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Social Science for Safety: What Is It and Why Do We Need It?

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Synopsis

Many prominent authors have distinguished several eras in safety science based on the predominant focus of safety measures taken. A technical focus was followed by attention devoted to human factors, which has now broadened to an organizational or socio-technical focus. Along with this changing focus the role of social science has changed. The move from the technological era to the human factors era was spurred by the increasing awareness that human strengths and limitations need to be taken into account when designing advanced technical systems. The subsequent broadening to an organizational perspective followed the general trend in management research where describing organizations as mechanistic, technology-driven systems was left behind in favor of capturing the complex interaction between social and technological processes that generates individual and organizational performance. As a consequence the knowledge from the social sciences that is relevant for promoting safety has expanded considerably. Not only psychological knowledge concerning individuals' abilities and attitudes as they relate to operating technical systems is important, but a broad range of theories and empirical findings from work and organizational psychology and social psychology, from the sociology of work and organizations, and even from political science in view of power relations in organizations and regulatory regimes.

Embracing the wealth of knowledge in the social sciences and applying it in the service of improved safety is a complex interdisciplinary endeavor. Most fundamentally it requires openness to different worldviews and the readiness to challenge long-held basic assumptions. Core to any safety management strategy are decisions on risk control. Different options for managing risk and uncertainty have different theoretical assumptions and belief systems embedded in them. Minimizing uncertainty is grounded in a mechanistic understanding of organizations, giving priority to central control. Acknowledging the inevitability of uncertainty in complex socio-technical systems leads to decentralizing control capacity in order to empower local actors for handling uncertainty. From the perspective of learning organizations, even creating uncertainty may be considered desirable to enlarge adaptive capacity and foster innovation. The different conceptions of risk control tend to be prevalent in different professional (sub)cultures within organizations. While engineers and executives believe in uncertainty reduction through design and planning, operative personnel are acutely aware of the need for resilience in the face of only partially controllable uncertainties. Social scientists finally argue for promoting learning and innovation, thereby even adding uncertainty.

In the talk examples of the wide range of relevant social science knowledge and its implications for safety management are given and methods discussed to stimulate the dialogue between different professions in ways that foster perspective taking and cross-learning. There is no turning back from the realization that effective safety management has to build on evidence from technical and social sciences. The task ahead is to establish a culture of interdisciplinary appreciation which permits a truly integral approach to safety.

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