Environ Syst Decis (2014) 34:181–182
DOI 10.1007/s10669-014-9503-8

EDITORIAL

Expertise processes in risk assessment and management: How to improve their governance and their conduct?

Myriam Merad

Published online: 17 May 2014

Major accidents and disasters, such as Fukushima in Japan (2011) and Aquila in Italy (2009), have significantly changed the conditions of public vigilance and their trust in so-called experts. They have also consequently questioned the legal liability of experts and have remobilized the scientific community in the way that the expertise process is conducted, governed and challenged. More robust, sound and reliable expertise processes are needed, and more transparency and accountability are asked for by the public. At the same time, the frontiers between expertise and decision processes must continually be reevaluated and subjected to possible public audits and scrutiny.

This special issue on "Expertise, Risks and Decisions" in *Environment Systems and Decisions* suggests for the first time a multi-disciplinary contribution to this crucial subject with four main focuses: (1) on the use of social and human sciences to improve the robustness of expertise processes, (2) on how to bridge the gap between experts and other actors by using deliberative and participative approaches, (3) on expert judgment and information fusion and (4) on the use of decision-aiding methods.

Maslen and Hayes (2014) and Tabibzadeh and Meshkati (2014) have suggested learning from major disasters and accidents such as the case of the Wivenhoe Dam inquiry following the Queensland (Australia) floods in January 2011 and BP Deepwater Horizon in the Gulf of Mexico (2010), respectively. It is still surprising to notice that even in our contemporary world, expertise continues to be considered as a *vox dei* where no errors are tolerated and where the blame is considered as being the final sanction. The authors suggest that if we go beyond this omnipresent vision of expertise, possible improvements in expert practices and facilitation of organizational learning can be made. The so-called human and organizational factors in safety sciences, and how to mobilize human and social sciences in risk analysis and risk management, are the key for a more comprehensive learning from expertise and decision-making experiences in risky, uncertain and complex situations.

Wachinger et al. (2014) and Árvai et al. (2014) have, respectively, proposed practical methods and case studies (public debate on hospital planning in Germany and a pressing international development problem in rural Costa Rica: management of the lucrative but also environmentally destructive pineapple industry) on how to make participative and deliberative democracy paradigms achievable in practice. They have, respectively, suggested innovative approaches to bridge the gap between experts, citizens and politicians. The authors have also proposed to organize the participative and/or the deliberative processes based on semi-formal or formal structured decision-making approaches and tools.

With Baccou and Chojnacki (2014), Ha-Duong and Journé (2014) and Lannoy and Procaccia (2014), we return to some crucial problems in expertise such as information fusion in deep uncertainty, the assessment of the probability of a major accident and learning for operational practices and experiences by the use of expert judgment in safety and reliability engineering.

Using practical and operational examples, such as natural risk problems in mountains in France and crisis management, Tacnet et al. (2014) and Kamissoko et al. (2014) close this special issue by sharing their experiences in framing structured approaches based on decision-aiding theories using multi-criteria methods, decision support systems methods and tools and information fusion approaches.

M. Merad (✉)
INERIS, Paris, France
e-mail: myriam.merad@ineris.fr

In a book published in 2010 and a collective paper published in 2013 (Merad et al. 2010, 2013), we have argued for the need for a multi-disciplinary contribution to an analytics and an ethics of expertise in safety, security and environmental issues. This contribution should, in our opinion, be mainly based on two fundamental challenges: (1) working on expertise process validity conditions and factors and (2) expertise process legitimacy criteria and conditions. This special issue offers a wide and a robust contribution to this subject. Researches, practitioners and regulators in the field of safety, security, environment and health will be pleased to share practical examples and methodological contributions to improve the conduct and the governance of expertise processes.

References

Árvai J, Kellon D, León R, Gregory R, Richardson R (2014) Structuring international development decisions: confronting trade-offs between land use and community development in Costa Rica. Environ Syst Decis 34(2): doi 10.1007/s10669-014-9495-4

Baccou J, Chojnacki E (2014) A practical methodology for information fusion in presence of uncertainty: application to the analysis of a nuclear benchmark. Environ Syst Decis 34(2): doi 10.1007/s10669-014-9496-3

Ha-Duong M, Journé V (2014) Calculating nuclear accident probabilities from empirical frequencies. Environ Syst Decis 34(2): doi 10.1007/s10669-014-9499-0

Kamissoko D, Zaraté P, Pérès F (2014) Decision process in large scale crisis management. Environ Syst Decis 34(2): doi 10.1007/s10669-014-9498-1

Lannoy A, Procaccia H (2014) Expertise, safety, reliability and decision making – practical industrial experience. Environ Syst Decis 34(2): doi 10.1007/s10669-014-9500-y

Maslen S, Hayes J (2014) Experts under the microscope: the Wivenhoe Dam case. Environ Syst Decis 34(2): doi 10.1007/s10669-014-9492-7

Merad M (2010) Decision aiding and expertise in risk analysis and risk management (Aide à la décision et expertise en gestion des risques). Editor: Lavoisier, p 256. ISBN: 978-2-7430-1265-6

Merad M, Dechy D, Llory M, Marcel F, Tsoukias A (2013) Towards an analytics and an ethics of expertise: learning from decision aiding experiences in public risk assessment and risk management. EURO J Decis Process. doi 10.1007/s40070-013-0022-5

Tabibzadeh M, Meshkati N (2014) Learning from the BP Deepwater Horizon accident: risk analysis of human and organizational factors in negative pressure test. Environ Syst Decis 34(2): doi 10.1007/s10669-014-9497-2

Tacnet J-M, Dezert J, Curt C, Batton-Hubert M, Chojnacki E (2014) How to manage natural risks in mountain areas in a contest of imperfect information? New frameworks and paradigms for expert assessments and decision-making. Environ Syst Decis 34(2): doi 10.1007/s10669-014-9501-x

Wachinger G, Renn O, Wist S-K (2014) Using participation to create resilience: how to involve citizens in designing a hospital system? Environ Syst Decis 34(2): doi 10.1007/s10669-014-9502-9