

## **Book review:**

# **Learning Factories: The Nordic Model of Manufacturing**

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**Reviewed by Richard Ennals**

The Norwegian “Value Creation 2010” programme included a national PhD programme, “Enterprise Development and Working Life” (EDWOR), with a methodological foundation of Action Research. The programme, hosted by the Norwegian University of Science and Technology (NTNU) brought together Norwegian researchers, with an international faculty from Norway, USA, Turkey and the UK. There were two cohorts of PhD students, leading to two sets of theses, which had benefited from ongoing debate and advice. The book “Learning Factories: The Nordic Model of Manufacturing” was based on a thesis by Halvor Holtskog in the second cohort (EDWOR 2). His co-authors are from NTNU in Gjøvik, and George Washington University, USA, comprising a collaborative research team, using a range of methods over several years, which are presented in detail.

The focus of the book is made clear in the abstract for the Introductory Chapter, which “aims to provide deeper insight into how a modern and sophisticated management of employees plays an important and – in our view – key role for the successful reindustrialisation of the Western world. There are important lessons to learn from high cost countries that successfully compete in the global marketplace. In such contexts, the re-combination of tacit knowledge, people, competences and culture to create effective and efficient automated production is indeed essential.”

The book deals with the “Nordic Model”, which combines four key institutionalised societal mechanisms:

- Centrally led wage negotiations between trade unions and employer federations
- Safety nets of health insurance, welfare benefits, and pensions to all citizens
- Labour market flexibility, that is, a high degree of job mobility and career experimentation combined with a high degree of job safety
- Democratic decision processes and high employee participation in organising work tasks at all levels.

Holtskog and his colleagues explore the resulting style of collaboration and learning at work, which is different from what is found in the EU, USA or Japan. The focus is on the automotive industry, probably the most globalised industry in the world. Case study companies manufacture automobile parts.

The book is based in the Norwegian work life tradition, with an important role for “Employee Driven Innovation” (EDI). It deals with matrix organisations, where a person can be a leader and an employee. It considers how industries create knowledge. Within this context there is detailed analysis of long term company case studies, based in the Raufoss region, and with a focus on “Lean Manufacturing” within the Nordic Model.

The authors refer to “Industry 4.0”, which has a strong technological base. “It involves sensors which gather data from each step of the automated process; identifying each nut and bolt is a

prerequisite, as is the usage of big data. However, little attention is given to people and the knowledge creation process”.

There is a remarkable tone of optimism, as the case studies are presented with a formidable background of international research literature. What wider conclusions can be drawn?

As with Silicon Valley in the USA, Raufoss has unique characteristics, and the case study findings concerning successful and innovative manufacturing cannot simply be generalised across Norway and other Western economies. Both are special cases, distinctive regional phenomena. Powerful industry clusters have both close geographical proximity and global reach, developed over time. There is a narrow product focus, with frequent local restructuring, mergers and acquisitions, and changing ownership patterns. There are strong links to local universities and colleges, a background of defence funding, and a continued focus of national innovation strategy. Raufoss is an example of successful diversification from defence to civil production, with continued security and confidentiality, a continuing quality culture, and a focus on high end products. There is a distinctive employment culture, which is a magnet for international migrant workers. It offers an entry point for global industry, with pressure for continuous innovation.

The book reflects Norwegian pride in manufacturing success, and an awareness of a bubble of innovative development and debate at a time of economic difficulty elsewhere. It demonstrates a determination to maintain global competitiveness beyond the field of oil and gas, where the boom is currently coming to an end, raising questions about future industrial strategy.

Holtskog is concerned with technical innovation beyond the automotive industry, for example in skiing, where competitive advantage can be achieved. Given the applications in slalom and cross-country, and the outstanding results by Norwegian skiers in the 2018 Winter Olympics in Korea, it would be a mistake to suggest that the future is “all downhill” from now on!