

# Aesthetics of Universal Knowledge



Simon Schaffer • John Tresch • Pasquale Gagliardi  
Editors

# Aesthetics of Universal Knowledge

palgrave  
macmillan

*Editors*

Simon Schaffer  
Department of History &  
Philosophy of Science  
University of Cambridge  
Cambridge, United Kingdom

John Tresch  
Department of History &  
Sociology of Science  
University of Pennsylvania  
Philadelphia, Pennsylvania, USA

Pasquale Gagliardi  
Secretary General  
Fondazione Giorgio Cini  
Venezia, Italy

ISBN 978-3-319-42594-8      ISBN 978-3-319-42595-5 (eBook)  
DOI 10.1007/978-3-319-42595-5

Library of Congress Control Number: 2017938305

© Fondazione Giorgio Cini onlus 2017

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use. The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Cover illustration: *La mano di Atlante*, glass mosaic by Tomaso Buzzi  
Photo by Enrico Fiorese, Courtesy of Fondazione Giorgio Cini

Printed on acid-free paper

This Palgrave Macmillan imprint is published by Springer Nature  
The registered company is Springer International Publishing AG  
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

## ACKNOWLEDGEMENT

The editors would like to thank all the contributors for the thought and care they have shown to this project, making it a truly collective dialogue. We would also like to thank Palgrave and its fine team of editors, especially Amy Invernizzi, who shepherded the book to its completion. Finally, this book would not have been possible without the innumerable contributions of Anna Lombardi of the Segreteria Generale of the Fondazione Cini. From the very start of the planning of the dialogue through to the collecting of the final photos and signatures, Anna's steadfast, exacting, skilful, and generous work has been essential to this project. The editors wish to express their enormous and sincere gratitude to her for all she has done.

# CONTENTS

<b>1</b>	<b>Text and Context: <i>Genius Loci</i> (A Preface)</b>	<b>1</b>
	Pasquale Gagliardi	
<b>2</b>	<b>Introduction</b>	<b>11</b>
	Simon Schaffer	
<b>Part I</b>	<b>Visions: How Aesthetics and Museology Affect the Ways in Which Worlds can be Shown and Known</b>	<b>29</b>
<b>3</b>	<b>Re-visioning the World: Mapping the Lithosphere</b>	<b>31</b>
	Adam Lowe and Jerry Brotton	
<b>4</b>	<b>Architects of Knowledge</b>	<b>53</b>
	Pierre Chabard	
<b>5</b>	<b>Pictorialism (Prelude and Fugue)</b>	<b>77</b>
	Cheryce von Xylander	
<b>6</b>	<b>The Unending Quantity of Objects: An Observation on Museums and Their Presentation Modes</b>	<b>115</b>
	Anke te Heesen	

<b>Part II</b>	<b>Worlds: How the Performance of Cosmologies can Change the Way the Moral History of the World is Told and Understood</b>	135
7	<b>Cosmopragmatics and Petabytes</b> John Tresch	137
8	<b>Gaia or Knowledge without Spheres</b> Bruno Latour	169
9	<b>Mapping Dark Matter and the Venice Paradox</b> David Turnbull	203
<b>Part III</b>	<b>Economics: How Different Models of Knowledge and Their Contents Matter to Politics and Society</b>	233
10	<b>The Web, Google, and Cosmograms</b> Steve Crossan	235
11	<b>Rhetoric, Economics, and Nature</b> Deirdre N. McCloskey	249
12	<b>Lodestar</b> Richard Powers	263

## BIOGRAPHIES OF CONTRIBUTORS

*Jerry Brotton* is Professor of Renaissance Studies at Queen Mary University of London and Associate Director of the Queen Mary/Warwick University project “Global Shakespeare”. He is the author of *Trading Territories: Mapping the Early Modern World* (1997), *Global Interests: Renaissance Art between East and West* (2000), co-authored with Lisa Jardine, *The Renaissance Bazaar: From the Silk Road to Michelangelo* (2002), and *The Sale of the Late King’s Goods: Charles I and His Art Collection* (2006), which was shortlisted for the Samuel Jonson Prize. His bestselling and prize-winning *A History of the World in Twelve Maps* (2012) has been published in 12 languages. In 2014, he published *Great Maps* (Dorling Kindersley). He is also a broadcaster and presented BBC4’s three-part TV series, “Maps: Power, Plunder and Possession” (2010), “Mapping Ulster” (2013), and BBC Radio 3’s “Courting the East” (2007). He also co-curated and edited the exhibition and catalogue of *Penelope’s Labour: Weaving Words and Images* with Adam Lowe, an exhibition at the Venice Biennale of 2011, part of ongoing collaborations with Lowe. In 2016 he published *This Orient Isle: Elizabethan England and the Islamic World* (Penguin).

*Pierre Chabard*, architect, historian, and critic, graduated in 1998 from the School of Architecture Paris-Belleville. He wrote a PhD thesis (University of Paris VIII, March 2008) dealing with the graphic, scenographic, and museographic devices designed by the Scottish thinker Patrick Geddes, in the 1910s, to visually display urban knowledge. Associate Professor in Architectural and Urban History since 2004, he

teaches at the École nationale supérieure d'architecture Paris-La Villette and at the École spéciale d'architecture. Member of the research team AHTTEP (Unité Mixte de Recherche CNRS no. 3329 "Architecture Urbanistique Société"), his current research deals with the relationship between architectural production and mediation (books, magazines, exhibitions, etc.). He published (with Marilena Kourniati) *Raisons d'écrire. Des livres, des architectes, 1945–1999* (Paris, Éd. de La Villette, 2013) and is currently working on a museological history of architecture in the 1970s and 1980s. A founding member of the editorial board of *Criticat* ([www.criticat.fr](http://www.criticat.fr)), Pierre Chabard practises architectural criticism in several forms: architectural monographs (*Charles Vandenhove, maître d'œuvres*, Le Moniteur/Bonnefanten Museum, 2010), exhibition catalogues (*Archilab*, 1999–2002; *Venice Biennale 2002*; *V+*, 2015), architectural magazines (*L'architecture d'aujourd'hui*, *AMC*, *d'A*, *A+*, *A10*, etc.), and reviews (*Le Visiteur*, *Les Cahiers du Mnam*, *Critique d'art*, etc.).

**Steve Crossan** is a technologist with a deep interest in history. He founded [culturalinstitute.google.com](http://culturalinstitute.google.com) in 2011 and joined DeepMind in 2015 to help bring their AI technology into Google. Prior to that Steve was the first product leader hired by Google in Europe, initially building the Maps team in Zurich, and subsequently working on Search and Gmail. Steve read Modern History at Oxford before taking a Masters in Computer Science at UCL, and it was studying the history of technology that took him from one to the other. Prior to Google he started 3 technology companies in fields including digital asset management, open source software and search. He grew up in Africa, France and Cambridge, England.

**Pasquale Gagliardi** is former Professor of The Sociology of Organization at the Catholic University of Milan and is at present the Secretary General of the Giorgio Cini Foundation in Venice. During the 1990s, he contributed to the raising and development of the "aesthetics of organization" as a specific field of enquiry within organisational studies. His present research focuses on the relationship between culture, aesthetic knowledge, and organisational order. He has widely published on these topics in Italian and English. Among his publications are: *Le imprese come culture* (Torino: Isedi, 1986); *Symbols and Artifacts. Views of Corporate Landscape* (Berlin/New York: de Gruyter, 1990); *Studies of Organization in the European Tradition* (Greenwich, CT: Jai Press, 1995), co-edited with Samuel Bacharach and Bryan Mundell; *Narratives We Organize by*, co-edited with



Barbara Czarniawska (Amsterdam/Philadelphia: John Benjamins, 2003); *Management Education and Humanities*, co-edited with Barbara Czarniawska (Cheltenham, UK: Edward Elgar, 2006); *Les atmosphères de la politique. Dialogue pour un monde commun*, co-edited with Bruno Latour (Paris: Les Empêcheurs de penser en rond/Le Seuil, 2006); *Coping with the Past. Creative Perspectives on Conservation and Restoration*, co-edited with Bruno Latour and Pedro Memelsdorff (Firenze: Leo S. Olschki, 2010); *Il gusto dell'organizzazione. Estetica, conoscenza, management* (Milano: Edizioni Angelo Guerini e Associati, 2011); and *Protecting Nature, Saving Creation. Ecological Conflicts, Religious Passions, and Political Quandaries*, co-edited with Anne Marie Reijnen and Philipp Valentini.

**Anke te Heesen** is a historian of science and a curator. Since 2011, she teaches history of science at the Humboldt-University Berlin, Germany. She worked at the Hygiene-Museum in Dresden, at the Max Planck Institute for the History of Science, Berlin, and at the University of Tübingen, Germany. She was founding director of the Museum of the University Tübingen and held the chair for Historical and Cultural Anthropology before she came to Berlin. Her research has focused on issues of objects and science, notation-systems of scientists, art and science, and collecting/ordering practices. Her main books are *World in a Box: The Story of an Eighteenth-Century Picture Encyclopedia* (2002), *Theorien des Museums* (2012), and *The Newspaper Clipping: A Modern Paper Object* (2014). Her current research projects deal with the history of exhibitions of the 1970s and the emergence of the research interview.

**Bruno Latour** is Professor and Vice President for Research at Sciences Po, Paris. In addition to work in philosophy, history, sociology, and anthropology of science, he has collaborated on many studies in science policy and research management. He wrote: *Laboratory Life; Science in Action; The Pasteurization of France*; a field study on an automatic subway system, *Aramis or the Love of Technology*; an essay on symmetric anthropology, *We Have Never Been Modern*; a series of essays, *Pandora's Hope: Essays in the Reality of Science Studies*, on the consequences of the "science wars"; and a book on the political philosophy of the environment, *Politics of Nature*. In another series of books, he has been exploring the consequences of science studies for traditional topics of the social sciences such as religion, social theory, and law, including *Reassembling the Social, an Introduction to Actor Network Theory*. With Peter Weibel, he curated

*Iconoclash: Beyond the Image Wars in Science, Religion and Art* (2002) and *Making Things Public: Atmospheres of Democracy* (2007), major international exhibitions in Karlsruhe at the ZKM centre. At Sciences Po, he created the Médialab and a new experimental programme in art and politics (SPEAP). His *An Inquiry into Modes of Existence* (2014) was both a book and a collaborative digital platform. In 2014, he delivered the Gifford Lectures, *Facing Gaia: A New Enquiry into Natural Religion*.

*Adam Lowe*, artist, is the founder and director of Factum Arte and founding member of the Foundation for Digital Technology in Conservation. Established in 2001 and employing over 30 people in Madrid, Factum Arte has set new standards in digital documentation and the production of facsimiles for conservation; its technological innovations include the production of a new laser scanning system, a white light scanning system, software for the visualisation of 3D data, a device for recording fragile manuscripts when open at less than 60 degrees, a flatbed colour scanning system, and a 3D concrete printer that works on a large scale. Works by Lowe and his team at Factum Arte include the 2011 recording of the Sala Bologna in the Vatican and the production of an exact facsimile of the south wall for the Museo della Città, Bologna; the production of eight objects from Piranesi's designs, in conjunction with the Fondazione Giorgio Cini (2010–2011); the complete high-resolution colour and 3D recording of the burial chamber and Sarcophagus from the Tomb of Tutankhamun (2009–2011); and the production of an exact facsimile of Veronese's *Wedding at Cana*, that has been installed in its original location in Palladio's refectory in Venice (a project with the Musée du Louvre in Paris and the Fondazione Giorgio Cini in Venice [2006–2007]). Factum Arte also works with many of the world's leading artists including Marina Abramovic, Anish Kapoor, Grayson Perry, Marc Quinn, Peter Greenaway, Gabriel Orozco, Lara Baladi, and Manuel Franquelo.

*Deirdre N. McCloskey* has been, since 2000, UIC Distinguished Professor of Economics, History, English, and Communication at the University of Illinois at Chicago and was Visiting Tinbergen Professor (2002–2006) of Philosophy, Economics, and Art and Cultural Studies at the Erasmus University of Rotterdam. Trained at Harvard as an economist, she has written 14 books and edited seven more and has published some 360 articles on economic theory, economic history, philosophy, rhetoric, feminism, ethics, and law. She taught for 12 years in Economics at the

University of Chicago and describes herself now as a “postmodern free-market quantitative Episcopalian feminist Aristotelian”. Her latest books are *How to be Human—Though an Economist* (University of Michigan Press, 2001), *Measurement and Meaning in Economics* (S. Ziliak, ed.; Edward Elgar, 2001), *The Secret Sins of Economics* (Prickly Paradigm Pamphlets, University of Chicago Press, 2002), *The Cult of Statistical Significance: How the Standard Error Costs Us Jobs, Justice, and Lives* [with Stephen Ziliak; University of Michigan Press, 2008], and *The Bourgeois Virtues: Ethics for an Age of Capitalism* (University of Chicago Press, 2006). Before *The Bourgeois Virtues*, her best-known books were *The Rhetoric of Economics* (University of Wisconsin Press, 1st ed. 1985; 2nd ed. 1998) and *Crossing: A Memoir* (Chicago, 1999), which was a *New York Times* Notable Book.

**Elizabeth Pisani** is an epidemiologist and a hypocrite. She believes data collected with taxpayers’ money should be made available to anyone who could use them to save or enrich lives and was instrumental in nudging major funders of public health research to publish a joint policy on data access in 2011. She just really hates giving other people “her” data and not just for visceral reasons. Having learnt at the well-manicured hands of Jakarta’s transvestite hookers that good data do not necessarily equate to useful knowledge, Elizabeth has come to question the utility of liberating vast quantities of facts into a contextual vacuum. Her book *The Wisdom of Whores: Bureaucrats, Brothels and the Business of AIDS* (Granta, 2008) explored the interplay between the creation of “scientific” data and its interpretation, both things moulded by politics and human frailty. Deracinated data can be worse than useless; they can be dangerous. Elizabeth has a degree in Classical Chinese from Oxford and others in Medical Demography and Infectious Disease Epidemiology from the London School of Hygiene and Tropical Medicine. Her most recent book *Indonesia Etc.: Exploring the Improbable Nation* (WW Norton, 2014) ponders the persistence in the collective imagination of a notional/national unity.

**Richard Powers** is the author of 11 novels set among disparate disciplines such as photography, artificial intelligence, music composition, molecular biology, game theory, virtual reality, business, genomics, and neuroscience. His stories explore the interdependence of technological change, scientific models, and personal narratives. The books have received various prizes, including the W.H. Smith Literary Award; the Ambassador Book Award of the English Speaking Union, TIME Magazine’s Book of the

Year; and the National Book Award. He is a MacArthur fellow, a fellow of the American Academy of Arts and Sciences, a recipient of a Lannan Literary Award, a fellow of the American Academy of Arts and Letters, and the Knight Professor of Creative Writing at Stanford University.

*Simon Schaffer* is Professor of History and Philosophy of Science at the University of Cambridge. His first visit to Venice was in 1963, in a badly insulated tent on the Lido. Since then, he has studied the various roles of insulation, machinery, travel, calculation, and performance in the past of the sciences. With Steven Shapin, he wrote *Leviathan and the air pump* published in 1985 and in a new edition in 2011. In 2000, he collaborated with Adam Lowe on a multi-site exhibition about digitality and information, N0ISE. Schaffer has worked for a number of shows and catalogues, including “Iconoclasm” and “Making things public” (for Bruno Latour and Peter Weibel) and “Unconformity and entropy” (for Anish Kapoor and Adam Lowe). He is a member of the advisory board of the Science Museum. Between 2010 and 2015, he helped lead a collaborative project with the National Maritime Museum on the nautical history of longitude: how the assemblage of charts, clocks, cunning, and collaboration could ever have helped travellers find out where they were at sea. A tercentenary exhibition on longitude at sea opened at the National Maritime Museum in summer 2014.

*John Tresch* is Associate Professor of History and Sociology of Science at the University of Pennsylvania. His book *The Romantic Machine: Utopian Science and Technology after Napoleon* (Chicago, 2012) explored the aesthetic and political aspirations invested in the technologies of the early industrial revolution—steam engines, daguerreotypes, and electric media—in Paris before 1848. His follow-up book connects the fantastic visions, hoaxes, and philosophical speculations of Edgar Allan Poe to the fragile institutional authority of science in the early USA. He is also conducting a long-term ethnographic study of the neuroscience of meditation. He has degrees in cultural anthropology from the University of Chicago and the Ecole Normale Supérieure and in History and Philosophy of Science from Cambridge University.

*David Turnbull* is Senior Research Fellow at the Victorian Eco-Innovation Lab in the Melbourne School of Design at the University of Melbourne. His overarching research interest is the ways in which knowledge and space are co-produced. He approaches this from a number of

disparate but intersecting trajectories. (1) The comparison of knowledge practices across cultural traditions including western science. (2) Narratives of prehistory: comparative explanations of how humans moved and developed complex polities. (3) Theories of complexity and the commons, and how to work with and sustain multiplicity. This all comes together in a variety of current projects including maritime prehistory, rock art and early cognition, and performative mapping at Lake Mungo. He is the author of numerous works including *Maps Are Territories: Science is an Atlas* (1993), and *Masons, Tricksters and Cartographers: Comparative Studies in the Sociology of Scientific and Indigenous Knowledge* (2003).

*Cheryce von Xylander* is an American by birth, German by upbringing, and English by the wiles of the Norns. She studies the aesthetic politics of knowledge transmission. Taking cognition to be a form of situated practice, she explores the madness of mind. Her work, cross-cultural and trans-disciplinary, clusters around themes of applied popular philosophy: aesthetic re-education inside and outside the asylum, bracketed interconnections between the natural sciences and liberal arts, and comparative global imaginaries. She currently teaches intellectual history and philosophy at the Technical University Darmstadt and lives in Berlin.

## LIST OF FIGURES

Fig. 1.1	Isola di San Giorgio Maggiore, Venezia. Photo by ORCH, Courtesy of Fondazione Giorgio Cini	1
Fig. 3.1	The first map of the lithosphere. Willem Goeree, <i>Voor-Bereidselen Tot de Bybelsche Wysheid Gebruik der Heilige</i> , Amsterdam 1690	33
Fig. 3.2	‘Yu Ji Tu’ map of China, 1136. Courtesy Library of Congress	35
Fig. 3.3	Waldseemüller 1507 world map. <i>Universalis cosmographia secundum Ptholomaei traditionem et Americi Vespucii alioru[m]que lustrationes</i> . Saint Dié, France. Courtesy Library of Congress	37
Fig. 3.4	Jean Picard, diagram of triangles used to measure the meridian south of Paris. Jean Picard, <i>La Mesure de la Terre</i> , 1671	38
Fig. 3.5	Apollo 17 Blue Earth photo, 1972. Image courtesy NASA Johnson Space Center	39
Fig. 3.6	Marc Quinn, from ‘The Eye of History’ series, 2013. Copyright Marc Quinn Studio	40
Fig. 3.7	Gerard Mercator’s map of the world using his famous 1569 projection. Public Domain	41
Fig. 3.8	Terra-centric equi-rectangular projection of the world, digital. Factum Arte	47
Fig. 3.9	Terra-centric equi-rectangular projection of the world, routed. Factum Arte	47
Fig. 3.10	Terra-Forming montage. The proposed site in the Fondazione Giorgio Cini on the island of San Giorgio Maggiore, Venice. Factum Arte	49

- Fig. 3.11 Terra-Forming montage. The proposed site in the Fondazione Giorgio Cini on the island of San Giorgio Maggiore, Venice. Factum Arte 49
- Fig. 3.12 A detail of the 2 × 4 meter model that can be flooded and drained, Factum Arte. The model was made for the *Anthropocene Monument*, an exhibition curated by Bruno Latour and Bronislaw Szerszynski at Les Abattoirs, Toulouse, October 2014 50
- Fig. 3.13 Wylde’s Globe in Leicester Square, *Illustrated London News*, 7 June 1851 50
- Fig. 3.14 Reclus’ globe project, sketch by Louis Bonnier; IFA, Fonds Louis Bonnier 1897–1898, doc. R 35-39-36. In Alavoine-Muller Soizic, «Un globe terrestre pour l’Exposition universelle de 1900. L’utopie géographique d’Élisée Reclus», *L’Espace géographique* 2/2003 (tome 32), pp. 156–170 51
- Fig. 4.1 Design of a (never built) “Civic Museum and Outlook Tower for an American City”, by the architect Frank C. Mears for Patrick Geddes, 1923 (Strathclyde University Archives, Glasgow, T-GED-22-1-1882) 56
- Fig. 4.2 Sketch of the Outlook Tower, drawn by Patrick Geddes, probably at the end of the 1890s, presenting the different ways to look at the world from the tower (Strathclyde University Archives, Glasgow, T-GED-14-1-14) 58
- Fig. 4.3 Cover of George Guyou (alias Paul Reclus), *The Hollow Globe. A New Geographical Apparatus*, n.d. [c. 1900] (Strathclyde University Archives, Glasgow, T-GED-7-8-69) 59
- Fig. 4.4 Schematic model of the *Mundaneum*, exhibited at the *Musée International*, n.d. [c.1920] (Paul Otlet Archives, Mundaneum, Mons, Belgium, M.I.10, f.201) 61
- Fig. 4.5 Allegorical representation of the *Mundaneum* engraved by Igor Platounoff in 1938, and published as a greetings postcard (Paul Otlet Archives, Mundaneum, Mons, Belgium, Box no. 4) 63
- Fig. 5.1 *Bettmann Panopticon* contributors perform a pun on “Portable Bettmann” (*Panopticon*, 10) 88
- Fig. 5.2 Herbert Bayer: © 2015 Artists Rights Society (ARS), New York/VG Bild-Kunst, Bonn. Bayer-advert showcased in a 1932 Bettmann-article (Otto L. Bettmann, “The Relationship of Word and Picture: Principles of Photo-Typography,” in: *Penrose’s Annual: The Process Year Book & Review of the Graphic Arts* 34 (1932): 74–76) 89

- Fig. 5.3 This poster appeared in Bayer’s “Great Ideas of Western Man” series, produced for the Container Corporation of America. Herbert Bayer: © 2015 Artists Rights Society (ARS), New York/VG Bild-Kunst, Bonn (Blaschke, *Commodification of Images*, 138) 91
- Fig. 5.4 Entry for “cowboys” in the *Portable Archive* (*Portable Archive*, 47) 92
- Fig. 5.5 The *World Geo-graphic Atlas*’ map of “energy slaves.” Herbert Bayer: © 2016 Artists Rights Society (ARS), New York/VG Bild-Kunst, Bonn (Bayer, *Geographic Atlas*, 278) 94
- Fig. 5.6 The *Portable Archive*’s depiction of “energy slaves” (*Portable Archive*, 84) 95
- Fig. 6.1 The wet collection of the Museum of Natural History in Berlin, 2010; photographed by Carola Radke, courtesy of Museum of Natural History, Berlin 118
- Fig. 6.2 Mona Hatoum, “Current Disturbance”, 1996, wood, wire mesh, light bulbs, computerized dimmer unit, amplifier and four speakers; photographed by Ben Blackwell, courtesy Capp Street Studios, San Francisco 121
- Fig. 6.3 Towers with cars from Volkswagen, 2000; photographed by Emanuel Raab, courtesy of Autostadt GmbH, Wolfsburg 123
- Fig. 7.1 N-gram of “Cosmogram” in English, 1800–2008. Copyright Google Corporation 140
- Fig. 7.2 Umar bin Muzaffar Ibn al-Wardi. *Kharidat al-‘Aja’ib wa Faridat al-Ghara’ib*. (The Pearl of Wonders and the Uniqueness of Things Strange). Courtesy of Library of Congress, Late seventeenth century. Near East Section, African and Middle Eastern Division 143
- Fig. 7.3 Haj in November 2008. Al-Haram Mosque, Mecca. Courtesy Al Jazeera English 145
- Fig. 7.4 Temple of Humanity, Rio de Janeiro. Photo Paul Marett 150
- Fig. 7.5 View of Hamina Data Center, Finland (formerly Stora Enso paper mill). Photo by Connie Zhou. Courtesy Google 152
- Fig. 7.6 View inside Google Data Center, Mayes County, Oklahoma. Photo by Connie Zhou, Courtesy Google 153
- Fig. 8.1 George Cruikshank, “All the World Going to See the Great Exhibition of 1851”, from Henry Mayhew and George Cruikshank, *1851; or The Adventures of Mr. and Mrs. Sandboys and Family* (London: George Newbold, 1851) 170



Fig. 8.2	Wilhelm von Kaulbach, Abschied von Kosmos (Berlin, 1869: woodcut)	171
Fig. 8.3	Paper and transparencies. Elena Tamagno, Università di Architettura di Torino, Central library archives, Carlo Mollino fund. Torino, Italy, 2009. Courtesy Armin Linke	173
Fig. 8.4	Mars Rover Model, NASA Jet Propulsion Laboratory, Mars Yard, rover. Pasadena, USA, 1999. Courtesy Armin Linke	173
Fig. 8.5	Adrian Walker, artist, drawing from a specimen in a laboratory in the Department of Anatomy at the University of British Columbia, Vancouver, 1992. <a href="http://www.depont.nl/en/collection/artists/artist/werk_id/415/kunstenaar/wall/">http://www.depont.nl/ en/collection/artists/artist/werk_id/415/kunstenaar/wall/</a>	174
Fig. 8.6	Ceci non plus, n'est pas une pipe. Samuel García Pérez, 2012	176
Fig. 8.7	The strange scenography of objects being seen by subjects. Drawing by Samuel García Pérez, 2012	177
Fig. 8.8	The strange scenography of objects being seen by subjects. Drawing by Samuel García Pérez, 2012	178
Fig. 8.9	The strange scenography of objects being seen by subjects. Drawing by Samuel García Pérez, 2012	179
Fig. 8.10	The strange scenography of objects being seen by subjects. Drawing by Samuel García Pérez, 2012	180
Fig. 8.11	The strange scenography of objects being seen by subjects. Drawing by Samuel García Pérez, 2012	180
Fig. 8.12	Gerard Mercator, <i>Atlas sive cosmographicae meditationes de fabrica mundi et fabricati figura</i> . Duisburg, 1595	184
Fig. 8.13	<i>Deus sive Sphaera</i> ; God, or the Spheres. Image: Bruno Latour/Lindsay Stairs	186
Fig. 8.14	Parallel between theocentrism: Cosmocentrism and knowledge-centric: Laboratory-centric views. Image: Bruno Latour/Lindsay Stairs	187
Fig. 9.1	Dark_Matter_Map 2012. <i>Source</i> : <a href="http://commons.wikimedia.org/wiki/File:COSMOS_3D_dark_matter_map.jpg">http://commons.wikimedia.org/wiki/File:COSMOS_ 3D_dark_matter_map.jpg</a>	204
Fig. 9.2	The Expanding Universe. <i>Source</i> : <a href="https://otrasfuentes.files.wordpress.com/2013/01/5c8c5c4f3cb7d8f4ca299ba723fa9e71.jpg">https://otrasfuentes.files. wordpress.com/2013/01/5c8c5c4f3cb7d8f4ca299ba 723fa9e71.jpg</a>	206
Fig. 9.3	Gravitational lensing: using the universe as a telescope. <i>Source</i> : <a href="http://commons.wikimedia.org/wiki/File:Diagram_on_%22Gravitational_Lensing%22.jpg">http://commons.wikimedia.org/wiki/File:Diagram_ on_%22Gravitational_Lensing%22.jpg</a>	209
Fig. 9.4	Christoforo Sabbadino's Project for Venice 1547. The first map to be used administratively in constructing Venice. <i>Source</i> : Archivio di Stato di Venezia. <a href="http://commons.wikimedia.org/wiki/File:Cristoforo_sabbadino_-_progetto_per_venezia_del_1557.jpg">http://commons. wikimedia.org/wiki/File:Cristoforo_sabbadino_-_progetto_ per_venezia_del_1557.jpg</a>	210

- Fig. 9.5 Fra Luca Paciolo teaching Albrecht Dürer linear perspective? Portrait by Jacopo de' Barbari 1495. *Source:* [http://commons.wikimedia.org/wiki/File:Jacopo\\_de%27\\_Barbari\\_-\\_Portrait\\_of\\_Fra\\_Luca\\_Pacioli\\_and\\_an\\_Unknown\\_Young\\_Man\\_-\\_WGA1269.jpg](http://commons.wikimedia.org/wiki/File:Jacopo_de%27_Barbari_-_Portrait_of_Fra_Luca_Pacioli_and_an_Unknown_Young_Man_-_WGA1269.jpg) 213
- Fig. 9.6 The MOSE Project to protect Venice from flooding. *Source:* [http://commons.wikimedia.org/wiki/File:Localizzazione\\_GB.jpg](http://commons.wikimedia.org/wiki/File:Localizzazione_GB.jpg) 216
- Fig. 10.1 The problem with Wikipedia. *Source:* <https://xkcd.com/214/> 238
- Fig. 12.1 Lodestar. Image by Richard Powers 266