

VACLAV SMIL



**MATERIALS** AND  
**DEMATERIALIZATION**

**MAKING THE MODERN WORLD**

**WILEY**

# **Making Modern World Materials Dematerialization**

**Laurie Wilkie, John Chenoweth**



## **Making Modern World Materials Dematerialization:**

**SUMMARY - Making The Modern World: Materials And Dematerialization By Vaclav Smil** Shortcut Edition, Our summary is short simple and pragmatic It allows you to have the essential ideas of a big book in less than 30 minutes As you read this summary you will learn that the increased consumption of materials is the major feature of the modern world You will also learn that the invention of the steam engine revolutionized mankind a long term dematerialization without radical changes in lifestyle is very unlikely humanity s material progress is experiencing two successive ages energy is the most important of all materials our civilization is at a crossroads in terms of our consumption of materials the current level of material consumption is very recent if we place it in the long historical period The consumption of materials is at the heart of economic production without which it could not exist Materials of all kinds be they mineral vegetable etc condition our daily life modern life that of industrialized countries whose societies are consumer societies Their production use and destruction once they have become waste are the subject of this book which examines the costs of our society s dependence on materials as well as the possible paths to a progressive dematerialization which the threatened integrity of the biosphere makes indispensable Buy now the summary of this book for the modest price of a cup of coffee     *Making the Modern World* Vaclav Smil,2013-10-02 How much further should the affluent world push its material consumption Does relative dematerialization lead to absolute decline in demand for materials These and many other questions are discussed and answered in *Making the Modern World Materials and Dematerialization* Over the course of time the modern world has become dependent on unprecedented flows of materials Now even the most efficient production processes and the highest practical rates of recycling may not be enough to result in dematerialization rates that would be high enough to negate the rising demand for materials generated by continuing population growth and rising standards of living This book explores the costs of this dependence and the potential for substantial dematerialization of modern economies *Making the Modern World Materials and Dematerialization* considers the principal materials used throughout history from wood and stone through to metals alloys plastics and silicon describing their extraction and production as well as their dominant applications The evolving productivities of material extraction processing synthesis finishing and distribution and the energy costs and environmental impact of rising material consumption are examined in detail The book concludes with an outlook for the future discussing the prospects for dematerialization and potential constraints on materials This interdisciplinary text provides useful perspectives for readers with backgrounds including resource economics environmental studies energy analysis mineral geology industrial organization manufacturing and material science     [A Cultural History of Objects in the Modern Age](#) Laurie Wilkie,John Chenoweth,2022-08-31 *A Cultural History of Objects in the Modern Age* covers the period 1900 to today a time marked by massive global changes in production transportation and information sharing in a post colonial world New materials and inventions from plastics to the digital to biotechnology have created unprecedented scales of disruption

shifting and blurring the categories and meanings of the object If the 20th century demonstrated that humans can be treated like things whilst things can become ever more human where will the 21st century take us The 6 volume set of the Cultural History of Objects examines how objects have been created used interpreted and set loose in the world over the last 2500 years Over this time the West has developed particular attitudes to the material world at the centre of which is the idea of the object The themes covered in each volume are objecthood technology economic objects everyday objects art architecture bodily objects object worlds Laurie A Wilkie is Professor at the University of California Berkeley USA John M Chenoweth is Associate Professor at the University of Michigan Dearborn USA Volume 6 in the Cultural History of Objects set General Editors Dan Hicks and William Whyte

**The End of Doom** Ronald Bailey, 2015-07-21 In the past five decades there have been many many forecasts of impending environmental doom They have universally been proven wrong Meanwhile those who have bet on human resourcefulness have almost always been correct In his widely praised book *Ecoclam* Ronald Bailey strongly countered environmentalist alarmism using facts to demonstrate just how wildly overstated many claims of impending ecological doom really were Now twenty years later the Reason Magazine science correspondent is back to assess the future of humanity and the global biosphere Bailey finds contrary to popular belief that many present ecological trends are quite positive Including Falling cancer incidence rates in the United States The likelihood of a declining world population by mid century The abundant return of agricultural land to nature as the world reaches peak farmland A proven link between increases in national wealth and reductions in air and water pollution Global warming is a problem but the cost of clean energy could soon fall below that of fossil fuels In *The End of Doom* Bailey avoids polemics and offers a balanced fact based and ultimately hopeful perspective on our current environmental situation Now isn't that a breath of fresh air

Indigenous Knowledge and Material Histories Jens Soentgen, 2024-06-30 This Element deals with stories told about substances and ways to analyse them through an Environmental Humanities perspective It then takes up rubber as an example and its many stories It is shown that the common notions of rubber history which assume that rubber only became a useful material through a miraculous operation called vulcanization that is attributed to the US American Charles Goodyear are false In contrast it is shown that rubber and many important rubber products are inventions of Indigenous peoples of South America made durable by a process that can be called organic vulcanization It is with that invention that the story of rubber starts Without it rubber would not exist neither in the Americas nor elsewhere Finally it is shown that Indigenous rubber products also offer some ecological advantages over industrially manufactured ones

**The World in a Grain** Vince Beiser, 2019-08-06 A finalist for the PEN E O Wilson Literary Science Writing Award The gripping story of the most important overlooked commodity in the world sand and the crucial role it plays in our lives After water and air sand is the natural resource that we consume more than any other even more than oil Every concrete building and paved road on Earth every computer screen and silicon chip is made from sand From Egypt's pyramids to the Hubble telescope from the world's tallest

skyscraper to the sidewalk below it from Chartres stained glass windows to your iPhone sand shelters us empowers us engages us and inspires us It s the ingredient that makes possible our cities our science our lives and our future And incredibly we re running out of it The World in a Grain is the compelling true story of the hugely important and diminishing natural resource that grows more essential every day and of the people who mine it sell it build with it and sometimes even kill for it It s also a provocative examination of the serious human and environmental costs incurred by our dependence on sand which has received little public attention Not all sand is created equal Some of the easiest sand to get to is the least useful Award winning journalist Vince Beiser delves deep into this world taking readers on a journey across the globe from the United States to remote corners of India China and Dubai to explain why sand is so crucial to modern life Along the way readers encounter world changing innovators island building entrepreneurs desert fighters and murderous sand pirates The result is an entertaining and eye opening work one that is both unexpected and involving rippling with fascinating detail and filled with surprising characters

**State of the World 2015** The Worldwatch Institute,2015-04-13 We think we understand environmental damage pollution water scarcity a warming world But these problems are just the tip of the iceberg Food insecurity financial assets drained of value and a rapid rise in diseases of animal origin are among the underreported consequences of an unsustainable global system In this volume experts explore these hidden threats along with the central question of how we can develop resilience to these and other shocks

**Industry 4.0** Tessaleno Devezas,João Leitão,Askar Sarygulov,2017-02-28 This book presents the latest research perspectives on how the Industry 4 0 paradigm is challenging the process of technological and structural change and how the diversification of the economy affects structural transformation It also explores the impact of fast growing technologies on the transformation of socioeconomic and environmental systems and asks whether structural and technological change can generate sustainable economic growth and employment Further the book presents the basic innovations new technologies materials energy etc and industrial policies that can lead to such a structural change

**Materials and Sustainability** Julia L Freer Goldstein,Paul Foulkes-Arellano,2024-04-12 This book examines sustainable manufacturing from the extraction of materials to processing use and disposal and argues that significant changes in all of the above are needed for the world to progress toward a more circular economy Materials and processing methods are usually chosen with performance as the key metric Why has our society embraced plastics Because they work In most cases they are lighter easier to manufacture and less expensive than the metal wood glass or stone they have replaced Why do industrial manufacturers use toxic chemicals Because they are effective but the unintended consequences may be severe By learning how various materials are made and what happens when they are recycled readers will better understand the value of materials and the challenges that manufacturers face when trying to make their facilities and products less toxic and less wasteful The three chapters in Part I provide essential background about materials in the circular economy chemicals and waste Part II delves into specific materials It includes

chapters on plastics metals wood and paper products glass and novel materials Part III covers recycling and manufacturing processes and Part IV delves into practical considerations including the effect of regulations concluding with a chapter that helps readers translate the information presented into action Interviews with industry experts round out the chapters and offer valuable insights Materials and Sustainability is a must read for business professionals who are serious about making their companies as environmentally responsible as possible and for business and engineering students who want to begin their careers with practical knowledge about materials and their impacts

*Environmental Politics for a Changing World*

Ronnie D. Lipschutz,Doreen Stabinsky,2018-07-12 This book argues that environmental problems are first and foremost political and therefore about power Using a framework of political economy and political ecology the authors deconstruct current environmental problems to identify root causes and address those problems through mobilization of collective action and social power The second edition also offers Updated examples and stories of political struggles and the actors involved Explicit attention to various forms of power in environmental politics including structural and social power Local politics and collective action as related to global environmental politics Discussion of emerging issues such as synthetic biology commodification and financialization of nature including carbon markets and geoengineering

Grand Theater Urbanism

Charlie Qiuli Xue,2019-07-04 This volume explores the phenomenon and trend of cultural buildings by investigating 10 typical cities in China from the first second and third tiers and from the Chinese diaspora Each grand theater design was the result of a high profile international competition and created by global architects in collaboration with Chinese design institutes The national and international significance of these iconic projects lies in the fact that they not only reflect the dynamics of global design ideas but also represent a particular historical moment in China s modernization process The development histories and purposes of constructing cultural buildings are carefully outlined and colorfully presented Given China s tremendous population the development trajectory of its urban construction will provide insights for other regions that hope to embark on the high speed track in the 21st century In Grand Theater Urbanism Professor Charlie Xue and his team document China s current shift towards a culture of consumption and leisure symbolized by the construction of multi use Grand Theaters in major cities Grand Theater Urbanism reveals the unexpected variety and complexity of this contemporary cultural drive in a series of exemplary chapters with highly detailed local case studies Professor David Grahame Shane Columbia University New York Jane Jacobs likened city life to a performance This book goes a stage further and analyses the actual performance spaces within cities in China In doing so it makes a valuable connection between urban design and the cultural life in cities This is an important and often forgotten dimension of urbanism and I heartily commend this book to readers Professor Matthew Carmona The Bartlett University College London

**Unmaking Waste in**

**Production and Consumption** Robert Crocker,Christopher Saint,Guanyi Chen,Yindong Tong,2018-09-13 This book provides scholars working in the many disciplines that relate to the concept of the Circular Economy with a cross disciplinary

forum looking at areas such as Theory Policy and Contexts Improving Resource Efficiency and Reducing Waste Changing Consumption and Behaviour by Design and Transforming Technologies of Production     Solarities Cymene Howe,Jeff Diamanti,Amelia Moore,2023 *Solarities* Elemental Encounters and Refractions is a transdisciplinary essay collection that explores the physical conceptual and political possibilities materialized by solarity a form of relation to the sun and its elemental force upon planetary life The authors propose that a different set of questions becomes possible when the material specificities of solar become the compass for thought prompting us to uncover our relationship to the sun How does solarity materialize in the bodies and lives of humans and non humans now and in the future What can we learn if we no longer take the sun for granted How do we continue to persist on a planet that is so intimately bound up in a state of love fear and dependence on this primary source of all living energy Each of the essays in *Solarities* take solar radiation as an interpretive lens that takes multiple forms often transforming as it does so *Solarities* draws inspiration from Black ecologies Indigenous philosophy feminist science technology studies and more than human discussions in the human sciences recognizing the phenomenological and ontological openings they make available The authors understand solarity as an energy source channeled through photovoltaic cells for example but the essays gathered here focus on the lives that solarity creates or impedes The experimental task is to find how solarities work their way into materials and processes across our work seeking out the particular influences of solarity in making being s These relations are core to thinking the elemental conditions of solarity since it is through particular forms of focalizing the sun that life is sustained or made to wither across the planet In these ways the elemental condition of solarity is at once hyper particular and also shared across organic and inorganic bodies conditioned by physical form and material composition Throughout the collection the authors explore how solarity appears or recedes from view when we concentrate our attentions on it surfacing the existential omnipresence of the sun to open new thought possibilities inspire new actions and refract new dimensions of socionatural encounter     *The Political Economy Reader* Naazneen H. Barma,Steven K. Vogel,2021-08-29 *The Political Economy Reader* advocates a particular approach to the study of political economy the market institutional perspective which emphasizes the ways in which markets are embedded in political and social institutions This perspective offers a compelling alternative to the market liberal view which advocates freer markets and less government intervention in the economy as if states and markets were naturally at odds with each other The reader embraces a truly interdisciplinary approach to the study of political economy with extensive coverage from sociology economics history and political science It includes some of the most important classical and contemporary theoretical perspectives on political economy And it engages some of the most topical debates in political economy today such as climate change the global financial crisis inequality the digital platform economy and the COVID 19 pandemic For political economy courses at a variety of levels and from a range of disciplines the reader is also of interest to scholars and citizens wanting perspective on the intersection of economics politics and society New to the Second Edition

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**Consumption and Everyday Life** Mark Paterson, 2017-10-25 With an emphasis on everyday life this respected text offers a lively and perceptive account of the key theories and ideas which dominate the field of consumption and consumer culture Engaging case studies describe forms of consumption familiar to the student provide some historical context and illustrate how a range of theoretical perspectives from theories of practice to semiotics to psychoanalysis apply Written by an experienced teacher the book offers a comprehensive grounding drawing on the literature in sociology geography cultural studies and anthropology This new revised and expanded edition includes more extended discussion of gender the senses sustainability globalization and the environment as well as a brand new chapter on the ethics of consumption

**Developing Earthly Attachments in the Anthropocene** Edward H. Huijbens, 2021-04-26 This book explores the development and significance of an Earth oriented progressive approach to fostering global wellbeing and inclusive societies in an era of climate change and uncertainty Developing Earthly Attachments in the Anthropocene examines the ways in which the Earth has become a source of political social and cultural theory in times of global climate change The book explains how the Earth contributes to the creation of a regenerative culture drawing examples from the Netherlands and Iceland These examples offer understandings of how legacies of non respectful exploitative practices culminating in the rapid post war growth of global consumption have resulted in impacts on the ecosystem highlighting the challenges of living with planet Earth The book familiarizes readers with the implied agencies of the Earth which become evident in our reliance on the carbon economy a factor of modern day globalized capitalism responsible for global environmental change and emergency It also suggests ways to inspire and develop new ways of spatial sense making for those seeking earthly attachments Offering novel theoretical and practical insights for politically active people this book will appeal to those involved in local and national policy making processes It will also be of interest to academics and students of geography political science and environmental sciences

**Unifying Systems** Aarne Mämmelä, 2025-04-29 Interdisciplinary systems thinking is complementary but does not replace conventional disciplinary analytical thinking The book is valuable for researchers their advisors and other thinkers interested in deep knowledge of science Interdisciplinary systems thinking is valuable for three reasons The goal of all science is a unified view of the world we cannot solve the significant problems of our time without interdisciplinary collaboration and general theories of systems and system archetypes support the solution to those problems System archetypes are generic system models that have stood the test of time As specialists within a discipline we must be able to communicate between disciplines Interdisciplinary generalists can offer us reliable visions and relevant research problems The goal of interdisciplinary research is to find unified solutions to those problems The book



provides a lot of information from over a thousand sources in a structured manner to help the reader The book includes a comprehensive chronology vocabulary and bibliography The author has been a research professor in information engineering for over 25 years During his career he became interested in systems thinking which is closely related to the philosophy and history of science

*Building China* Sarah Swider,2016-02-19 Roughly 260 million workers in China have participated in a mass migration of peasants moving into the cities and construction workers account for almost half of them In *Building China* Sarah Swider draws on her research in Beijing Guangzhou and Shanghai between 2004 and 2012 including living in an enclave working on construction jobsites and interviews with eighty three migrants managers and labor contractors This ethnography focuses on the lives work family and social relations of construction workers It adds to our understanding of China s new working class the deepening rural urban divide and the growing number of undocumented migrants working outside the protection of labor laws and regulation Swider shows how these migrants members of the global precariat an emergent social force based on vulnerability insecurity and uncertainty are changing China s class structure and what this means for the prospects for an independent labor movement The workers who build and serve Chinese cities along with those who produce goods for the world to consume are mostly migrant workers They or their parents grew up in the countryside they are farmers who left the fields and migrated to the cities to find work Informal workers who represent a large segment of the emerging workforce do not fit the traditional model of industrial wage workers Although they have not been incorporated into the new legal framework that helps define and legitimize China s decentralized legal authoritarian regime they have emerged as a central component of China s economic success and an important source of labor resistance

Next Industrial Revolution, The: A New Age For Innovation In Industry Vincent Petit,2023-06-15 In *The Next Industrial Revolution* Vincent Petit builds on his earlier work *The Age of Fire Is Over* 2021 where he explored how key transformations in consumption patterns impact our energy system in ways that have been seldom envisioned He further develops this work here and traces how these transformations apply to our modern industrial system the bedrock of our global economic development and wealth creation Petit argues that the world is on the cusp of the next centennial transformation of our industrial system driven by major technological enhancements considerable opportunities for productivity step changes but also significant resiliency and environmental challenges Through a deep and unique exploration of the innovation landscape and global context in each major sector of industry the author sheds light on the key changes that will transform not only every sector of activity but also the way they interact with one another to produce nothing short of a complete redesign of our industrial system The way such transformation will unfold will however depend on the complex entanglement of technological progress policy business transformations and cultural evolutions Through different scenarios the author highlights some of the key decisions that need to be made today in order to make the most of this opportunity

**Numbers Don't Lie** Vaclav Smil,2020-10-01 My favourite author has done it again *Numbers Don't Lie* is by far his most accessible

book to date and I highly recommend it to anyone who is curious about the world I unabashedly recommend this book to anyone who loves learning Bill Gates Is flying dangerous How much do the world's cows weigh And what makes people happy From Earth's nations and inhabitants through the fuels and foods that energize them to the transportation and inventions of our modern world and how all of this affects the planet itself in Numbers Don't Lie Professor Vaclav Smil takes us on a fact finding adventure using surprising statistics and illuminating graphs to challenge lazy thinking Smil is on a mission to make facts matter because after all numbers may not lie but which truth do they convey Smil's title says it all to understand the world you need to follow the trendlines not the headlines This is a compelling fascinating and most important realistic portrait of the world and where it's going Steven Pinker The best book to read to better understand our world It should be on every bookshelf Linda Yueh There is perhaps no other academic who paints pictures with numbers like Smil Guardian Vaclav Smil is Distinguished Professor Emeritus at the University of Manitoba He is the author of over forty books on topics including energy environmental and population change food production and nutrition technical innovation risk assessment and public policy No other living scientist has had more books on a wide variety of topics reviewed in Nature A Fellow of the Royal Society of Canada in 2010 he was named by Foreign Policy as one of the Top 100 Global Thinkers This is his first book for a more general readership

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