Thinking Ahead—Essays on Big Data, Digital Revolution, and Participatory Market Society

Dirk Helbing

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ISBN 978-3-319-15077-2 ISBN 978-3-319-15078-9 (eBook)
DOI 10.1007/978-3-319-15078-9

Library of Congress Control Number: 2015934446

Springer Cham Heidelberg New York Dordrecht London

Cover illustration: Internet security and privacy issues with a human eye and digital binary code as surveillance of hackers or hacking from cyber criminals watching prohibited access to web sites with firewalls. Stock Photo. Copyright: Lightspring.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

About the Author

Physicist Dirk Helbing is Professor of Computational Social Science at the Department of Humanities, Social and Political Sciences and an affiliate of the Computer Science Department at ETH Zurich, as well as co-founder of ETH's Risk Center. He is internationally known for the scientific coordination of the FuturICT Initiative which focuses on using smart data to understand techno-socio-economic systems.

"Prof. Helbing has produced an insightful and important set of essays on the ways in which big data and complexity science are changing our understanding of ourselves and our society, and potentially allowing us to manage our societies much better than we are currently able to do. Of special note are the essays that touch on the promises of big data along with the dangers...this is material that we should all become familiar with!"

Alex Pentland, MIT, author of Social Physics: How Good Ideas Spread—The Lessons From a New Science

"Dirk Helbing has established his reputation as one of the leading scientific thinkers on the dramatic impacts of the digital revolution on our society and economy. Thinking Ahead is a most stimulating and provocative set of essays which deserves a wide audience."

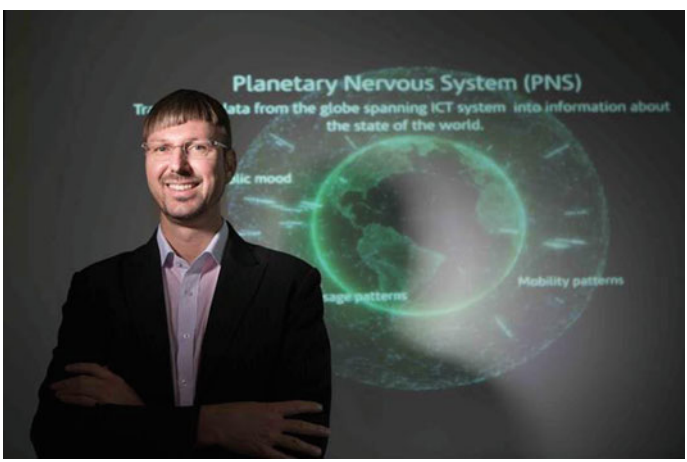
Paul Ormerod, economist, and author of Butterfly Economics and Why Most Things Fail.

"It is becoming increasingly clear that many of our institutions and social structures are in a bad way and urgently need fixing. Financial crises, international conflicts, civil wars and terrorism, inaction on climate change, problems of poverty, widening economic inequality, health epidemics, pollution and threats to digital privacy and identity are just some of the major challenges that we confront in the twenty-first century. These issues demand new and bold thinking, and that is what Dirk Helbing offers in this collection of essays. If even a fraction of these ideas pay off, the consequences for global governance could be significant. So this is a must-read book for anyone concerned about the future."

Philip Ball, science writer and author of Critical Mass

"This collection of papers, brought together by Dirk Helbing, is both timely and topical. It raises concerns about Big Data, which are truly frightening and disconcerting, that we do need to be aware of; while at the same time offering some hope that the technology, which has created the previously unthought-of dangers to our privacy, safety and democracy can be the means to address these dangers by enabling social, economic and political participation and coordination, not possible in the past. It makes for compelling reading and I hope for timely action."

Eve Mitleton-Kelly, LSE, author of Corporate Governance and Complexity Theory and editor of Co-evolution of Intelligent Socio-technical Systems.



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Preface

This booklet presents a collection of essays and discussion or white papers on Big Data, the ongoing Digital Revolution and the emergent Participatory Market Society. These have been written since the year 2008 in anticipation of and response to the financial and other crises. While we have seen a pretty peaceful period after the fall of the Berlin Wall in 1989, the world seems to have increasingly destabilized in the aftermath of September 11, 2001.

If we want to master the related challenges, we must analyze the underlying problems and change the way we manage our techno-socio-economic systems.

I would like to thank many friends and colleagues, in particular the worldwide FuturICT community, for the inspiring discussions and the continued support. I am also grateful to Stefano Balietti, James Breiding, and Markus Christen for their reprint permissions regarding two of the chapters in this booklet.

November 2014 Dirk Helbing
Zürich

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