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SYDNEE DENNIS

A one-stop reference for automotive and other engineers involved in vehicle and automotive technologies. The book provides essential information on each of the main automotive systems (engines; powertrain and chassis; bodies; electrical systems) plus critical external factors that engineers need to engage with, such as hybrid technologies, vehicle efficiency, emissions control and performance optimization. * Definitive content by the leading authors in the field * A thorough resource, providing all the essential material needed by automotive and mechanical engineers on a day-to-day basis * Fundamentals, key techniques, engineering best practice and know-how together in one quick-reference sourcebook * Focuses on what engineers need to know: engineering fundamentals, key associated technologies, environmental and efficiency engineering, and sustainability, as well as market-driven requirements such as reliability, safety, and comfort * Accompanied by multi-body dynamics and tire dynamic modeling software Haynes offers the best coverage for cars, trucks, vans, SUVs and motorcycles on the market today. Each manual contains easy to follow step-by-step instructions linked to hundreds of photographs and illustrations. Included in every manual: troubleshooting section to help identify specific problems; tips that give valuable short cuts to make the job easier and eliminate the need for special tools; notes, cautions and warnings for the home mechanic; color spark plug diagnosis and an easy to use index.

Testimonios brings together first-person narratives from the vibrant, diverse, and complex Latinx and Hispanic mathematical community. Starting with childhood and family, the authors recount their own individual stories, highlighting their upbringing, education, and career paths. Their particular stories, told in their own voices, from their own perspectives, give visibility to some of the experiences of Latinx/Hispanic mathematicians. Testimonios seeks to inspire the next generation of Latinx

and Hispanic mathematicians by featuring the stories of people like them, holding a mirror up to our own community. It also aims to provide a window for mathematicians (and aspiring mathematicians) from all ethnicities, with the hope of inspiring a better understanding of the diversity of the mathematical community.

Until recently, only the United States had an active venture capital market. This is changing rapidly, as many other countries have experienced rapid growth in venture capital financing over the past five years. This book contains new scientific articles showcasing the latest research on venture capital in Europe. Venture capital investment remains a hot topic with portfolio managers, individual investors, academics worldwide. This book examines in detail all the major issues regarding venture capital investment: contracting, financing, regulation, valuation, etc. and identifies new trends in the venture capital arena. Features a foreword by Josh Lerner. *The only book in which academics from around the world present the latest research on venture capital in Europe *Covers all of Europe as well as including overview papers about venture capital industry, public and private venture capital, valuation, financing, contracting, structuring, regulation, etc. *Comprehensive, authoritative coverage

This manual contains in-depth maintenance, service and repair information for the BMW 3 Series, E90, E91, E92, E93.

To most people, cars are just appliances to be disposed of when they rust, become unreliable, or are outgrown. But to car people, it's different. Cars are like photographs that occupy physical space. They hold aromas that trigger memories, and remind us of who we once were. In addition, to some people, the relationship with the car itself is a real thing. Many enthusiasts pine for the cars of their youth, regret that they ever let them go, and yearn and search for them the way people do with old lovers, hoping to find them and rekindle that old spark. In *Resurrecting Bertha*, Rob Siegel assures you that this is normal

(well, as normal as anything is with car people), and embarks on this journey himself. Writing in his trademark Hack Mechanic voice that's enthralled readers for 35 years, Rob describes his original eight-year relationship with his highly-modified 1975 BMW 2002 "Bertha," selling the car to a dear friend, its 26 years of storage, and buying it back in a weak whisky-soaked moment only to experience the "oh dear God what did I just do" regret when he raises the long-closed garage door and comes face-to-face with the badly deteriorated car. The book details the steps Rob went through to get the car running, then driving, then sufficiently sorted to make a 2000-mile drive, and how the reconnection with the car was so much deeper than he expected. *Resurrecting Bertha* is about more than just the nuts and bolts; it's about deciding what's important, the joy of doing good, and how, if you do it right, not only can you go home again, but you can do so in the same car.

This book concerns the design of marine wastewater

This work shows how to capture the business of mid-sized companies - from the basic concepts of foreign exchange to prospecting the corporate client. The author shows the finer points of foreign exchange regimes recognized by the IMF and that exchange rates are a matter of government restrictions.

Effective Security Management, 5e, teaches practicing security professionals how to build their careers by mastering the fundamentals of good management. Charles Sennewald brings a time-tested blend of common sense, wisdom, and humor to this bestselling introduction to workplace dynamics. Working with a team of sterling contributors endowed with cutting-edge technological expertise, the book presents the most accurately balanced picture of a security manager's duties. Its Jackass Management cartoons also wittily illustrate the array of pitfalls a new manager must learn to avoid in order to lead effectively. In short, this timely revision of a classic text retains all the strengths that have helped

the book endure over the decades and adds the latest resources to support professional development. * Includes a new chapter on the use of statistics as a security management tool * Contains complete updates to every chapter while retaining the outstanding organization of the previous editions * Recommended reading for The American Society for Industrial Security's (ASIS) Certified Protection Professional (CPP) exam

The latest developments in the field of hybrid electric vehicles Hybrid Electric Vehicles provides an introduction to hybrid vehicles, which include purely electric, hybrid electric, hybrid hydraulic, fuel cell vehicles, plug-in hybrid electric, and off-road hybrid vehicular systems. It focuses on the power and propulsion systems for these vehicles, including issues related to power and energy management. Other topics covered include hybrid vs. pure electric, HEV system architecture (including plug-in & charging control and hydraulic), off-road and other industrial utility vehicles, safety and EMC, storage technologies, vehicular power and energy management, diagnostics and prognostics, and electromechanical vibration issues. Hybrid Electric Vehicles, Second Edition is a comprehensively updated new edition with four new chapters covering recent advances in hybrid vehicle technology. New areas covered include battery modelling, charger design, and wireless charging. Substantial details have also been included on the architecture of hybrid excavators in the chapter related to special hybrid vehicles. Also included is a chapter providing an overview of hybrid vehicle technology, which offers a perspective on the current debate on sustainability and the environmental impact of hybrid and electric vehicle technology. Completely updated with new chapters Covers recent developments, breakthroughs, and technologies, including new drive topologies Explains HEV fundamentals and applications Offers a holistic perspective on vehicle electrification Hybrid Electric Vehicles: Principles and Applications with Practical Perspectives, Second Edition is a great resource for researchers and practitioners in the automotive industry, as well as for graduate students in automotive engineering.

Fuel cells are one of the cleanest and most efficient technologies for generating electricity. Since there is no combustion, there are none of the pollutants commonly produced by boilers and furnaces. For systems designed to consume hydrogen directly, the only products are electricity, water and heat. Fuel cells are an important technology for a potentially wide variety of applications including on-site electric pow-

er for households and commercial buildings; supplemental or auxiliary power to support car, truck and aircraft systems; power for personal, mass and commercial transportation; and the modular addition by utilities of new power generation closely tailored to meet growth in power consumption. These applications will be in a large number of industries worldwide. In this Seventh Edition of the Fuel Cell Handbook, we have discussed the Solid State Energy Conversion Alliance Program (SECA) activities. In addition, individual fuel cell technologies and other supporting materials have been updated.

European banking supervision, also known as the Single Supervisory Mechanism, is the first and arguably the main component of European banking union. In late 2014, the European Central Bank became the supervisor for the region's largest banking groups; the ECB also oversees the supervision by national authorities of smaller banks. This Blueprint is the first in-depth study of how this ground-breaking reform is working in practice. Despite teething troubles and occasional misjudgements, this assessment finds that overall European banking supervision has been effective, demanding and broadly fair, at least for the banks under the ECB's direct watch. Even so, achieving a truly single market in banking services will require more time, further supervisory initiatives and new Europe-wide regulatory and legislative steps.

What are you waiting for? Whether you're dreaming about starting a business, learning about entrepreneurship or on the brink of creating a new opportunity right now, don't wait. Open this updated bestseller. Inside you'll find everything you need, including: a new and popular way to learn about and to practice entrepreneurship. new practical exercises, questions and activities for each step in your process. specific principles derived from the methods of expert entrepreneurs. over seventy updated case briefs of entrepreneurs across industries, locations and time. new applications to social entrepreneurship, technology and to large enterprises. plentiful connections to current and foundational research in the field (Research Roots) brand new chapter on "The Ask" - strategies for initiating the process of co-creating with partners data that will challenge conventional entrepreneurship wisdom a broader perspective on the science of entrepreneurship In this vibrant updated edition, you will find these ideas presented in the concise, modular, graphical form made popular in the first edition, perfect for those learning to be entrepreneurs or

those already in the thick of things. If you want to learn about entrepreneurship in a way that emphasizes action, this new edition is vital reading. If you have already launched your entrepreneurial career and are looking for new perspectives, take the effectual entrepreneurship challenge! this book is for you. If you feel that you are no longer creating anything novel or valuable in your day job, and you're wondering how to change things, this book is for you. Anyone using entrepreneurship to create the change they want to see in the world will find a wealth of thought-provoking material, expert advice and practical techniques in these pages and on the accompanying website: www.effectuation.org So, what are you waiting for?

A field manual to the technologies that are transforming our lives Everywhere we turn, a startling new device promises to transfigure our lives. But at what cost? In this urgent and revelatory excavation of our Information Age, leading technology thinker Adam Greenfield forces us to reconsider our relationship with the networked objects, services and spaces that define us. It is time to re-evaluate the Silicon Valley consensus determining the future. We already depend on the smartphone to navigate every aspect of our existence. We're told that innovations—from augmented-reality interfaces and virtual assistants to autonomous delivery drones and self-driving cars—will make life easier, more convenient and more productive. 3D printing promises unprecedented control over the form and distribution of matter, while the blockchain stands to revolutionize everything from the recording and exchange of value to the way we organize the mundane realities of the day to day. And, all the while, fiendishly complex algorithms are operating quietly in the background, reshaping the economy, transforming the fundamental terms of our politics and even redefining what it means to be human. Having successfully colonized everyday life, these radical technologies are now conditioning the choices available to us in the years to come. How do they work? What challenges do they present to us, as individuals and societies? Who benefits from their adoption? In answering these questions, Greenfield's timely guide clarifies the scale and nature of the crisis we now confront—and offers ways to reclaim our stake in the future.

An introduction to marketing concepts, strategies and practices with a balance of depth of coverage and ease of learning. Principles of Marketing keeps pace with a rapidly changing field, focussing on the ways brands create and capture consumer value. Practical content and linkage are at

the heart of this edition. Real local and international examples bring ideas to life and new feature 'linking the concepts' helps students test and consolidate understanding as they go. The latest edition enhances understanding with a unique learning design including revised, integrative concept maps at the start of each chapter, end-of-chapter features summarising ideas and themes, a mix of mini and major case studies to illuminate concepts, and critical thinking exercises for applying skills.

This handbook serves as a guide to deploying battery energy storage technologies, specifically for distributed energy resources and flexibility resources. Battery energy storage technology is the most promising, rapidly developed technology as it provides higher efficiency and ease of control. With energy transition through decarbonization and decentralization, energy storage plays a significant role to enhance grid efficiency by alleviating volatility from demand and supply. Energy storage also contributes to the grid integration of renewable energy and promotion of microgrid.

To effectuate is to engage in a specific type of entrepreneurial action. It has special importance for situations where the future is truly unknowable or human agency is of primary importance. In this new and updated edition of the bestselling *Effectuation*, Saras Sarasvathy explores the theory and techniques of non-predictive control for creating new firms, markets and economic opportunities.

Popular Science gives our readers the information and tools to improve their technology and their world. The core belief that Popular Science and our readers share: The future is going to be better, and science and technology are the driving forces that will help make it better.

This illustrated history chronicles electric and hybrid cars from the late 19th century to today's fuel cell and plug-in automobiles. It describes the politics, technology, marketing strategies, and environmental issues that have impacted electric and hybrid cars' research and development. The important marketing shift from a "woman's car" to "going green" is discussed. Milestone projects and technologies such as early batteries, hydrogen and bio-mass fuel cells, the upsurge of hybrid vehicles, and the various regulations and market forces that have shaped the industry are also covered.

Gaining public attention due, in part, to their potential application as energy storage devices in cars, Lithium-ion batteries have encountered widespread demand, however, the understanding of lithium-ion technology has often lagged behind pro-

duction. This book defines the most commonly encountered challenges from the perspective of a high-end lithium-ion manufacturer with two decades of experience with lithium-ion batteries and over six decades of experience with batteries of other chemistries. Authors with years of experience in the applied science and engineering of lithium-ion batteries gather to share their view on where lithium-ion technology stands now, what are the main challenges, and their possible solutions. The book contains real-life examples of how a subtle change in cell components can have a considerable effect on cell's performance. Examples are supported with approachable basic science commentaries. Providing a unique combination of practical know-how with an in-depth perspective, this book will appeal to graduate students, young faculty members, or others interested in the current research and development trends in lithium-ion technology.

Expert PHP and MySQL takes you beyond learning syntax to showing you how to apply proven software development methods to building commerce-grade PHP and MySQL projects that will stand the test of time and reliably deliver on customer needs. Developers of real-world applications face numerous problems that seem trivial on the surface, but really do take some skill to get right. Error handling is about more than just the mechanics in the PHP syntax, but also about handling MySQL errors, logging those errors, and about hiding information about application internals that error messages sometimes can expose. Meet these challenges and more head-on! Author Marc Rochkind shows how to begin a project right, with a clear contract and set of written requirements. You'll learn about project organization, setting up a solid development environment, connecting with client personnel. Database design is essential, and Expert PHP and MySQL has you covered with guidance on creating a sound model and database, and on pushing functionality into the database as appropriate; not everything should be done in PHP. Error handling is covered at both the PHP and MySQL levels. Application structure is covered. Guidance is provided on reporting. And finally there is conversion. In Expert PHP and MySQL you'll explore the following: The popular and widely used combination of PHP and MySQL Commercial-grade application of language and database features Human factors such as planning and organization Organizing a project to meet requirements and satisfy the customer Structuring an application for efficient development and future modification Coding

PHP for productivity, reliability, security Generating online, downloadable, and printed reports Converting existing data to the new application

Shipboard Propulsion, Power Electronics, and Ocean Energy fills the need for a comprehensive book that covers modern shipboard propulsion and the power electronics and ocean energy technologies that drive it. With a breadth and depth not found in other books, it examines the power electronics systems for ship propulsion and for extracting ocean energy, which are mirror images of each other. Comprised of sixteen chapters, the book is divided into four parts: Power Electronics and Motor Drives explains basic power electronics converters and variable-frequency drives, cooling methods, and quality of power Electric Propulsion Technologies focuses on the electric propulsion of ships using recently developed permanent magnet and superconducting motors, as well as hybrid propulsion using fuel cell, photovoltaic, and wind power Renewable Ocean Energy Technologies explores renewable ocean energy from waves, marine currents, and offshore wind farms System Integration Aspects discusses two aspects—energy storage and system reliability—that are essential for any large-scale power system This timely book evolved from the author's 30 years of work experience at General Electric, Lockheed Martin, and Westinghouse Electric and 15 years of teaching at the U.S. Merchant Marine Academy. As a textbook, it is ideal for an elective course at marine and naval academies with engineering programs. It is also a valuable reference for commercial and military shipbuilders, port operators, renewable ocean energy developers, classification societies, machinery and equipment manufacturers, researchers, and others interested in modern shipboard power and propulsion systems. The information provided herein does not necessarily represent the view of the U.S. Merchant Marine Academy or the U.S. Department of Transportation. This book is a companion to *Shipboard Electrical Power Systems* (CRC Press, 2011), by the same author.

Transform an average car or truck into a turbocharged high performance street machine. A handbook on theory and application of turbocharging for street and high-performance use, this book covers high performance cars and trucks. This comprehensive guide features sections on theory, indepth coverage of turbocharging components, fabricating systems, engine building and testing, aftermarket options and project vehicles.

From the author of *Power from the Sun*, the complete guide to switching to clean,

affordable, renewable energy resources. Energy bills have skyrocketed in the United States, and traditional energy sources can be as damaging to the environment as they are to your pocketbook. The Homeowner's Guide to Renewable Energy will show you how to slash your home energy costs while dramatically reducing your carbon footprint. Completely revised and updated, this new edition describes the most practical and affordable methods for significantly improving in-home energy efficiency and tapping into clean, affordable, renewable energy resources. If implemented, these measures will save the average homeowner tens of thousands of dollars over the coming decades. Focusing on the latest technological advances in residential renewable energy, this guide examines each alternative energy option available including:

- Solar hot water and solar hot air systems
- Passive and active solar retrofits for heating and cooling
- Electricity from solar, wind, and microhydro
- Hydrogen, fuel cells, methane digesters, and biodiesel

This well-illustrated and accessible guide is an essential resource for those wanting to enter the renewable energy field. Packed with practical tips and guidelines, it gives readers sufficient knowledge to hire and communicate effectively with contractors and is a must-read for anyone interested in saving money and achieving energy independence. "If you're thinking about investing in a renewable energy system for your home . . . The Homeowner's Guide to Renewable Resources helps clarify the decision-making process . . . Dan guides you through everything you need to choose which renewable options to integrate into your lifestyle. A great addition to my bookshelf!" —Mick Sagrillo, Sagrillo Power & Light

This example-driven book offers a thorough introduction to Java's APIs for XML Web Services (JAX-WS) and RESTful Web Services (JAX-RS). *Java Web Services: Up and Running* takes a clear, pragmatic approach to these technologies by providing a mix of architectural overview, complete working code examples, and short yet precise instructions for compiling, deploying, and executing an application. You'll learn how to write web services from scratch and integrate existing services into your Java applications. With *Java Web Services: Up and Running*, you will:

- Understand the distinction between SOAP-based and REST-style services
- Write, deploy, and consume SOAP-based services in core Java
- Understand the Web Service Definition Language (WSDL) service contract
- Recognize the structure of a SOAP message
- Learn how to deliver Java-based RESTful web ser-

vices and consume commercial RESTful services

- Know security requirements for SOAP- and REST-based web services
- Learn how to implement JAX-WS in various application servers

Ideal for students as well as experienced programmers, *Java Web Services: Up and Running* is the concise guide you need to start working with these technologies right away.

We are facing a global energy crisis caused by world population growth, an escalating increase in demand, and continued dependence on fossil-based fuels for generation. It is widely accepted that increases in greenhouse gas concentration levels, if not reversed, will result in major changes to world climate with consequential effects on our society and economy. This is just the kind of intractable problem that Purdue University's Global Policy Research Institute seeks to address in the *Purdue Studies in Public Policy* series by promoting the engagement between policy makers and experts in fields such as engineering and technology. Major steps forward in the development and use of technology are required. In order to achieve solutions of the required scale and magnitude within a limited timeline, it is essential that engineers be not only technologically-adept but also aware of the wider social and political issues that policy-makers face. Likewise, it is also imperative that policy makers liaise closely with the academic community in order to realize advances. This book is designed to bridge the gap between these two groups, with a particular emphasis on educating the socially-conscious engineers and technologists of the future. In this accessibly-written volume, central issues in global energy are discussed through interdisciplinary dialogue between experts from both North America and Europe. The first section provides an overview of the nature of the global energy crisis approached from historical, political, and sociocultural perspectives. In the second section, expert contributors outline the technology and policy issues facing the development of major conventional and renewable energy sources. The third and final section explores policy and technology challenges and opportunities in the distribution and consumption of energy, in sectors such as transportation and the built environment. The book's epilogue suggests some future scenarios in energy distribution and use.

"Whether you call it "lean start-up," "design thinking," or "agile," a new method is revolutionizing how to successfully create, refine, and bring ideas to market--without traditional business planning. But because these ideas and techniques run counter to conventional managerial thinking and prac-

tice, managers in established organizations have difficulty implementing them. Innovation experts Nathan Furr and Jeff Dyer aim to change that. Based on field work with thousands of managers and validated insidedozens of companies, *THE INNOVATOR'S METHOD* shows when and how to apply a "lean start-up" approach to innovation in established businesses. *THE INNOVATOR'S METHOD* takes managers through these new practices for managing innovation, showing how to adapt them to their businesses and answering such questions as: How do we know this idea is worth pursuing? Does it solve the right problem for customers? Have we found the right solution? Do we have the right business model for our new offering? With detailed cases from the authors' work implementing these ideas with companies such as Intuit, NEC, P&G, Virgin Airlines, Kia, Folio, Citi, Hallmark, and Verizon, *THE INNOVATOR'S METHOD* picks up where Jeff Dyer's *THE INNOVATOR'S DNA* leaves off, showing how to test, validate and commercialize ideas with the lean and agile techniques that successful entrepreneurs use"-

Backpacker brings the outdoors straight to the reader's doorstep, inspiring and enabling them to go more places and enjoy nature more often. The authority on active adventure, *Backpacker* is the world's first GPS-enabled magazine, and the only magazine whose editors personally test the hiking trails, camping gear, and survival tips they publish. *Backpacker's* Editors' Choice Awards, an industry honor recognizing design, feature and product innovation, has become the gold standard against which all other outdoor-industry awards are measured.

Auto Repair For Dummies, 2nd Edition (9781119543619) was previously published as *Auto Repair For Dummies*, 2nd Edition (9780764599026). While this version features a new *Dummies* cover and design, the content is the same as the prior release and should not be considered a new or updated product. The top-selling auto repair guide--400,000 copies sold--now extensively reorganized and updated Forty-eight percent of U.S. households perform at least some automobile maintenance on their own, with women now accounting for one third of this \$34 billion automotive do-it-yourself market. For new or would-be do-it-yourself mechanics, this illustrated how-to guide has long been a must and now it's even better. A complete reorganization now puts relevant repair and maintenance information directly after each automotive system overview, making it much easier to find hands-on fix-it in-

structions. Author Deanna Sclar has updated systems and repair information throughout, eliminating discussions of carburetors and adding coverage of hybrid and alternative fuel vehicles. She's also revised schedules for tune-ups and oil changes, included driving tips that can save on maintenance and repair costs, and added new advice on troubleshooting problems and determining when to call in a professional mechanic. For anyone who wants to save money on car repairs and maintenance, this book is the place to start. Deanna Sclar (Long Beach, CA), an acclaimed auto repair expert and consumer advocate, has contributed to the Los Angeles Times and has been interviewed on the Today show, NBC Nightly News, and other television programs.

This comprehensive overview of chassis technology presents an up-to-date picture for vehicle construction and design engineers in education and industry. The book acts as an introduction to the engineering design of the automobile's fundamental mechanical systems. Clear text and first class diagrams are used to relate basic engineering principles to the particular requirements of the chassis. In addition, the 2nd edition of 'The Automotive Chassis' has a new author team and has been completely updated to include new technology in total vehicle and suspension design, including platform concept and four-wheel drive technology.

Updated for the latest database management systems -- including MySQL 6.0, Oracle 11g, and Microsoft's SQL Server 2008 -- this introductory guide will get you up and running with SQL quickly. Whether you need to write database applications, perform administrative tasks, or generate reports, Learning SQL, Second Edition, will help you easily master all the SQL fundamentals. Each chapter presents a self-contained lesson on a key SQL concept or technique, with numerous illustrations and annotated examples. Exercises at the end of each chapter let you practice the skills you learn. With this book, you will: Move quickly through SQL basics and learn several advanced features Use SQL data statements to generate, manipulate, and retrieve data Create database objects, such as tables, indexes, and constraints, using SQL schema statements Learn how data sets interact with queries, and understand the importance of subqueries Convert and manipulate data with SQL's built-in functions, and use conditional logic in data statements Knowledge of SQL is a must for interacting with data. With Learning SQL, you'll quickly learn how to put the power and flexibility of this language to work.

This book offers a comprehensive look at

an industry that plays a growing role in motor vehicle production in the United States.

If we lived in a liquid world, the concept of a "machine" would make no sense. Liquid life is metaphor and apparatus that discusses the consequences of thinking, working, and living through liquids. It is an irreducible, paradoxical, parallel, planetary-scale material condition, unevenly distributed spatially, but temporally continuous. It is what remains when logical explanations can no longer account for the experiences that we recognize as part of "being alive." Liquid life references a third-millennial understanding of matter that seeks to restore the agency of the liquid soul for an ecological era, which has been banished by reductionist, "brute" materialist discourses and mechanical models of life. Offering an alternative worldview of the living realm through a "new materialist" and "liquid" study of matter, it conjures forth examples of creatures that do not obey mechanistic concepts like predictability, efficiency, and rationality. With the advent of molecular science, an increasingly persuasive ontology of liquid technologies can be identified. Through the lens of lifelike dynamic droplets, the agency for these systems exists at the interfaces between different fields of matter/energy that respond to highly local effects, with no need for a central organizing system. Liquid Life seeks an alternative partnership between humanity and the natural world. It provokes a re-invention of the languages of the living realm to open up alternative spaces for exploration: Rolf Hughes' "angelology" of language explores the transformative invocations of prose poetry, and Simone Ferracina's graphical notations help shape our concepts of metabolism, upcycling, and designing with fluids. A conceptual and practical toolset for thinking and designing, Liquid Life reunites us with the irreducible "soul substance" of living things, which will neither be simply "solved," nor go away. Rachel Armstrong is Professor of Experimental Architecture at Newcastle University (UK), and has also been a Rising Waters II Fellow for the Robert Rauschenberg Foundation (April-May 2016), TWOTY futurist in 2015, Fellow of the British Interplanetary Society, and a Senior TED Fellow in 2010. She is also the coordinator of the Living Architecture project, an EU-funded project that establishes the principles for our buildings to share some of the properties of living things, e.g. metabolism, operating at the intersection of architecture, building construction, bio-energy and synthetic biology. She is also the author of Vibrant Architecture (De Gruyter, 2015), Star Ark: A Living, Self-Sus-

taining Spaceship (Springer, 2017), and Soft Living Architecture: An Alternative View of Bio-informed Design Practice (Bloomsbury, 2018).

Every time we choose a route to work, decide whether to go on a second date, or set aside money for a rainy day, we are making a prediction about the future. Yet from the global financial crisis to 9/11 to the Fukushima disaster, we often fail to foresee hugely significant events. In *The Signal and the Noise*, the New York Times' political forecaster and statistics guru Nate Silver explores the art of prediction, revealing how we can all build a better crystal ball. In his quest to distinguish the true signal from a universe of noisy data, Silver visits hundreds of expert forecasters, in fields ranging from the stock market to the poker table, from earthquakes to terrorism. What lies behind their success? And why do so many predictions still fail? By analysing the rare prescient forecasts, and applying a more quantitative lens to everyday life, Silver distils the essential lessons of prediction. We live in an increasingly data-driven world, but it is harder than ever to detect the true patterns amid the noise of information. In this dazzling insider's tour of the world of forecasting, Silver reveals how we can all develop better foresight in our everyday lives.

The Handbook of Lithium-Ion Battery Pack Design: Chemistry, Components, Types and Terminology offers to the reader a clear and concise explanation of how Li-ion batteries are designed from the perspective of a manager, sales person, product manager or entry level engineer who is not already an expert in Li-ion battery design. It will offer a layman's explanation of the history of vehicle electrification, what the various terminology means, and how to do some simple calculations that can be used in determining basic battery sizing, capacity, voltage and energy. By the end of this book the reader has a solid understanding of all of the terminology around Li-ion batteries and is able to do some simple battery calculations. The book is immensely useful to beginning and experienced engineer alike who are moving into the battery field. Li-ion batteries are one of the most unique systems in automobiles today in that they combine multiple engineering disciplines, yet most engineering programs focus on only a single engineering field. This book provides you with a reference to the history, terminology and design criteria needed to understand the Li-ion battery and to successfully lay out a new battery concept. Whether you are an electrical engineer, a mechanical engineer or a chemist this book helps you better appreciate the inter-relationships between

the various battery engineering fields that are required to understand the battery as an Energy Storage System. Offers an easy explanation of battery terminology and enables better understanding of batteries, their components and the market place. Demonstrates simple battery scaling calcu-

lations in an easy to understand description of the formulas Describes clearly the various components of a Li-ion battery and their importance Explains the differences between various Li-ion cell types and chemistries and enables the determination

which chemistry and cell type is appropriate for which application Outlines the differences between battery types, e.g., power vs energy battery Presents graphically different vehicle configurations: BEV, PHEV, HEV Includes brief history of vehicle electrification and its future