

[Review of: Christopher P. Nemeth, Erik Hollnagel (2014) Resilience Engineering in Practice. - Volume 2: Becoming Resilient]

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Publication date

2015

Document Version

Final published version

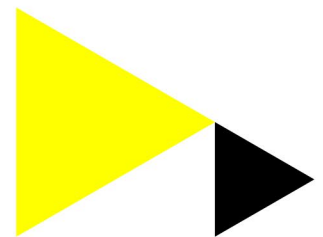
Published in

Newsletter of the Europe Chapter of the Human Factors and Ergonomics Society

[Link to publication](#)

Citation for published version (APA):

Karanikas, N. (2015). [Review of: Christopher P. Nemeth, Erik Hollnagel (2014) Resilience Engineering in Practice. - Volume 2: Becoming Resilient]. *Newsletter of the Europe Chapter of the Human Factors and Ergonomics Society*, 2015(1), 10-12.

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NEWSLETTER
of the Europe Chapter of the
Human Factors and
Ergonomics Society
No. 1 / 2015

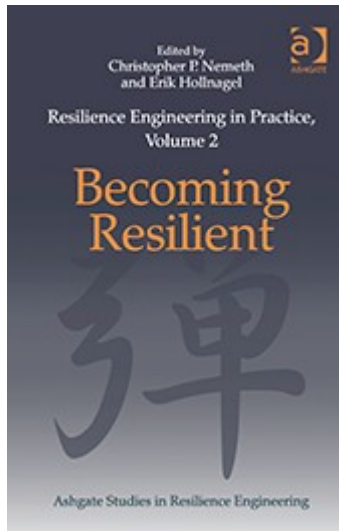


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Book Review

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Resilience Engineering in Practice, Volume 2. Becoming Resilient

by Christopher P. Nemeth and Erik Hollnagel
2014, 248 pages, £60 (hardback)
Farnham, UK: Ashgate
ISBN: 978-1-4724-2515-7

When academics introduce new theories to the industry, one of the principal concerns of the managers is how they can operationalize such novel approaches. This second book in the Resilience Engineering (RE) in Practice series provides plenty of paradigms that dwindle the distance between theory and practice. The authors who contributed to this book do not just elaborate on RE concepts, but demonstrate how the RE approach has actively supported researchers and practitioners in their understanding of systems' planning, operation and monitoring.

The chapters' authors through a variety of cases and examples discuss highly interesting concepts, such as:

- Translation of RE cornerstones into functions of societal engineering, and assessment of system capacity in the context of disaster risk management and climate change adaptation (Chapter 1). The latter concerned, the authors do not address potential cases of conflicting legislation and shared capacity, but this might be a topic of further research.
- Practical classification of variability as positive, neutral and ambiguous as guidance for ensuring the balance between autonomy and control and defining the role of experts in decision-making at all organizational levels (Chapter 2). A future reference might include how RE perspectives are linked to the management styles widely described in the business and administration literature, as well as the various expert judgement methods used to support decisions.
- RE functions that apply in cases of fundamental surprise, which is deemed as a high challenge to organizational performance since it

refers to totally unforeseen events and unplanned responses (Chapter 3).

- Potential of the RE in providing a systemic approach towards safety improvements, as an alternative to the simplification of accident analyses whereby linear models of causality are applied (Chapter 4).
- Criteria for assessing safety performance measurements, based on RE principles (Chapter 5). The rationale presented in this Chapter might comprise a valuable reference for supporting the transition from compliance-based safety management evaluations to performance-based assessments.
- Framework for organizational learning, accompanied by a model that pictures the interplay among the framework categories (Chapter 6). The authors' approach is tightly connected to the concepts of closed control loops and indicates the possibility of developing a model that integrates RE and system engineering.
- Need to manage resilience through a well-structured safety management system in order to ensure that RE can contribute in preventing accidents and will not be an accident cause (Chapter 7). One of the main messages of the authors is that properly designed resilience is vital for the deployment of full RE's potential to increase safety management effectiveness.
- Challenges that arise while managing large projects and stem from diverse perspectives of the micro and macro levels during decision-making (Chapter 8). The authors make clear that the success of RE implementation depends on how different risk / benefit perceptions of all levels are reconciled.
- Enrichment of individual and team training with RE thinking, in addition to traditional stimuli-response and evidence-based training schemes (Chapter 9). This view confirms that RE approach does not cancel previous practice, but instead suggests improvements and adjustments towards increased organizational viability.
- Emphasis of RE on preparedness rather than prediction, the latter being the focus of traditional risk assessment methods. The authors present a workshop outline that aims to increase the capability of participants to evaluate a system's brittleness and engage RE thinking (Chapter 10). Although such an approach seems appealing, the challenge is how educational and training institutes can embed such novel concepts in their syllabus whereas regulations still dictate the use of probabilistic risk management.

- Importance of consistently developing sensors of organizational performance as means to monitor resilience during operations or to evaluate it after response to crises (Chapter 11). The authors successfully illustrate that inadequate instrumentation does not allow the acquisition of the overall picture of how RE functions of anticipation, monitoring and adaptation are or were applied. This in turn might hinder organizational learning and improvement.
- Relation between safety culture and resilience, the first seemed as an indication of performance level achieved and the latter described as a route towards organizational excellence. As the author argues, although a generative safety culture might comprise the ultimate goal, RE does not suggest a ceiling. Instead, RE refers to a continuous changing balance among the four abilities of response, monitoring, learning and anticipation (Chapter 12).

From a broad perspective it seems that all these various concepts discussed across the 12 chapters confirm exactly the adaptive nature of the RE theory itself. The authors did not just apply RE in their cases by following the prescribed RE theory. Instead, they adapted the use of RE functions and they matched RE thinking to a wide spectrum of real-world studies. Perhaps, an alternative structure of the book based on thematic topics (e.g., RE design and management, RE application to existing systems and past events) would be more convenient to the reader. However, this remark does not reduce at all the potential of the book to challenge our views, affect our practices and impact the future. Maybe one of the remaining challenges is how we can provide the industry with a practical and reliable tool that will allow on-time monitoring of resilient performance.

Nektarios Karanikas is Associate Professor in the field of Aviation Safety and Human Factors at the Aviation Academy of the Amsterdam University of Applied Science. He was awarded his doctorate (Safety and Quality Management) from Middlesex University and he holds an MSc Human Factors and Safety Assessment in Aeronautics (Cranfield University). His prior professional experience includes aircraft engineering, maintenance management, quality assurance, accident investigation and lecturing – research in safety and human factors (Hellenic Air Force Academies and CPD courses). He has been member of various associations including ISASI, IOSH and EAAP.
