

RISK & SAFETY – What Really Counts

PREVIEW

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*Those who would give up essential Liberty,
to purchase a little temporary Safety,
deserve neither Liberty nor Safety*

Benjamin Franklin, U.S. writer, philosopher, politician, 1706 – 1790

PREVIEW

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1 Preface

Many years ago, I spent a few days in the mountains, enjoying outdoor life and ski touring. After previous snowfalls, the avalanche hazard had been assessed as possibly critical on that particular day. Nevertheless, I decided to explore the terrain, leaving my friends behind. While ascending with my skis, suddenly a slab broke loose just above me. My heart beat rate doubled. The whole slope started to move under my feet. I found myself sliding without any control, my skis dragging me down like anchors, the heavy snow overwhelming me up to my waist. Since I was able to write this book about a quarter of a century later, you might presume that the outcome of that little adventure, which is described more in detail in chapter 8.1, was fortunate for me. In that time, I considered myself an experienced mountaineer, knowing about the basic safety measures to avoid avalanches, but I disregarded some of them deliberately. Do you know about the thrilling sensation of skiing down a steep slope in pristine powder? Probably you will understand the fascination of risk. It's about emotions, not about rationality. Young people in search of adventure are exposed to extraordinary risks.

Later I became involved in risk and safety issues on a professional level. Tunnel safety and ventilation has been my primary field of profession in the past two decades. This book arose from a technical article in 2011 with the ominous title 'Reducing Costs and Improving Safety of Road Tunnels' [108]. To that, I got positive reactions from many professionals, although my recommendations were obviously neglected in practice. A public servant, being in charge of investments in road safety in a 'not to be named country' didn't mince his words, explaining that reducing costs and improving safety might be officially communicated goals towards the public, but honestly do not provide real incentives neither for procurers, nor for suppliers. Leaders, government officials and company managers applying thorough analysis of benefits, costs and risks for thought-out decisions may exist in Disneyland, but not in the real world.

The deeper I got into the matter, the more I was astonished about the gap between public risk perception, officially communicated policy, and the mess in the harsh reality. Working under time and cost pressure, failures and accidents that could be easily avoided happen regularly due to design flaws, bad workmanship, erroneous operation, and mostly lack of funds, time and will for proper analysis, evaluation of good solutions and practical quality assurance by thorough testing and improving. I describe many case studies, trying to write in an understandable way to the general public, without going into the technical details.

Have you ever wondered why air quality in many road tunnels is quite poor, and why fires in tunnels often lead to the whole tunnel getting filled with smoke, endangering and sometimes even killing people, despite expensive tunnel ventilation equipment? In contrast, how many casualties do fires in tunnels really cause? What would you do in such a situation?



Fig. 1 In a tunnel filled with smoke

The worst European road tunnel catastrophes, namely the Mont Blanc tunnel fire disaster with 39 fatalities, the Gotthard road tunnel fire with 11 fatalities, and the bus crash in the Sierre tunnel with 28 fatalities (among those 26 children), were caused by Belgian trucks and busses. Obviously, the most effective way to improve road tunnel safety would be to ban Belgian vehicles from Alpine roads. Or is that a premature conclusion, based on hindsight interpretation of a random correlation? Are some of the new design standards that have been invented as consequences of the mentioned tunnel disasters, leading to investment of billions of Euros of taxpayers' money in tunnel safety, based on premature conclusions too?

Even when most people in modern affluent societies live as safe as never before in human history, there is still potential for improvement, and we must avoid to relapse into medieval conditions due to ignorance, carelessness and ruthlessness of particular stakeholders. It is only human that decisions with far reaching consequences are mostly based on randomly chosen particular arguments and simplified cause-effect templates. Proven engineering principles to manage technological risks, as described in chapter 12, seem to be neglected in favor of bureaucratic empty runs, following dubious standards and codes without questioning them. From an overall point of view, safety is impaired when time and funds are wasted for safety measures with limited usefulness, and subsequently those funds lack when more important tasks are at stakes.