

Trust: Interdisciplinary Perspectives

Volume 2

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Science of Societal Safety

Living at Times of Risks and Disasters

 Springer Open

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Preface

The automobile is a convenience of civilization. Accidents that they cause, however, take more than a million lives over the world each year. The Tangshan earthquake in 1976 caused 240,000 to 650,000 deaths in China, and the 2004 Indian Ocean earthquake killed as many as 280,000 people. The 9/11 terrorist attacks in 2001 to the US World Trade Center and Pentagon left about 3000 people dead. Every year, accidents, natural disasters, terror attack, wars, and other causes leave a large number of victims.

Societal safety science aims at preventing accidents and disasters that threaten human societies, reducing the damages caused by such events, rescuing the victims, and promoting recovery and reconstruction of the disaster-struck areas. It is a new field of study that contributes to the enhancement of societal safety through academic fusion of study fields in natural science, social science, and humanities.

International communities have recognized the importance in taking academic approaches to problems in societal safety. Societal safety science, however, has not quite yet established itself as a new field for studying problems in safety. Kansai University, in Osaka, Japan, proposed the field, for the first time, in 2009 and established a faculty and a graduate school with the same title. The facts tell us that societal safety science is a leading field in the studies of disaster prevention. Countries in northern Europe, however, had proposed a similar research field called societal safety in the late 1990s. Our undergraduate and graduate schools use the name societal safety science that attached “sciences” to the title “societal safety.”

A new study field needs a sufficient accumulation of researches in the field by specialists. Upon such research accomplishments, the establishment requires publication of an exhaustive and systematic textbook. This book is the first introductory textbook publication for those that study societal safety science for the first time.

When the GDP per capita is small and the country is poor, the societies look to the administration for securing clothing, food, and residence for the people, building infrastructures, and targeting economic growth. For some advanced countries, the years from the end of World War II to the mid-1960s were such times, and the priority was placed on quantitative expansion rather than enhancing quality of living.

Then after the period of high growth, advanced countries accomplished economically wealthy societies in the latter half of the 1960s. After the oil shock, infrastructures like roads and highways, water supply and sewage, and housing matured, and then the social demands turned their interests to quality than quantity and securing safety for the people. In the academia, Ulrich Beck published *Risk Society* (SAGE Publications Ltd., 1992) and discussed that modern societies forced to emphasize production and distribution risks instead of those of wealth, and James Reason, well known in the field of accident theory, published *Managing the Risks of Organizational Accidents* (Ashgate, 1997).

As we described above, Kansai University, for the first time in Japan, opened the Faculty of Societal Safety Sciences and the Graduate School of Societal Safety Sciences in 2010. A 2000 report “For the Establishment of Safety Sciences” by the Science Council of Japan contributed to the idea of building a new faculty. The report stated:

“Safety Engineering has made great accomplishments for realizing safety through engineering efforts. Simple engineering efforts, however, are now facing difficulties in dealing with the enormous sizes of technical products and globalization of our living environments. We now need to establish a field of Safety Sciences to counter safety problems from a wider standpoint beyond simple engineering approaches.”

This book of 5 parts and 19 chapters is the English edition of our book published in Japanese in March 2018 from Minerva Shobo. Part I “Human Societies and Societal Safety Sciences” gives overviews of what societal safety sciences aim at, development of scientific technologies and changes in human societies, how people are coping with risks in the modern societies, and how safety engineering and studies of disaster prevention and risk management developed. Part II “Events that Threaten Human and Its Societies” explains natural and social disasters and their histories, environmental risks, wars, crimes, and terrorisms. Part III “Risk Analysis and Management” discusses problems related to risk, like methods of risk analysis, risk management, risk communication, crisis management, and so on. Part IV “Social Mechanisms for Disaster Management” analyzes public systems for disaster prevention, reduction, and mitigation, government activities for disaster management, private systems for such purposes, and systems for supporting disaster victims. Part V “For Advancement of Societal Safety Sciences,” in the end, discusses the future of societal safety sciences through governance and agreement formation for societal safety.

Societal safety sciences tackle a big diversity of problems including natural disasters, accidents, environmental destruction, food safety, illnesses including pandemics, crimes and international terrorism, and information security. Translating this book into English, therefore, is only successful with not just high abilities in English as a language but also through work by someone with skills and knowledge to understand these problems in their own special fields. The translator of this book, Dr. Kenji Iino, met the task beautifully.

This book is the first systematic textbook in societal safety sciences. The authors will be greatly delighted if it spreads internationally and helps the world make steps forward in building safer societies.

Finally, we would like to express our gratitude to Professor Takashi Inoguchi for his valuable suggestions in publishing this book. We are also grateful to Springer Japan and Minerva Shobo for allowing the publication of the English version *Science of Societal Safety: Living at Times of Risks and Disasters* of the Japanese book *Shakai Anzengaku Nyumon*.

Takatsuki, Osaka, Japan
September 1, 2018

Seiji Abe
Mamoru Ozawa
Yoshiaki Kawata

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Abbreviations

AI	Artificial intelligence
AIDS	Acquired immunodeficiency syndrome
AMEDAS	Automated meteorological data acquisition system
BCP	Business continuity plan
CAA	Consumer Affairs Agency, Government of Japan
CAO	Cabinet Office of the Government of Japan
CIV	Crisis impact value
COP	Conference of the Parties
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CSR	Corporate social responsibility
DDT	Dichlorodiphenyltrichloroethane
DMAT	Disaster medical assistance team
DHS	US Department of Homeland Security
ERM	Enterprise risk management
FAO	Food and Agriculture Organization of the United Nations
FDMA	Fire and Disaster Management Agency of Ministry of Internal Affairs and Communications, Government of Japan
FEMA	Federal Emergency Management Agency
GCP	Good clinical practice
GDP	Gross domestic product
GIAJ	General Insurance Association of Japan
GIROJ	General Insurance Rating Organization of Japan
GIS	Geographical information system
GLP	Good laboratory practice
GMP	Good manufacturing practice
GPS	Global positioning system
GTD	Global Terrorism Database
HERP	Headquarters for Earthquake Research Promotion
HIV	Human immunodeficiency virus
HLW	High-level radioactive waste

IAEA	International Atomic Energy Agency
ICAO	International Civil Aviation Organization
ICE	Intercontinental express
ICRP	International Commission on Radiological Protection
ICS	Incident command system
ICT	Information and communication technology
IEC	International Electrotechnical Commission
ILO	International Labour Office
IoT	Internet of things
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
ITS	Intelligent transportation systems
ITSA	International Transportation Safety Association
ITU	International Telecommunication Union
JIS	Japanese Industrial Standards
JISC	Japanese Industrial Standards Committee
JLSC	Japan Legal Support Center
JR	Japan Railways
JTSB	Japan Transport Safety Board
LCC	Life-cycle cost
LIAJ	Life Insurance Association of Japan
METI	Ministry of Economy, Trade and Industry, Government of Japan
MEXT	Ministry of Education, Culture, Sports, Science and Technology, Government of Japan
MHLW	Ministry of Health, Labour and Welfare, Government of Japan
MIC	Ministry of Internal Affairs and Communications, Government of Japan
MLIT	Ministry of Land, Infrastructure, Transport and Tourism, Government of Japan
MOD	Ministry of Defense, Government of Japan
MOE	Ministry of the Environment, Government of Japan
NCPTSD	National Center for Posttraumatic Stress Disorder, US Department of Veterans Affairs
NCTSN	National Child Traumatic Stress Network
NILIM	National Institute for Land and Infrastructure Management
NIMBY	Not in my backyard
NO _x	Nitrogen oxides
NPO	Nonprofit organization
NPP	Nuclear power plant
NRC	US Nuclear Regulatory Commission
NTSB	National Transportation Safety Board
OSHMS	Occupational safety and health management systems
PCB	Polychlorinated biphenyl
PDCA	Plan, do, check, act

PFA	Psychological first aid
PM	Particle matter
PRA	Probabilistic risk assessment
PRTR	Pollutant release and transfer register
PTSD	Posttraumatic stress disorder
SARS	Severe acute respiratory syndrome
SCJ	Science Council of Japan
SPR	Skills for psychological recovery
SSJ	Seismological Society of Japan
TB	Tuberculosis
TBT	Technical barriers to trade
TEPCO	Tokyo Electric Power Company
TMI	Three Mile Island
UNEP	United Nations Environment Programme
UNISDR	United Nations Office for Disaster Risk Reduction
UNODC	United Nations Office on Drugs and Crime
USACE	US Army Corps of Engineers
VC	Volunteer center
WHO	World Health Organization
WTO	World Trade Organization