

Future Tech

Future Tech

How to Capture Value from Disruptive Industry Trends

Trond Arne Undheim



Publisher's note

Every possible effort has been made to ensure that the information contained in this book is accurate at the time of going to press, and the publishers and authors cannot accept responsibility for any errors or omissions, however caused. No responsibility for loss or damage occasioned to any person acting, or refraining from action, as a result of the material in this publication can be accepted by the editor, the publisher or the author.

First published in Great Britain and the United States in 2021 by Kogan Page Limited

Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the publishers, or in the case of reprographic reproduction in accordance with the terms and licences issued by the CLA. Enquiries concerning reproduction outside these terms should be sent to the publishers at the undermentioned addresses:

2nd Floor, 45 Gee Street
London
EC1V 3RS
United Kingdom

122 W 27th St, 10th Floor
New York, NY 10001
USA

4737/23 Ansari Road
Daryaganj
New Delhi 110002
India

www.koganpage.com

Kogan Page books are printed on paper from sustainable forests.

© Trond Arne Undheim 2021

The right of Trond Arne Undheim to be identified as the author of this work has been asserted by him in accordance with the Copyright, Designs and Patents Act 1988.

ISBNs

Hardback 978 1 39860 034 8
Paperback 978 1 39860 032 4
Ebook 978 1 39860 033 1

British Library Cataloguing-in-Publication Data

A CIP record for this book is available from the British Library.

Library of Congress Cataloguing-in-Publication Data

[to follow]

Typeset by Integra
Print production managed by Jellyfish
Printed and bound by CPI Group (UK) Ltd, Croydon CR0 4YY

CONTENTS

Introduction: what drives change 1

- What the industrial revolution taught us about today's changes 2
- Unbundling the second industrial revolution of the 20th century 7
- The 21st century's challenges: what future tech is all about 12
- Micro-view: how individuals respond to disruption 15
- Key takeaways and reflections 17

01 The forces of disruption: tech, policy, business models, social dynamics, and the environment 19

- How to pick which technologies to focus on? 20
- Five spheres of future-oriented activity 26
- Disruption of demand 32
- The social biosphere of innovation 34
- Key takeaways and reflections 37

02 How science and technology enable innovation 39

- Tech discovery approach #1: grasp how technology platform businesses work 39
- Tech discovery approach #2: understand how taxonomies work 42
- Tech discovery approach #3: visualize the relationship between technologies 51
- Tech discovery approach #4: track specific technologies 52
- Conclusion 59
- Key takeaways and reflections 60

03 Policy and regulation moderate market conditions 63

- The five roles of government 64
- 1 Government as questioner 65
- 2 Government as facilitator and limiter 66
- 3 Government as risk taker (scaling) 69
- 4 Government as tech innovator 69
- 5 Government as protector 71
- Government's role in regulating technology 73
- Government standardization of technology 76

- The key policy areas to watch out for 81
- Conclusion 85
- Key takeaways and reflections 87

- 04 How business forces upend technologies, markets, and society 89**
 - How industry taxonomies illustrate technology change 90
 - Spotting emerging business models—a challenging task 95
 - Platform tech—last decade’s dominant approach 97
 - How startups upend markets 104
 - Strategy frameworks—business models put into a larger context 108
 - Conclusion 112
 - Key takeaways and reflections 113

- 05 Social dynamics drive adoption 116**
 - How a futurist thinks of social dynamics 117
 - How individual consumer habits influence technology’s impact 118
 - The impact of social groups on technology 122
 - The impact of social dynamics on technology: case studies 126
 - Conclusion 136
 - Key takeaways and reflections 137

- 06 Five technologies that matter and why: AI, blockchain, robotics, synthetic biology, and 3D printing 138**
 - The future of artificial intelligence 140
 - The future of blockchain 145
 - The future of robotics 151
 - The future of synthetic biology 154
 - The future of 3D printing 161
 - Conclusion 167
 - Key takeaways and reflections 169

- 07 How to become a postmodern polymath 170**
 - T-shaped and beyond 170
 - Beginning a journey of combining insights from several domains 171
 - The greater aim—adding value to society 174
 - Conclusion 187

- 08 Personalize your insight ecosystem 188**
- What is insight? 188
 - Readily available insight tools 189
 - Your personal insight and growth toolkit 190
 - The way to track insight for growth 193
 - Tech discovery approach #1: personalize your approach 198
 - Tech discovery approach #2: develop your insights beyond 101 200
 - Tech discovery approach #3: understand the scientist as well as the science 200
 - Conclusion 204
 - Key insights and takeaways 205
- 09 Merge with technology to achieve a cognitive leap 206**
- Integrating with machines 207
 - Setting boundaries for machines 212
 - Stewardship and ethics of machines 213
 - How brain–computer interfaces are transforming everything 215
 - Why we develop new machines 223
 - Tweaking machines 226
 - How to access advanced technology? 228
 - Conclusion 228
 - Key insights and takeaways 229
- Conclusion 231**
- Be aware of macro-trends 231
 - Act on micro-trends 234
 - Understand the stakes of missing the picture on tech 237
- Appendix 239*
- Types of platform technologies 239
 - Nasa’s Readiness Levels 242
 - Productivity tools 243
 - 10 thought leadership events that matter 248
 - Resources for artificial intelligence 254
 - Resources for blockchain 260
 - Resources for robotics 262
 - Resources for synthetic biology 264
 - Resources for 3D printing 266

Polymaths throughout history 269
My personal insight ecosystem 273

Bibliography 277

Index 305