RESEARCH FOR
DESIGNERS

A Guide to Methods and Practice

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SAGE | 50 YEARS

To Ekaterina and Ella

ABOUT THE AUTHOR

Gjoko Muratovski has more than 20 years of global, multidisciplinary design experience. He holds a PhD in Design Research with focus on Branding and Corporate Communication Strategies. In addition to this, he is trained in a range of design fields such as Graphic Design, Visual Communications, Industrial Design, Architectural Design, Interior Design, and Furniture Design and Manufacturing. His formal education and professional development spans across 11 countries.

Over the years Dr Muratovski has been working with a broad range of corporate, governmental and not-for-profit organizations from around the world. This includes Deloitte, Toyota, Greenpeace, NASA Johnson Space Center, UNESCO World Cultural Heritage, World Health Organization, United Nations Association of Australia, Department of the Premier and Cabinet of South Australia, Auckland Council of New Zealand, and Melbourne International Design Week, to name a few. He is also regularly retained as an advisor by various design firms and advertising agencies on issues ranging from strategic design to brand development strategies.

In addition to having broad industry experience, Dr Muratovski also has a significant academic experience that ranges from teaching and curriculum development, to research, education management, and academic leadership. Currently, he holds senior academic roles at the Shanghai-based College of Design & Innovation at Tongji University – one of the oldest and most prestigious universities in China, and at the School of Art & Design at Auckland University of Technology – the leading design school in New Zealand.

ENDORSEMENTS

Today, designers design services, processes and organizations; craft skills no longer suffice. We need to discover, define and solve problems based upon evidence. We need to demonstrate the validity of our claims. We need Design Research, but as a special kind of research, with methods appropriate to the applied, constructive nature of design. We need a book on research for designers that can educate students and be a reference for professionals. And here it is: Gjoko Muratovski's masterful book for 21st century designers.

Don Norman, Professor and Director: Design Lab, University of California San Diego and former Vice President: Advanced Technologies, Apple

Inspiring and engaging. Gjoko Muratovski gives us a visionary preview on the future of design. He argues that design is transforming from 'problem-solving' to 'problem-finding' – something every company, from startups to multinationals, needs in today's hyper-connected and fast-changing world. Muratovski provides the context and more importantly, the implications of the rise of design as a powerful competitive advantage. If you want to know more about the role of design in the past, present and where design is headed, start here. If you've ever wanted to become a 'design-driven' company, read this book.

David R. Butler, Vice President: Innovation & Entrepreneurship and former Vice President: Global Design, The Coca-Cola Company

Today, as designers, we are exploring a new vision; a vision that seeks to apply creativity to challenges of our age, namely digital technology and information. The designer of today is involved with designing experiences, not just looks and appearances. Gjoko Muratovski's *Research for Designers* gives the reader a pair of wings to transcend limitation and do original work.

Suresh Sethi, Vice President: Global Consumer Design – South Asia, Whirlpool Corporation

Research for Designers clearly explains how effective cross-disciplinary discovery and delivery of strategic solutions to complex problems needs to begin with targeted and credible research of the problem area, the ecosystem, the context, and the stakeholders involved. While the book provides a great overview for designers that are interested in learning about research methods and how to use them, the book is also useful to strategists and decision-makers as it can expand their problem-solving toolkit to incorporate design research and practice in the pursuit of new, original and better outcomes. This is an excellent resource for both students and developing design practitioners.

Jane Treadwell, Practice Manager: Governance Systems, The World Bank Group and Advisor: Clinton Foundation Climate Initiative

Gjoko Muratovski has written the definitive compendium that not only covers 'how' to best conduct design research but 'why' it is such a vital ingredient to success. Although intended for design students, I believe Muratovski's manual offers a far broader appeal. Strategists, business leaders, policy makers, anyone who wants to enhance and advance their research proficiency to achieve a better outcome should read this book. I know I'll be sharing copies with my colleagues.

Maureen Thurston, Corporate Strategy Executive and Principal: Design Leverage, Deloitte Australia

Research for Designers is a welcome contribution to the world of design academia as it discusses methods for carrying out systematic design research. This book allows the reader to choose methods for design research according to different types of design problems and not only for the different stages of the design process. In this respect, this will be useful not only to postgraduate students and academics engaged in serious design research, but also to practicing designers dealing with large-scale, complex and cross-disciplinary design problems.

Kun-Pyo Lee, President, IASDR – International Association of Societies of Design Research. Professor and Head of Department: Industrial Design, KAIST and former Executive Vice President / Head of Corporate Design Centre, LG Electronics

Design's importance in social, cultural and economic terms has never been greater. So it's a surprise that the design research community has waited so long for an authoritative and comprehensive handbook on research methods which further our understanding and knowledge of the process of designing. *Research for Designers* fills this gap in the literature. There's no doubt it will become a seminal reference for those seeking to undertake research in the field.

Seymour Roworth-Stokes, Chair, Design Research Society. Professor and Dean: School of Art and Humanities, Coventry University

Research for Designers explores design research based on a panorama of the evolution of design. It is a useful book for designers, educators and researchers. It is also a meaningful book, as it opens the window for enriching and improving the rationalities between design and a possible better world. While facing a new era of design activism, a new culture of knowledge creation should be involved as part of the agenda. Gjoko Muratovski's work makes a concrete step forward.

Yongqi Lou, Professor and Dean: College of Design and Innovation, Tongji University and Vice President, CUMULUS

Flexible production technology and new business models enable companies to make almost anything. The unintended consequences include consumers confused by too many choices and managers not knowing what to make. Design offers new ways for executives to understand and fulfil people's needs and aspirations; however, the informality of design knowledge prevents design operating at the speed and scale that is needed. *Research for Designers* is a

major contribution to giving structure to design knowledge. This book will help companies succeed by helping people have better lives.

Patrick Whitney, Steelcase/Robert C Pew Professor and Dean: IIT Institute of Design

Gjoko Muratovski's *Research for Designers* provides a structured approach to introducing design students and new researchers to design research. Designers embarking on research have often found it to be challenging to find books that are able to provide them with the necessary advice and guidance for success. This book helps to overcome this challenge by taking the reader through the research process from defining the research problem through to the literature review on to data collection and analysis. With such practical and useful chapters this book should prove to be essential reading in design schools across the world.

Tracy Bhamra, Professor and Pro Vice Chancellor: Enterprise, Loughborough University

With *Research for Designers*, Gjoko Muratovski has put together a highly valuable resource for designers who want to better understand how to do design research. Designers, but also those who teach designers, will find these resources extraordinary useful.

Erik Stolterman, Professor and Chair: Informatics, Indiana University Bloomington and Professor: Institute of Design, Umeå University

A brilliantly written and wonderfully comprehensive book on the wide array of research methods available that can, ultimately, help us design a better world. As companies, organizations and even governments turn to designers to solve a wide range of problems, a more evidence-based approach to design will certainly be in design's future. This book is an invaluable contribution to that effort. Appropriate for students and professional designers alike, Gjoko Muratovski's *Research for Designers* should be required reading for anyone creating anything!

Dan Formosa, Award-Winning Designer and Founding Partner, Smart Design

In *Research for Designers*, Gjoko Muratovski provides a comprehensive and insightful guidance to designers on how to find answers to well articulated design related questions, in a methodical and systematic way. Given that the design field have suffered a lack of well grounded literature on research methods and research methodology this book is a welcome contribution and fills a gap for everyone that aims to approach the field in a methodologically proper way. This book is an excellent contribution to the knowing of 'how' to do design research – a knowledge critical not only for researchers but for everyone operating in the design field. With *Research for Designers*, Gjoko Muratovski makes a long awaited contribution to the professionalization of the design field.

Göran Roos, Professor: Strategic Design, Swinburne University of Technology

The need for conducting rigorous knowledge-based inquiry is a central theme of this very timely and relevant book by Gjoko Muratovski. *Research for Designers* is an extremely valuable

'how to' book that arms designers with practical knowledge on how to conduct and communicate research in order to create even greater value from the work that they currently do.

Swee Mak, Professor and Director: Design Research Institute, RMIT University

Research for Designers is a highly valuable book for anyone who engages with the design process, regardless of whether they are designers, engineers or business developers. This book introduces research with a strong practical focus and it lays down the foundations for developing an entire R&D process, even for large-scale, long-term projects – which makes it incredibly useful to both design and business leaders.

Kalevi Ekman, Professor and Director: Aalto Design Factory, Aalto University

Designers aiming to change the world are always in pursuit of new approaches that can help them realize their potential, even if they are already strongly motivated creative people. This search is a driving force that leads them to become deeper thinkers, and this is also what drives them to learn new things. So far, they had to do with basic research in order to understand complex problems, namely looking within the field of design itself, while this book shows them how to find knowledge that lies outside the field. Wonderfully written, each well-structured chapter of the book encourages designers to develop their own knowledge from the ground up.

Yukari Nagai, Dean Professor: School of Knowledge Science, JAIST

Muratovski's clear, methodical coverage of the major approaches to research provides the succinct introduction and on-going practical resource that every undergraduate, graduate, or practicing designer might need to begin contributing, themselves, to the next stage of the field's development. Armed with the lessons contained in this practical guide, they will not only make further contributions to the marketing bonanza and paradigm shift in corporate leadership already underway, they will help move design from problem finding to problem predicting and also, it seems, teach us much about what it means to be human in a world of ever accelerating technological change.

Branden Thornhill-Miller, Director of Research, Preparing Global Leaders Foundation. Adjunct Professor: Economics & Psychology, University of Paris V (Sorbonne). Fellow: Harris Manchester College, University of Oxford

Research for Designers works well to illuminate for Master's and Doctoral level students how and why important shifts in design are taking place around the world from 'product creation' to 'process creation' and from 'a field of practice' to a 'field of thinking and research'. In course development and lecturing on design at universities such as Stanford, St. Petersburg Polytechnic, Borås, Aalto and Tongji, I have until now been searching for good new books of this kind. One down.

Antti Ainamo, Professor: Fashion Brand Management, University of Borås. Adjunct Professor: Management Studies, Aalto University School of Business. Adjunct Professor: Strategic Design, Aalto University School of Arts, Design and Architecture

FOREWORD

Imagine the world as it was two and a half million years ago. Everything you could have seen – everything in the environment – was natural, set in place by natural processes, modified only by weather, time, and possibly animals. No human beings existed to change or disturb the natural order. And then something quite unusual took place. *Homo habilis* made the first stone tools (Friedman, 1997: 54–5; Mithen, 1998: 105–128; Ochoa and Corey, 1995: 1–8; Watson, 2005: 23–5).

These were our ancestors – and making tools was one of the activities that made us human in the first place. *Homo habilis* was one of the advanced animals that made tools. Tools and our tool-making behaviour helped to make us human by helping to shape the modern brain, and with it, the mind that shapes our mental world. All this goes back two and a half million years to the unknown moment when the first of our remote ancestors manufactured the first stone tool.

Design, in the most generic sense of the word, began with those primitive tools. Our pre-human ancestors were designing well before they began to walk upright. Four hundred thousand years ago, we began to manufacture spears. By forty thousand years ago, we had moved up to specialized tools. Urban design and architecture came along ten thousand years ago in Mesopotamia. Interior architecture and furniture design probably emerged with them. It was another five thousand years before graphic design and typography got their start in Sumeria with the development of cuneiform. After that, things picked up speed.

As professions go, design is still young, but the practice of design predates professions. Today, we have replaced cuneiform with ASCII characters. Instead of chipping rock, we download rock music from the Apple Store. If we haven't completely replaced spears with pruning hooks or swords with plowshares, we do provide a far wider range of goods and services than the world has known before. All goods and services are designed. The urge to design – to consider a situation, imagine a better situation, and act to create that improved situation – goes back to our pre-human ancestors. The modern design profession is unlike anything we have known in the past.

Nobel Laureate Herbert Simon defined design in the broadest sense of human action. To design, he wrote, is to '[devise] courses of action aimed at changing existing situations into preferred ones' (Simon, 1982: 129). Design involves a wide range of processes that human beings use to plan the future. We design the artifacts and processes that move us from the present to the future. Design involves the strategic choice of goals, and planning the actions we take to reach those goals.

The word 'design' entered the English language in the 1390s. It began as a verb describing a process of intention and action. To design is 'to conceive and plan out in the mind [. . .] to have as a purpose: intend [. . .] to devise for a specific function or end', then later, 'to make a drawing, pattern or sketch of [. . .] to draw the plans for [. . .] to create, fashion, execute or construct according to plan: devise, contrive [. . .]' (Merriam-Webster, 1993: 343). Thought and intention come first.

In this sense, design is a universal human capacity. In fact, every creature able to plan future actions and carry them out can design. Anyone with a clever dog knows this. Famous accounts describe dogs and horses that plan and design. Design, learning, and judgement go together, and these inform the process by which we plan. Again, human beings are not alone in this capacity – for example, Mary Catherine Bateson (1972: 104–120) recounts the story of a horse learning to canter, apparently abstracting general principles as he did so. Gorillas, orangutans, chimpanzees, and other primates certainly design. Nevertheless, human design is different. Two specific facts distinguish human beings from other creatures.

The first of these is the human ability to represent our strategic intentions in diagrams, blueprints, drawings, models, and descriptions. These represent our intentions. They also serve as instructions that show others how to execute the plans we conceive.

The second of these is the fact that we do more than design to realize our own goals. We design on behalf of others, working to meet their goals and solve their problems. Design is a service, and we make the goals and needs of other human beings our own goals as designers. When human beings engage designers to work in this way, they become professional designers. They design for a living.

In the twentieth century, the design profession took shape in such fields as graphic design, information design, product design, industrial design, and design management. Some architects and engineers also began to think of their work as design.

Today, we see design in an even larger frame: 'Modern design has grown from a focus on products and services to a robust set of methods that is applicable to a wide range of societal issues. When combined with the knowledge and expertise of specialized disciplines, these design methods provide powerful ways to develop practical approaches to large, complex issues. [. . .] The major problems facing humanity today involve complex systems of stakeholders and issues. These challenges often involve large numbers of people and institutions intermingled with technologies, especially those of communication, computation, and transportation. Health, education, urbanization, and environmental issues have these characteristics, as do the issues of sustainability, energy, economics, politics, and overall wellbeing' (Friedman, Lou, Norman, Stappers, Voûte and Whitney, 2014: np).

For Herbert Simon, all professional practices involve design in the broad human sense. So it is that physicians, managers, engineers, and lawyers design, as do politicians seeking to pass laws and generals trying to win battles.

In the twenty-first century, design involves a wider range of challenges than typical of design in the twentieth century, and a wider range of goals. Design also involves a broader context and greater complexity.

Today, as always, designers act on the physical world, address human needs, and generate the built environment. These common attributes have typified design since the time of *homo habilis*. This was true of people who made clay pots in Mesopotamia, shaped wheels for Roman chariots, wove linen in medieval Lithuania, or prepared arrows in the Americas before Europeans came.

Contemporary technology and social systems add four substantive challenges. These have grown in scale since the industrial revolution of the 1700s. The substantive challenges are: increasingly ambiguous boundaries between artifact, structure, and process; increasingly large-scale social, economic, and industrial frames; an increasingly complex environment of needs, requirements, and constraints; information content that often exceeds the value of physical substance.

These changes gave rise to three important differences in the context of professional design. These are: a complex environment in which many projects or products cross the boundaries of several organizations and stakeholder, producer, and user groups; projects or products that must meet the expectations of many organizations, stakeholders, producers, and users; demands at every level of production, distribution, reception, and control (Friedman, 2012: 148–51). These challenges raise an important question. How can we know in a reasonable way that our work as designers offers responsible solutions to the problems of those who ask for professional help? The answer to this question is the starting point for Gjoko Muratovski's *Research for Designers: A Guide to Methods and Practice*.

The physicist and philosopher Mario Bunge (1999: 251) defines research as the 'methodical search for knowledge'. To say that we know something is to say that we understand it, and that we can apply what we know to the problems we face. For Bunge, 'Original research tackles new problems or checks previous findings. Rigorous research is the mark of science, technology, and the "living" branches of the humanities'. Synonyms for research include exploration, investigation, and inquiry.

Muratovski's book shows designers how to answer questions and solve problems in a methodical, systematic way. To say this is to say a great deal. We call on designers to solve many kinds of problems. Design is nearly always an interdisciplinary field, and sometimes a transdisciplinary field. The different kinds of problems we face for any given project may require us to use many different methods. We must therefore have a deep understanding of some research methods and an awareness of many more methods than we ourselves can master. We tie these understandings together with an understanding of research methodology. A research method is a way to solve a problem; research methodology is the comparative study of methods and the kinds of problems that any given method can help us to solve. *Research for Designers* offers a broad introduction to the issues involved in both.

Research for Designers is a valuable textbook for design students who want to understand the key issues in research they will need as professional designers. It offers a robust yet concise overview for research students earning a PhD. It is a useful resource for experienced researchers and for those who supervise and teach research students. While there have been short guidebooks to design research in the past, this is the largest and most comprehensive text available in English to date. It meets a real need in our field.

In his keynote speech for the 2007 congress of the International Association of Societies of Design Research, Kees Dorst (2008) described design research as a revolution waiting to happen. This revolution builds on earlier understandings of professional practice, but the revolution requires more. Today, the revolution is under way – earlier approaches are undergoing evaluation, new methods are emerging, skilled researchers are generating the methods of inquiry we require to solve the challenging problems we face.

A book such as Gjoko Muratovski's *Research for Designers* helps research students move from studying research skills and methods to practising effective research for advanced design practice.

For working researchers and teachers, *Research for Designers* offers a toolkit for better research, and with it, the improvements our field needs in projects and publications. While the design field has grown dramatically in the number of conferences and journals where researchers present their work, overall quality is not what it should be. The revolution we need requires the kind of progressive research programmes that typify mature disciplines. This phase of design research is in its early stages.

Tore Kristensen (1999: np) states that a progressive research programme involves 'building a body of generalized knowledge; improving problem solving capacity; generalizing knowledge into new areas; identifying value creation and cost effects; explaining differences in design strategies and their risks or benefits; learning on the individual level; collective learning; and meta-learning.' A great deal of design research involves useful individual learning to solve situated problems for specific clients – but this kind of research goes no further than professional practice does. The difference between practice and practice-based research requires building a body of generalized knowledge, then generalizing the knowledge into new areas while helping the field to learn as a community.

Designers often make a distinction between 'knowing that' and 'knowing how', as though design research involves knowing how to do something practical rather than describing something in the world as scientists do. One of the great problems in the field involves exactly this distinction. Designers already do know how to do something. The difference between design and design research is this. Showing a product shows us 'that' a designer knows 'how' to do something. Research shows us 'how' to do it ourselves. And Gjoko Muratovski's *Research for Designers* shows us the 'how' of how to do research.

Step by step, *Research for Designers* demonstrates the facets of a solid research project. Experienced researchers understand these issues as a form of tacit knowledge. Muratovski explains the details of each step: states the research problem; discusses the current knowledge of the field; examines past efforts to examine or solve the problem; describes the methods and approach used to solve the problem; compares these with alternative methods; discusses problems encountered in the research, and explains how the researcher addresses these problems; explicitly offers a result that contributes to the body of knowledge within the field; and states the implications for future research.

Research shows others how to do what the researcher has learned. This is as true for practice-based research as it is for scientific research. Chemists show others how they solved a chemistry problem. Mathematicians demonstrate every step in a proof. Engineers explain the problems they face in selecting a metal or a process for a specific application. Sociologists