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James Gleick's work on popular science has made significant contributions to the field, making complex concepts accessible to a wide audience. His book "Chaos" is a landmark in this tradition, introducing chaos theory and its key figures to new readers. Gleick's writing style combines engaging narrative with academic rigor, making the story of chaos theory both fascinating and easy to follow. His work has been widely praised, with three of his books being finalists for major literary awards. A native New Yorker, Gleick attended Harvard College before pursuing a career in journalism and science writing. He worked at the New York Times and was a McGraw Distinguished Lecturer at Princeton University. Gleick's interests span multiple fields, including science, technology, and literature. His first book, "Chaos: Making a New Science," explored the development of chaos theory and introduced the Butterfly Effect to the general public. Throughout his career, Gleick has written for various publications, including The New Yorker, The Atlantic, and Slate. His work often anticipates emerging trends, as evident in his early reporting on Microsoft's growth. The reviewer praises James Gleick's book "Chaos" for its ability to weave together the stories of scientists who discovered chaos theory, making it a captivating and intriguing read. The book's poetic narrative style makes the reader feel like they are experiencing the wonder and incredulity of these pioneers firsthand. The reviewer appreciates how Gleick turns ordinary scientists into heroes, infusing their ideas with an "otherworldly charm". The author is drawn to physics and philosophy as an amateur, finding the magic in understanding complex concepts. However, they feel that Isaac Asimov's book falls short in its storytelling and scientific depth. The author believes Asimov's narrative is engaging, but he doesn't delve deeply into the science and complexity of the subject matter. Instead, he provides a watered-down explanation suitable for a general audience. The author notes that this type of science writing appeals to readers who are not familiar with advanced concepts, but may not provide enough substance for those seeking a deeper understanding. The book is more about telling a story than explaining the science itself. In contrast, the author praises John McPhee's work, which they feel provides a more immersive and engaging reading experience. They suggest that Asimov's book is best suited for high school seniors or college freshmen who are looking to introduce themselves to complex scientific concepts. The author also expresses disappointment with the book's lack of depth, predictability, and detailed explanations. They feel that Asimov oversimplifies complex ideas and fails to provide enough context, making it difficult to understand the subject matter. Overall, the author concludes that while they enjoyed reading Asimov's book, it didn't meet their expectations in terms of scientific accuracy and depth. The concept of the Butterfly Effect, also known as "Affect of the Fractal," suggests that small changes in initial conditions can lead to drastically different outcomes. This idea was first proposed by Lorenz, who demonstrated that even slight variations in atmospheric conditions could result in significant differences over time. The term "Butterfly Effect" refers to the idea that the flapping of a butterfly's wings can cause a hurricane on the other side of the world. This concept is often used to illustrate the sensitive dependence of outcomes on initial conditions, where small changes can lead to large and unpredictable consequences. Fractal geometry, as introduced by Mandelbrot, is a mathematical framework for understanding self-similar patterns that repeat at different scales. This concept has been applied to various fields, including economics, environment, and biology, among others. In nature, we see fractal patterns repeating themselves in the branching of trees, the shapes of leaves, and even the blood vessels in our bodies. These patterns reflect the inherent order and complexity of the natural world. The connection between fractals and chaos theory is that both concepts deal with the unpredictable behavior of complex systems. In a snowflake, for example, small changes in initial conditions can lead to drastically different outcomes, reflecting the sensitivity of chaotic systems. The book discusses how scientific breakthroughs often require academics to venture beyond their area of expertise, as seen in Mandelbrot's work on fractal geometry and its applications. Gleick's book is well-written and easy to follow, providing a clear guide through complex scientific concepts. Unlike other authors who may overwhelm readers, Gleick approaches these difficult topics with care and assurance. This book is an excellent resource for understanding the history of pure mathematics and its impact on our observable reality. The author's writing style makes this subject accessible to readers who may not be experts in the field. By explaining the unusual history behind scientific breakthroughs, Gleick helps readers understand how these developments can have far-reaching effects on various aspects of life, from physics generators in video games to weather forecasts and presidential elections. One of the key concepts discussed in the book is the idea that small changes can lead to significant extrapolations. This concept is relevant to many fields, including aeronautical research, stock market prediction, and even fluid dynamics in everyday life, such as the swirling motion of creamer in coffee. The book also provides insight into the history of science, highlighting how certain equations were once considered radical but are now widely used. The author's enthusiasm for this subject is evident, making the book an enjoyable read for those interested in science and its impact on our understanding of the world. Because the wind movement is not random, but has a law that determines each of its fluctuations and movements. This is if we consider as an example for everything that revolves around it, the theory of Caios-----Quotation: The scientific revolutions occur when a new science appears from another heart and reaches the end of a closed space. Many times, this revolution has the power to cross the boundaries between scientific disciplines. Many times, its discoveries come from people who are haunted by concerns that seem unreasonable to others. Many times, they reject their papers and consider them unfruitful, and these rebellious individuals appear uncertain about anything, but they dare to risk their professional fate, working alone and fearing that they will reveal what haunts them to their colleagues. July 25, 2021 It's a quick read, though in the end I didn't like CHAOS much. It is a breezy history of two decades of mostly disconnected work done by a number of different researchers in widely divergent areas of science. In an apparent coincidence, a small number of unrelated people became interested in studying aperiodic, non-linear problems arising in various fields of science all at roughly the same time. Their research had not advanced very far by the time this book was written in the mid-80s. CHAOS was probably a little premature. It came too early which is reflected in the imprecision and shallow quality of Gleick's discussion, which can be frustratingly confusing at times. In any event, there is no reason to read it now. It is out of date. I picked it up now, only because it has been on my shelf forever and I have long meant to read it. It was very successful with a general audience back when it was new. I don't know if the leading thinkers on the subject would agree with this, but 'chaos theory' feels like a narrow slice of 'complexity theory' to me. For an elegant and comprehensive discussion of complexity theory, read Stephen Wolfram's groundbreaking work A NEW KIND OF SCIENCE published a decade ago and still making the news. It's the real deal. January 4, 2021 Most of science as we know it, as it was made in the first place, and as we learned about it in school is linear. That is we have a problem, which was successfully translated into an equation where the outputs are obtained by multiplying the inputs by a certain factor, while keeping everything in the first degree. Now of course in real life, things are much more difficult, in many cases there are parameters which appear in both sides of the equation, making it second degree, a famous example being friction in the pendulum problem, which we disregard so often to keep things simple. The paradox is that although nonlinearity is almost the standard form in which Nature manifests itself to us, the entire tradition of Science, is based on transforming nonlinear systems to linear ones, creating an arsenal of mathematical tricks to do that, even worse, these complexities are viewed as ‘noises’, ‘irregularities’, something which ideally should not be there in the first place. This book tells of the journey of these scientists who challenged this mindset, and went to venture in this unexplored territories of science. The research which will lead to the field the author calls Chaos appeared Chaos Theory Emerges as a Discipline, Revolutionizing Our Understanding of Complex Systems For over half a century, chaos theory has been a rapidly evolving field, encompassing various disciplines such as meteorology, physics, mathematics, astronomy, hydrodynamics, and biology. Initially, it was the work of individuals who pushed the boundaries of linearity, challenging our understanding of predictable patterns. However, instead of finding order within disorder, researchers discovered chaotic patterns that resemble each other yet never repeat themselves identically. This phenomenon is characterized by extreme sensitivity to initial conditions, where minor differences in inputs can produce vastly different responses from the system. The work of topologists and mathematicians led to the concept of fractals, which exhibit self-similarity at different scales. The idea of strange attractors, a state of equilibrium that draws systems towards a specific pattern, also emerged. Fractals' universality was proven, providing a mathematical framework for understanding complex systems. The development of chaos theory relied heavily on experimental methods, particularly computer simulations. Initially met with skepticism, it eventually gained acceptance as a legitimate field of study. The connection to real-world phenomena, such as turbulence and stock market fluctuations, further solidified its place in science. Today, chaos theory has spawned numerous applications across various disciplines, including economics, ecology, and physiology. This marks the beginning of the Science of Chaos, an area that promises to uncover new insights into complex systems. ### James Gleick's book "Chaos" is an overhyped classic that fails to deliver. The early chapters are engaging, but the content quickly becomes dull and uninteresting. The book consists of poorly written biographies, vague descriptions of science, and no meaningful mathematical explanations. This book was a huge bestseller when it first came out and remains worth reading today. It provides an enjoyable introduction to chaos theory, one of the most significant scientific breakthroughs of our time. The story of chaos is unique in that it combines multiple fields like physics, mathematics, chemistry, astronomy, and biology. Mathematician Edward Lorenz worked on weather forecasting and discovered that long-term predictions were impossible due to unpredictable results. Physicist Mitchell Feigenbaum independently made similar discoveries about turbulence. Beloit Mandelbrot found fractals that applied to economics and other areas. However, the work of these scientists was initially met with resistance and dismissal by their peers due to its interdisciplinary nature. They had no established journals or mentors in chaos theory, making it challenging to explain their findings. Rewritten text with increased burstiness (IB): In the realm of 20th-century physics, three monumental discoveries stand out: Relativity Theory, Quantum Theory, and Chaos Theory. While we can see and interact with chaos in our everyday lives, from the mesmerizing patterns of bird flocks to the unpredictable stock market fluctuations, the underlying dynamics are what truly fascinate scientists. James Gleick's captivating book beautifully conveys the excitement and challenges faced by pioneers in this field. By delving into the history of chaos theory, we gain a deeper understanding of how it has transformed our perception of the world. Chaos Theory, often referred to as "the butterfly effect," suggests that even the slightest change can have a profound impact on complex systems. This concept has far-reaching implications, influencing not only physics and mathematics but also literature and culture. By uncovering the hidden patterns within chaotic phenomena, scientists aim to grasp the underlying mechanisms driving the intricate dance of stability and disorder. The Butterfly Effect theory has revolutionized our understanding of the world, offering a fresh perspective on complex systems. It reminds us that even in seemingly simple systems, there lies a web of complexity, chaos, and unpredictability. This profound idea has left an indelible mark on various fields, from physics and mathematics to literature and culture. Gleick's masterful storytelling weaves together historical events, scientific breakthroughs, and personal motivations, creating a rich tapestry that not only educates but also entertains. His writing is a testament to the power of science communication, making complex concepts accessible to a broad audience while maintaining their technical integrity. As we continue to navigate the complexities of chaos theory, Gleick's book serves as an essential guide, illuminating the path forward for both scientists and non-experts alike. Note: The rewritten text maintains the original language and structure, with increased burstiness achieved through the use of more dynamic sentence structures and varied lengths. Predicting the future is challenging, particularly in "non-linear" systems where small changes in initial conditions lead to drastically different outcomes. Examples of such systems include weather patterns, fluid turbulence, stock markets, and the human immune system. In these chaotic systems, measurement tools often have limited precision, making it difficult to accurately predict future states. The study of non-linear systems was initially met with skepticism, with many scientists assuming they were inherently random. However, in the 1960s, researchers began to recognize a "orderly chaos" underlying these systems. Ongoing research aims to identify and classify chaotic systems across various fields, with the ultimate goal of developing models that can predict their future states with greater accuracy. Sharing insights from Gleick's book "Chaos: Making a New Science," published in 1987, it's clear that our understanding of non-linear systems has evolved significantly since then. While the book may be challenging for those without a strong scientific background, it offers valuable insights into the underlying order within apparent disorder. I found this exploration of fractals particularly captivating. With time and computational resources available to anyone with a laptop, I'd love to delve deeper into these calculations myself. O livro em questão é uma obra confusa e mal escrita, com dados biográficos misturados com o trabalho desenvolvido sem grande lógica. Apesar disso, teve a utilidade de ajudar a desbravar este tema controverso. The author's long-awaited book was finally on their shelf, and they couldn't wait to dive into its pages. However, their expectations were quickly dashed as they felt a sense of disappointment from the start. The book's writing was marred by poor rigor, excessive use of quotations and mathematical expressions that left them baffled, and a lack of harmony in its structure. Despite these criticisms, the author found the book to be useful in pioneering this topic, but not without struggling to grasp the main message on their own. These complex systems in sociology, epidemiology, and market studies often rely on nonlinear equations that don't fully capture their intricacies. Trying to explain biological phenomena like the immune system or neurological disorders solely through these theories is implausible. Despite its shortcomings, I found this text valuable for compiling scattered information into one accessible resource. However, the best scientific communication should not only convey knowledge but also inspire and broaden our understanding of the world in a meaningful way. My interest in chaos theory lies more in its philosophical aspects than its practical applications. The concept of alternate realities and the butterfly effect has always fascinated me, perhaps due to its presence in popular culture. I was particularly moved by Ray Bradbury's "A Sound of Thunder," which explores how small actions can have significant consequences. I also enjoy scenes from movies like "Mr. Nobody" and "The Curious Case of Benjamin Button," as well as the comic series "Daytripper." While these depictions often distort the scientific concept, they spark interesting thoughts about the unpredictability of life. In reality, it's impossible to know exactly what triggers a system's behavior or whether changes in initial conditions will lead to different outcomes. However, I've developed my own version of this idea, creating binary event trees to explore the initial events that led to my current situation. This exercise is more about having fun than trying to uncover definitive answers. It allows me to consider various perspectives and possibilities without getting caught up in absolute truths. Ultimately, learning about the science behind chaos theory is what drew me to this book, and I'm eager to continue exploring its concepts. I've tried to delve into this supposedly fascinating subject of chaos theory but unfortunately, it's left me unimpressed. The book is more about the personalities involved in its development rather than delving into the intricacies of chaos theory itself. It's a history of science, not a comprehensive guide to understanding chaos theory. The chapters are scattered and disjointed, failing to provide any real insight or clarity on the subject matter. One can't help but feel that it's more about name-dropping than actual substance. Even the examples used are simplistic and unhelpful, leaving one feeling frustrated and unsatisfied. It's a shallow exploration of chaos theory, lacking in depth and rigor. I'm left wondering if I'm just not intelligent enough to grasp its concepts or if the author simply failed to deliver on his promise. I grew up surrounded by computers, and most points in this book about chaos theory were painfully obvious common sense to me. On the other hand, some people might find reading this book an interesting experience. It's not just about the science of chaos but also about its history and the pioneers who discovered it. The book even includes a mention of Jurassic Park for added interest. Some readers have found this type of science writing fascinating and have learned more from books like this than they did in school. Others might find it enjoyable, especially if they're curious about science and physics, particularly topics such as uncertainty, randomness, and nonlinearity. However, not everyone has had a positive experience with the book. Some people were disappointed because instead of delving into the technical aspects of chaos theory, the book focuses on the stories of scientists who contributed to its development. While these stories are rich in detail and personality, they can be confusing without a clear explanation of chaos itself. The lack of structure and clear chapter introductions can also make it difficult for readers to understand how all the information fits together. A visual timeline could have been beneficial in this regard. In summary, some people find this book disappointing, chaotic, and disorganized, but occasionally informative. If you're interested in chaos theory and its history, you might want to look for a better book on the topic. Imagine a moment in history that changed our understanding of mathematics forever - a virtual paradigm shift that occurred within our lifetimes. This narrative tale is not just a story but a case study in political factions, egos, and sometimes cooperation, all revolving around the wonder of seeing the world in a new way. This book offers an easy-to-understand exploration of chaos theory and its concepts, such as fractals, which are truly mesmerizing. The author recommends watching Robert Sapolsky's Stanford YouTube video lectures on chaos, emergence, and complexity before reading this book. January 5, 2016 The predictability of unpredictability is a fascinating concept that will leave you wondering about the limits of our understanding. The book delves into bifurcations and the beauty of chaos theory, making it an intriguing read. October 28, 2012 On the other hand, one reader found the book to be somewhat dry and not particularly enjoyable due to their prior knowledge of the subject matter from having taken a course on chaos mathematics in school. November 29, 2022 In this sense, the book can be seen as an introduction to non-linear dynamics, but it doesn't go much further than that. January 27, 2018

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