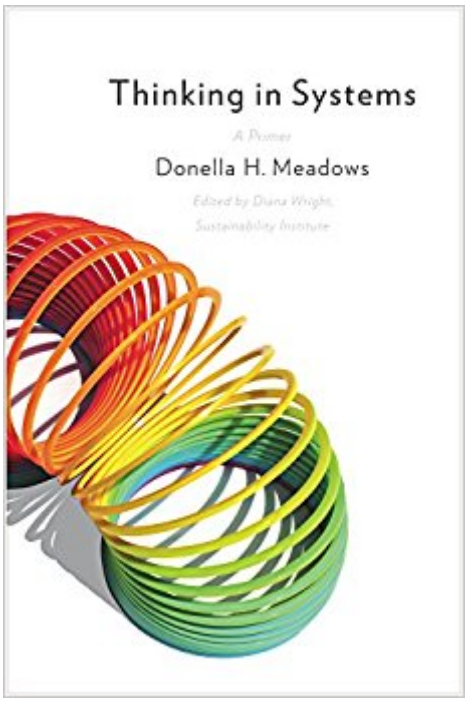
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# Thinking In Systems: A Primer




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## Synopsis

In the years following her role as the lead author of the international bestseller, Limits to GrowthÃ¢â ¬â ¢the first book to show the consequences of unchecked growth on a finite planetÃ¢â ¬â ¢ Donella Meadows remained a pioneer of environmental and social analysis until her untimely death in 2001. Thinking in Systems, is a concise and crucial book offering insight for problem solving on scales ranging from the personal to the global. Edited by the Sustainability InstituteÃ¢â ¬â„¢s Diana Wright, this essential primer brings systems thinking out of the realm of computers and equations and into the tangible world, showing readers how to develop the systems-thinking skills that thought leaders across the globe consider critical for 21st-century life. Some of the biggest problems facing the worldÃ¢â ¬â ¢war, hunger, poverty, and environmental degradationÃ¢â ¬â ¢are essentially system failures. They cannot be solved by fixing one piece in isolation from the others, because even seemingly minor details have enormous power to undermine the best efforts of too-narrow thinking. While readers will learn the conceptual tools and methods of systems thinking, the heart of the book is grander than methodology. Donella Meadows was known as much for nurturing positive outcomes as she was for delving into the science behind global dilemmas. She reminds readers to pay attention to what is important, not just what is quantifiable, to stay humble, and to stay a learner. In a world growing ever more complicated, crowded, and interdependent, Thinking in Systems helps readers avoid confusion and helplessness, the first step toward finding proactive and effective solutions.

## Book Information

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## Customer Reviews

Starred Review. Just before her death, scientist, farmer and leading environmentalist Meadows (1941-2001) completed an updated, 30th anniversary edition of her influential 1972 environmental call to action, Limits to Growth, as well as a draft of this book, in which she explains the methodology-systems analysis-she used in her ground-breaking work, and how it can be implemented for large-scale and individual problem solving. With humorous and commonplace examples for difficult concepts such as a "reinforcing feedback loop," (the more one brother pushes, the more the other brother pushes back), negative feedback (as in thermostats), accounting for delayed response (like in maintaining store inventory), Meadows leads readers through the increasingly complex ways that feedback loops operate to create self-organizing systems, in nature ("from viruses to redwood trees") and human endeavor. Further, Meadows explicates methods for fixing systems that have gone haywire ("The world’s leaders are correctly fixated on economic growth ...but they’re pushing with all their might in the wrong direction"). An invaluable companion piece to Limits to Growth, this is also a useful standalone overview of systems-based problem solving, "a simple book about a complex world" graced by the wisdom of a profound thinker committed to "shaping a better future." Copyright Ã Â© Reed Business Information, a division of Reed Elsevier Inc. All rights reserved.

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narrow the gap, it will be Dana’s greatest contribution."--Lester Brown, founder and President, Earth Policy Institute"Dana Meadows’ exposition in this book exhibits a degree of clarity and simplicity that can only be attained by one who profoundly and honestly understands the subject at hand--in this case systems modeling. Many thanks to Diana Wright for bringing this extra legacy from Dana to us."--Herman Daly, Professor, School of Public Policy, University of Maryland at College Park"Reading Thinking in Systems evokes the wisdom and even the voice of Dana Meadows. We are reminded of how she was not only one of the great systems thinkers, but also one of our greatest teachers. This is modestly called a primer, and indeed it is, but unlike most books with that title, this one quickly takes one from the elementary into deep systems thinking about issues as critical today as they were when Dana wrote these words. The discussion of oil use and the interaction of its extraction pattern with economic decision making should be required reading for all energy policy makers and energy company executives (as well as all informed citizens in a democracy). The fisheries case reminds us of how little any government or private actor has done to grasp the importance of takeout flows in determining stocks when the input flows are not within our control. The commentary on economics and, yes the need to consider limits, is a clear systems statement that clarifies a great deal of discussion that goes back to The Limits to Growth. It is remarkable that Dana is able to explain with such clarity such systems concepts of stocks, flows, feedback, time delays, resilience, bounded rationality, and system boundaries and to illustrate each one with multiple informative examples. Her statement that goals that optimize subsystems will sub optimize the functioning of the total system, is truly profound. As the book moves from the ’mechanics’ of systems dynamics to Dana’s more philosophical perspective, we are treated to her inherent belief in human values that consider the good of all, and how much more effective considering the needs of others is likely to be in solving larger, complex problems. The universe and our society may be very complex and operate in counterintuitive, non-liner fashion, but following the insights of this book and applying them will provide for far more effective solutions to the challenges of a 7 billion person planet than current incremental, linear responses by governments, corporations and individuals."--Bill Moomaw, Professor of International Environmental Policy at the Fletcher School, Tufts University"In Dana Meadows’s brilliantly integrative worldview, everything causes everything else; cause and effect loop back on themselves. She was the clearest thinker and writer co-creating the art and science of systems dynamics, and Thinking in Systems distills her lifetime of wisdom. This clear, fun-to-read synthesis will help diverse readers everywhere to grasp and harness how our complex world really works."--Amory B. Lovins, Chairman and Chief Scientist, Rocky Mountain Institute"Dana Meadows taught a generation of students, friends, and colleagues the art

and science of thinking beyond conventional boundaries. For her systems thinking included the expected things like recognizing patterns, connections, leverage points, feedback loops and also the human qualities of judgment, foresight, and kindness. She was a teacher with insight and heart. This long anticipated book, the distillation of her life's work, is a gem."--David Orr, Professor of Environmental Studies and Politics, Oberlin College"The publication of Thinking in Systems is a landmark. To live sustainably on our planet, we must learn to understand human-environment interactions as complex systems marked by the impact of human actions, the prominence of nonlinear change, the importance of initial conditions, and the significance of emergent properties. Dana Meadows' final contribution is the best and most accessible introduction to this way of thinking we have. This book is destined to shape our understanding of socio-ecological systems in the years to come in much the same way that Silent Spring taught us to understand the nature of ecosystems in the 1960s and 1970s."--Oran R. Young, Professor, Donald Bren School of Environmental Science and Management at University of California, Santa Barbara"Thinking in Systems is required reading for anyone hoping to run a successful company, community, or country. Learning how to think in systems is now part of change-agent literacy. And this is the best book of its kind."--Hunter Lovins, founder and President of Natural Capital Solutions and coauthor of Natural Capitalism: Creating the Next Industrial Revolution"Dana Meadows was one of the smartest people I ever knew, able to figure out the sensible answer to almost any problem. This book explains how she thought, and hence is of immense value to those of us who often wonder what she'd make of some new problem. A classic."--Bill McKibben, author of Deep Economy"An inspiring sequel to Dana Meadows' lifetime of seminal contributions to systems thinking, this highly accessible book should be read by everyone concerned with the world's future and how we can make it as good as it possibly can be."--Peter H. Raven, President, Missouri Botanical Garden"Few matched Dana Meadows remarkable blend of eloquence and clarity in making systems thinking understandable. When Dana began her career, the field was esoteric and academic. Today it is the sine quo non for intelligent action in business and society. The publication of Meadows' previously unfinished manuscript is a gift for leaders of all sorts and at all levels."--Peter M. Senge, author of The Fifth Discipline and The Necessary Revolution

A must read for anyone who is interested in changing the world or succeeding in anything over the long term. The first chapters, being basic introductions to systems analysis, seemed technical and unrelated to the challenges I face in my work and life. But in the second half, as she starts bringing these initial concepts alive with examples of how they relate to and impact larger issues that affect

us all, the beauty and elegance of her thinking shines through. I see the world differently now.

I wish there was a higher rating of 5 stars. This book so simply and elegantly explains any and every problem, scenario, and reality out there. Once you read and understand it (which is so easy because meadows writes so straightforward and beautifully) you can’t unsee all of the systems traps and levers that are being used in the real world everyday. Life changing read for me I am so glad that I read it for a class of mine.

Fantastic introduction to Systems thinking. This helped broaden the connections I have with what I do. There are general types of systems, but the sky’s the limit in terms of how creative you can become, connecting things to others and seeing the relationship. Think "butterfly effect" with focused thought and detail relating to just how a butterfly flapping its wings can cause a blown tire. No matter what your area of interest, understanding that everything operates within a system or multiple systems, it will expand and shed new light on your thinking. Well written and not overly technical at all, you will enjoy this book for sure!

I am not an engineer and had never given systems theory much thought until I stumbled across this book.The most important takeaway for me was the difference between parameter and system changes. A parameter change would be a variable like minimum wage or taxes. Politicians spend tons of time and money on these issues. But in the end, this rarely changes behavior and the national economy; rich people still find a way to pay less taxes.To change a system, you have to make drastic moves (i.e: Fair Tax) that radically alter the functions of the system to alter behavior.Also of note was the importance roles versus people: People are more alike than we think, it is more their role/job functions that determines their behavior.I highly recommend this book - it will improve the objectivity of your analysis and decisions, well worth the few dollars you paid.

Beyond over simplification and confusing complexity, sits profound simplicity. I know it sounds grandiose, but this is the type of work that all ’experts’ should strive to leave with us.

One of the best books I’ve read in a very long time. Seems to me our society could really use a good dose of whole systems thinking. We’ve gotten so good at breaking things into parts that we’ve forgotten how connected reality is. This book helped me reconnect the pieces and begin to experience the world from a whole systems perspective, and that makes all the difference. Because

changing the way we see things also changes the way we respond, whole systems thinking encourages us to figure out WHY things aren't working so we can improve our own society, instead of focusing on deciding who to blame.

As a systems engineer, this helps expand the scope of modern control systems towards human centric design and natural systems. It inspired me to model things like gene transcription and predator prey dynamics with bacteria and viruses. But don't be alarmed. Anyone can read and understand how to apply these concepts by broadening their scope of observation.

A book I immediately want to read again. Recommended especially for anyone trying to change the world. I felt less like I was reading and more like I was listening.

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