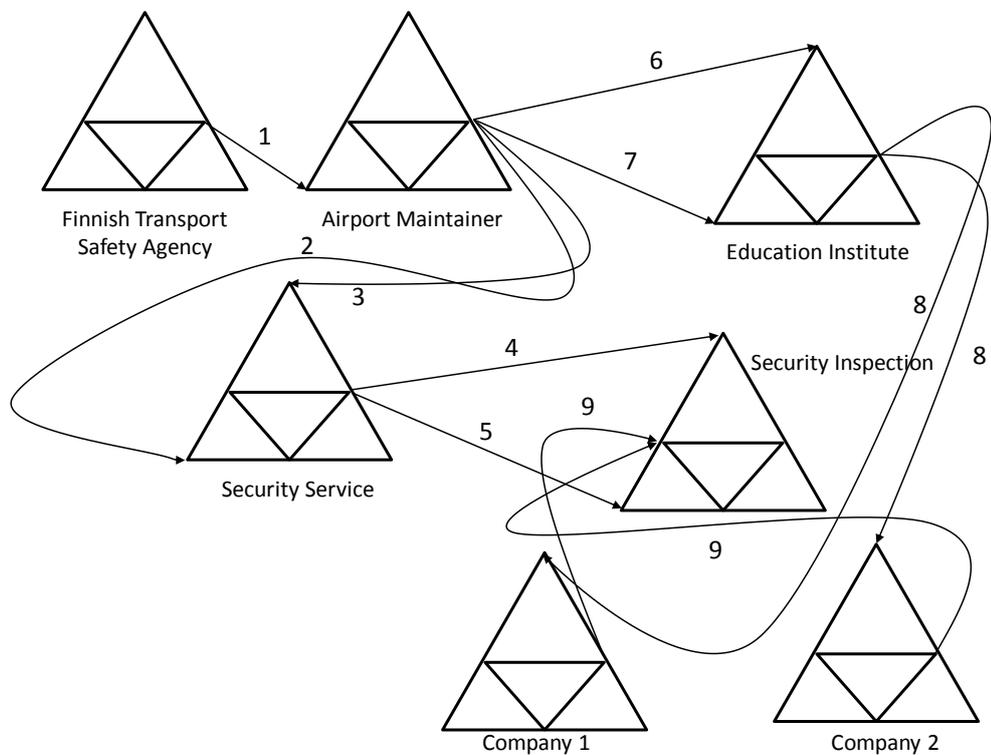
In figure 2, number 1 refers to the connection between Finnish Transport Safety Agency (FTSA) and security service. FTSA is the supervisory authority of civil aviation security service in Finland and gives directions to the airport maintainer. The airport maintainer provides tools and directions to its security service (2 and 3). The security service gives the tools and rules to the security check activity. The education institute owned by the airport maintainer receives its tools and rules from the airport maintainer. It provides the professional training for the company 1 and company 2. Company 1 and company 2 provide the subjects, i.e., the security inspectors to the security check activity. In real life, the network connected to the security check is more complicated than represented in figure 2. For instance, the sub-contracting companies also buy the training of security inspectors from other providers than the education institute.

According to activity theory, development is often triggered by changes in an *object* of activity. For instance, the changes in the recognition of threats after September 11th in 2001 had global effects on the civil aviation. An object of activity refers to its material emergence as well as to collective motive of the activity (Leont'ev, 1978). Objects of activity are embedded in social relationships and an object provides sense and meaning for an activity. These relationships need to be functionally coordinated in order to be able to create coherence and stability in an object (Miettinen, 2005). In situations of change, sense and meaning of an activity usually becomes questionable and subjects can lose the connection to the object of their work. For instance, the security check as a routine activity can be detached from its object.

Changes of the object of activity emerge often as tensions, disturbances, dilemmas, ruptures, or innovations that represent contradiction in an activity (Engeström 2001). A contradiction represents a historically accumulated, structural tension between opposing forces in an activity (Il'enkov, 1977). Organizational change is more or less perceived as the dissolution of contradictions in developmental work research (Kerosuo, in press). Contradictions evolve through the process of change from their formation to creating new models of activity as solutions to contradictions and to implementing and consolidating the new models. However, the dynamics involved do not occur in a deterministic way but require the engagement of human agency. The process of change thus emerging is not continuous but involves multiple mundane breakpoints and critical events in which the nature and direction of progression can suddenly change (Engeström, Kerosuo and Kajamaa, 2007; Kerouso, Kajamaa and Engeström, 2010).

Developmental work research is a methodological approach that focuses simultaneously on learning and development as intertwined social processes that are connected to historically evolving social cultural circumstances and environments. *Historical analysis* enables the identification of the origins of the present forms of activity. It also helps to see them as limited and changeable. In which circumstances and why certain ways of action emerged. Do those circumstances still prevail? In developmental work research, historical analysis uncovers the current contradictions of an activity and makes it possible to outline the future directions of the development, a *zone of proximal development*. The zone of proximal development describes an area of change and the development of present actions in terms of the past and future. Possible futures are collectively envisioned solutions, disruptions and gaps in the present activity (Engeström 1987, p. 174). Following Vygotsky's idea (1978), learning is considered to precede development in cultural historical activity theory.

3 METHODS AND DATA

3.1 Interviews of security officers

Data has been collected from interviews of security officers in order to study the main challenges experienced by security check officers in their work. The interviews were made by the second author of this paper. Altogether nine interviews were conducted during the spring 2010 with the security officers representing security service sub-contractor 1 and 2 (five from the other company and four the other).

The selection of the interviewees was carried out with the help of a supervisor from each sub-contractor. The interviews took place near the security control check point. The idea was that interviewees had an eye contact with a security line while other colleagues were working. This helped the interviewees keep their focus on the security work. The interview questions were categorized in themes that are based on the methodology of developmental work research and particularly the activity system. The activity system is used as a unit of analysis in DWR. Therefore the themes were *the object, the rules, the instruments, the community and the division of labor*. The duration of interviews was between 22 minutes and 1 ½ hours. The interviews were audio taped and transcribed verbatim by the interviewer.

The methods of phenomenography and developmental work research were applied in the analysis of interviews. Phenomenography is a qualitative research methodology that represents interpretative paradigm. The similarity between the phenomenography and phenomenology is that both are methods which have the human experience as its object. However, phenomenography is not the same thing than phenomenology. The phenomenology is a philosophical method in which the own experience of a researcher is put in the center of investigation. Phenomenography focuses on the essence of an experience and subsequent perceptions of the phenomenon.

Phenomenography enables the study of data "categories of description" which means that these categories capture a variety of meanings of historical types of work. The unit of description is a "conception" which represents "different ways of understanding" (Marton, 2005, p. 335). The categories of conception make it possible to research how people understand the world around them or how they understand their work. It is important to differentiate that "conceptualizing" is not identical with "experiencing" (ibid, pp. 336).

In the analysis of the interviews of security check officers, the first task was to indentify the conceptions of their overall meanings. The transcribed text was read several times and those excerpts were marked in which the interviewee expressed his or her way of seeing their work practices. In the similar way, it was identified from the excerpts how the interviewees talked about the passengers and how they see passengers', or customers' presence in security control. If the interviewees mentioned different kinds of problems or conflicts in any part of security control actions, these excerpts were identified as well. The second task was to copy the identified conceptions to a separate table. In the table, the excerpts modified and the point of the expression was made explicit. The modified excerpts were considered the conceptions. The challenges of security control were then contextualized to the history and development of security check.

3.2 Historical data and its analysis

The aim of the historical analysis is to recognize the origins of the present forms of action/elements and why and in which circumstances certain ways of action emerged.) The historical analysis makes it also possible to identify the developmental potentials of the work by uncovering the contradictions which might rise in transitions from one developmental period to another (Engeström 1987, p. 325.) The main references of the historical analysis of the study are the histories describing the development of the civil aviation administration in Finland (1997; 2007). These references provide the historical aspect of organizational change during the development of Finnish security control activity. To conduct the historical analysis there are questions that need to be settled according to Engeström. The first question is which features of an activity are focused on in the analysis? Second, how is the development of an activity divided into periods? Third, how are the transitions from one period to another explained? These analytical questions guide the historical analysis of this study that is presented in chapter 5.

3.2 Data and analysis of a supervisory board meeting

The supervisory board of training was established to secure the collaboration between the airport maintainer, education institute and the sub-contracting companies in security service and its training. Members of the board represented the management and expert specialist in the field of airport security and airport security training. The board had four meetings during 2010. The topics of the board meeting included the information of new regulations in the security of the civil aviation and their local interpretations as well as discussions on the quality issues, training, and staff resources. The authors of this paper attended the meetings, the first and the second author as researchers, and the third author as a representative of the education institute. However, the researchers were not allowed to attend the first meeting except it beginning. The researchers recorded parts of the discussion with a digital data saver. The discussion of the second, the third and the fourth meeting is made available for the analysis as memos that are partly transcribed verbatim.

In this study, the contents of the fourth meeting are only analyzed. The fourth meeting is selected for the study because the researchers presented the results of the interviews with the security officers in that meeting. The analysis uncovers the points of discussion that the feeding-back of the results triggered in the fourth meeting.

4 FINDINGS AND SUMMARY

The research task of this study was to uncover the challenges and how these challenges raised were discussed in the supervisory board activity. The main challenges experienced by security check officers related to two tensions emerging at their work. The first tension emerged between the official supervisory and the customer-oriented security check in which the officers give advice to passengers simultaneously as they control their belongings. The second tension emerged between the official supervisory and the security control functioning under business logic.

The historical analysis of the development of security control and its organization uncovered the circumstances in which these challenges emerged. The recent development involves security check becoming complex simultaneously as the business logic was gaining ground in the activity with demands of effectiveness. The changes in

the airport security control are strongly bounded to the historical changes of an organization and its developmental processes as well as emerging threats in air traffic industry. With the historical interpretation it is possible to detect the *zone of proximal development* (ZPD). *The zone of proximal development* shows changes both in the activities of security control and in the organizational progress. The change of the business-idea creates new challenges of competence in the context of security control. What was the most important focus of security control in 1970s´ has changed by the new century and is not anymore adequate in the competitive field of aviation industry. The organization is obliged to respond to competition by upgrading the services in the airports. This will say that the upgrading affects also to security control because it is one part of services in the airports. However, it is not clear what the security control would be as service activity.

 The challenges experienced by the security check officers were discussed in the supervisory board meeting. The discussion charted the terms of future activity as security service. The most important outcome of the discussion related to the object of activity, i.e., experiencing the threats to security in civil aviation. Seeing security check as service is related to the utility of security check for the air passengers. Security check is not experienced useful because the passengers do not feel threat in their environment. Main incidents threatening the security of air passenger have taken place elsewhere. Therefore, the security check is experienced negatively as limiting the rights of individual passengers. In order to feel security check as a service, the passengers and the general public have to experience the utility of the activity.

REFERENCES

Ahonen, H., Engeström, Y. & Virkkunen, J. (2000), 'Knowledge management –The second generation: creating competences within and between work communities in the competence laboratory' in Y. Malhotra (ed), *Knowledge Management and Virtual Organizations*, Idea Group Publishing, Hershey, PA, pp. 282-305.

Brown, J. S. and Duguid, P. (2001), 'Knowledge and organization: a social-practice perspective', *Organization Science*, vol. 12 no.2, pp. 198-213.

Engeström, Y. (1987), *Learning by expanding: An activity-theoretical approach to developmental research*, Orienta-Konsultit, Helsinki.

Engeström, Y. (2001), 'Expansive Learning at Work: Toward an Activity Theoretical Reconceptualization', *Journal of Education and Work,* vol. 14 no 1, pp.133-156.

Engeström, Y., Lompscher, J. & Rückriem, G. (2005), (eds) *Putting activity theory to work*, Lehmanns Media, Berlin.

Frederickson, H. G. and LaPorte, T. R. (2002), 'Airport security, high reliability, and the problem of rationality', vol. 62, Special Issue, pp. 34-44.

Grote, G., Weichbrodt, J. C., Gunter, H., Zala-Mezö, E. and Kunzle, B. (2009), 'Coordination in high-risk organization: the need for flexible routines', Cognition, Technology & Work, vol. 11, pp. 17-27.

Hakola, M. (1997), *Ilmailuasiain esittelijästä ilmailulaitokseksi* (trans. From reporter of Aviation to the Civil Aviation Administration), F.E.Lönnberg, Ilmailulaitos, Helsinki.

Hakola, M. (2007), *The Finavia story*, Multikustannus, Helsinki.

Marton, F. (1981), 'Phenomenography—Describing conceptions of the world around us', *Instructional Science,* vol. 10, pp. 177-200.

Marton, F. & Pong W.Y. (2005), 'On the unit of description in phenomenography', *Higher Education Research and Development,* vol. 24 no 4, pp. 335-348

Miettinen, R., Samra-Fredericks, D., & Yanow, D. (2009), **'**Re-turn to practice. An introductory essay', *Organizational Studies,* vol. 30 no 12, pp. 1309-1327.

Nicolini, D., Gherardi, S. and Yanow, D. (2003), 'Introduction: toward a practice-based view of knowing and learning in organizations', in .D. Nicolini, S. Gherardi, and D. Yanow (eds) *Knowing in Organizations. A Practice-Based Approach,* M.E Sharpe, Armonk, New York and London, England, pp. 3-31.

Åkerlind, G. S. (2005), 'Variation and commonality in phenomenographic research methods', *Higher Education Research and Development,* vol 24 no 4, pp. 321-334.