

FIVE INNOVATIONS THAT CHANGED HUMAN HISTORY

We live in an era of major technological developments, post-pandemic social adjustment and dramatic climate change arising from human activity. Considering these phenomena within the long span of human history, we might ask: which innovations brought about truly significant and long-lasting transformations?

Drawing on both historical sources and archaeological discoveries, Robin Derricourt explores the origins and earliest development of five major achievements in our deep history, and their impacts on multiple aspects of human lives. The topics presented are the taming and control of fire, the domestication of the horse and its later association with the wheeled vehicle, the invention of writing in early civilisations, the creation of the printing press and the printed book and the revolution of wireless communication with the harnessing of radio waves. Written in an engaging and accessible style, Derricourt's survey of key innovations makes us consider what we mean by long-term change, and how the modern world fits into the human story.

Robin Derricourt is an Honorary Professor of History at the University of New South Wales, Sydney and a Fellow of the Australian Academy of the Humanities. His previous books in archaeology and history include *Inventing Africa*, *Antiquity Imagined*, *Creating God: The birth and growth of major religions*, and *Unearthing Childhood: Young lives in prehistory*, which won the 2019 PROSE Award in Ancient History and Archaeology.

Five Innovations That Changed Human History

Transitions and Impacts

ROBIN DERRICOURT

University of New South Wales



Cambridge University Press & Assessment
978-1-009-52337-0 — Five Innovations That Changed Human History
Robin Derricourt
Frontmatter
[More Information](#)



CAMBRIDGE
UNIVERSITY PRESS

Shaftesbury Road, Cambridge CB2 8EA, United Kingdom
One Liberty Plaza, 20th Floor, New York, NY 10006, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
New Delhi – 110025, India
103 Penang Road, #05–06/07, Visioncrest Commercial, Singapore 238467

Cambridge University Press is part of Cambridge University Press & Assessment,
a department of the University of Cambridge.

We share the University's mission to contribute to society through the pursuit of
education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781009523370

DOI: 10.1017/9781009523400

© Robin Derricourt 2024

This publication is in copyright. Subject to statutory exception and to the provisions
of relevant collective licensing agreements, no reproduction of any part may take
place without the written permission of Cambridge University Press & Assessment.

When citing this work, please include a reference to the DOI 10.1017/9781009523400

First published 2024

Printed in the United Kingdom by CPI Group Ltd, Croydon, CR0 4YY 2024

A catalogue record for this publication is available from the British Library.

*A Cataloging-in-Publication data record for this book is available
from the Library of Congress*

ISBN 978-1-009-52337-0 Hardback

ISBN 978-1-009-52339-4 Paperback

Cambridge University Press & Assessment has no responsibility for the persistence
or accuracy of URLs for external or third-party internet websites referred to in this
publication and does not guarantee that any content on such websites is, or will remain,
accurate or appropriate.

Contents

<i>List of Illustrations</i>	<i>page ix</i>
1 Introduction: Transitions and Impacts	1
2 Taming Fire	10
The Discovery of Fire	10
Using Natural Fire	13
Did Neanderthals Control Fire	16
<i>Homo sapiens</i> and the Taming of Fire	18
The Transformative Power of Fire	22
Light	23
Signalling: Home Base and Conflict	24
Heat	27
Social Impacts	28
Cooking	29
Biology	31
Food Acquisition	33
Technology	36
Ritual and Art	38
Myths of the Origins of Fire	41
Conclusion	42
3 Domesticating Horses	44
Histories of the Horse	44
Horses before Domestication	47
Horse Biology and Domestication	49
The Horse before the Cart: Botai and the First Taming	51
Domesticated Horses in the Western Steppe	54
The Cart before the Horse: Animal Haulage by Ox (or Donkey)	56
Horses and Chariots	61
The Spread of Riding	66

And to the East?	67
The Multiple Roles of Horses	69
The Horse for Meat	70
The Horse for Milk	71
Secondary Products	71
Riding to Hunt	72
Riding to Herd	73
Riding to Communicate	74
Riding to Fight	76
Horse and Chariot	79
Racing the Horse and Chariot	81
The Pack Horse	81
The Horse for Haulage of Goods	82
The Horse for Haulage of People	84
Riding to Travel	84
Horses in Ritual and Symbolism	86
Conclusion	87
4 Developing Writing	89
The Origins of Writing	89
Symbols before Writing	93
Writing Numbers	95
Pictograms, Ideograms and First Writing	98
The Development of Cuneiform	100
Hieroglyphic and Hieratic	102
The Idea of Writing	107
Other Independent Origins	108
The Early Impacts and Roles of Writing	111
Ownership, Identity and Trade	111
Land, Rent and Building	112
Administration and Authority	114
Education and Lexical Reference	117
Literature	119
Social Class, Social Role and New Careers	121
Propaganda and Pride	122
Unifying the State or Nation	127
Religion and Words to the Gods	127
Spells and Magic	128
Law and Political Regulations	130
Correspondence	130
Memory	131
Conclusion	133

5	Inventing Printing	136
	The Development of Printing and the Book	136
	Printing in China	138
	Printing in Korea and Japan	142
	Invention of Paper	143
	Scribal Copies	145
	Precedents for Printing in Europe	147
	The European Printing Revolution	147
	Gutenberg and Mainz	151
	The Spread of Printing	154
	The Impacts and Context of the Printed Book	157
	The Book Itself	158
	The New Occupations	160
	The Reading Classes	162
	Language and Identity	166
	Genres	168
	Education	170
	Intellectual Enquiry, Renaissance Humanism and Scientific Development	173
	Ignorance	177
	Public Discourse and Propaganda	178
	Reformation: The Religious Revolution	179
	Anxiety about Printing	183
	Conclusion	185
6	Communicating Wirelessly	187
	From Unwired to Wired to Wireless	187
	Foot Transport and Horse Messengers	189
	Ships and Colonial Empires	191
	Semaphore	193
	Pigeons	195
	Telegraphy	196
	The Wired Telephone	200
	Communication without Wires	201
	The Changed Wireless World	206
	Naval Communication	206
	Marine Safety and Weather Information	209
	Military Tool	210
	Direction Finding and Navigation	213
	Radar	214
	Colonies and Dominions	215
	News and Propaganda	216
	Entertainment Broadcasting	218

Television	221
National Unity in Language and Culture	223
Connecting the World	225
Criminal Apprehension	226
Financial Operations	226
New Careers	228
Low-Power Devices	230
The Internet: Cables and Wi-Fi	231
Radio Telephony	231
Conclusion	233
7 Innovation, Progress and Presentism	235
Innovation	236
Progress	242
Presentism	246
<i>Notes</i>	251
<i>Further Reading</i>	280
<i>Index</i>	286

Illustrations

1	Kalahari San making fire with friction.	page 21
2	Lamps of the European Upper Palaeolithic.	25
3	Palaeolithic hearth: a diorama at Şanlıurfa Museum.	27
4	Rock painting of a figure smoking a beehive, Toghwana Dam, Zimbabwe.	34
5	‘Aborigines using fire to hunt kangaroos’, Joseph Lycett, ca. 1817.	35
6	Palaeolithic artists in Font-de-Gaume, Charles R. Knight, 1920.	39
7	Upper Palaeolithic cave painting of a horse at Lascaux.	49
8	Palaeolithic horse sculpture from Vogelherd.	50
9	Wagon from the Royal Standard of Ur.	59
10	Assyrian king Ashurbanipal hunting on horseback.	73
11	Assyrian archers.	77
12	Mounted archer from the Mongol army.	78
13	Pharaoh Ramesses II and his chariot.	80
14	Covered carriage with women passengers, 1411, from the Toggenburg Bible.	85
15	Sumerian numerals in cuneiform.	96
16	Egyptian hieroglyphic numerals.	97
17	The development of cuneiform writing.	101
18	Umm el-Qa’ab tags.	105
19	Oracle bone.	109
20	Stone stele of Ušumgal, ca. 2750 BC, marking real-estate transfer.	113
21	Sumerian clay tablet with administrative account of barley distribution.	116
22	Ebony label from Abydos with the name of King Aha.	125
23	Panel from the tomb of Hesy-Re.	126
24	Chinese printing from the Song dynasty, 960–1269.	140
25	Sixteenth-century German printing press.	150

26	Typeface of the Subiaco Lactantius (1465).	152
27	The Gutenberg Bible.	153
28	Publication about Amerigo Vespucci’s travels to the New World, 1504–1505.	156
29	<i>A Gest of Robyn Hode</i> : ballad from ca. 1510.	164
30	Textbooks in use: a woodcut from Perotti, <i>Rudimenta grammatices</i> , 1495.	172
31	Pony Express stamp, 1861.	191
32	Semaphore signalling at Scheveningen, 1799.	194
33	Goliath steamer laying telegraph cables, 1850.	197
34	Marconi in 1896 with his experimental radio equipment.	202
35	Reginald Fessenden working on radio voice transmission.	204
36	A German field radio station in the First World War.	212
37	Aeriola Sr Receiver, RCA Westinghouse, 1921–22 radio.	219
38	BBC Television camera with cable link to Alexandra Palace, 1938.	222
39	Wireless operator recruitment during the First World War.	228
40	Radio assembly work, Philadelphia, 1925.	229
41	Acheulean bifacial flint handaxes.	241