Investigations

Stuart A. Kauffman
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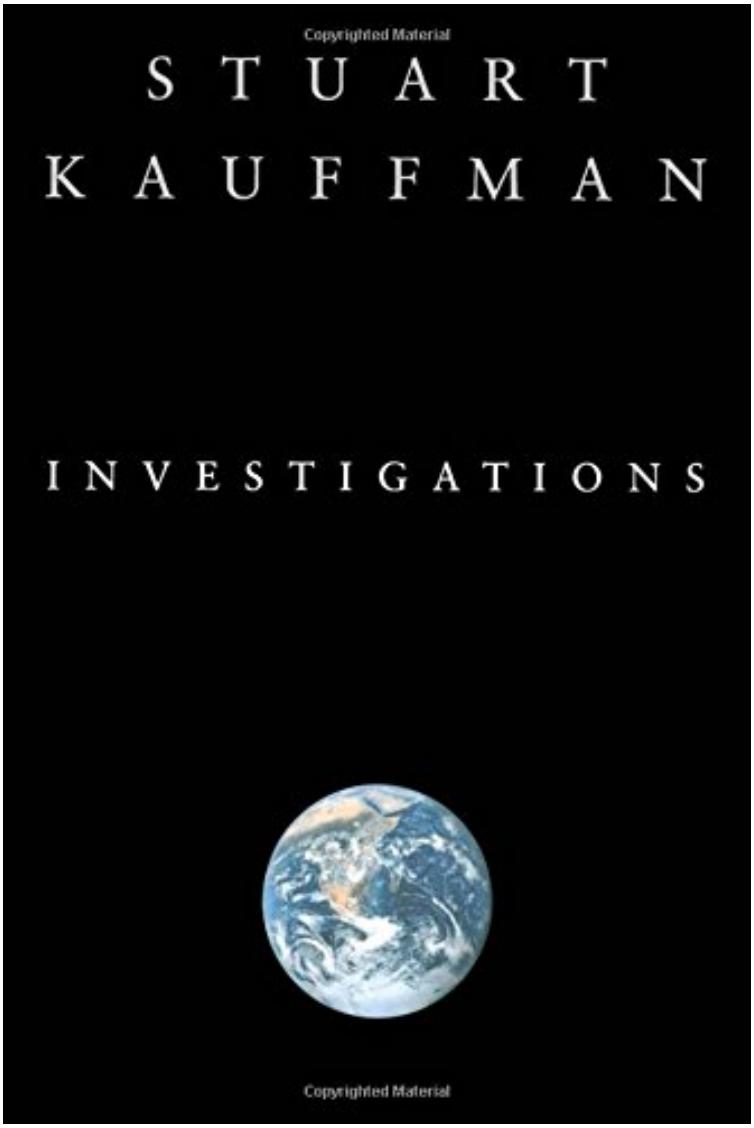

#1278179 in Books Stuart A Kauffman 2002-09-19Original language:EnglishPDF # 1 5.84 x .78 x 8.97l, .90 #File Name: 0195121058308 pagesInvestigations | File size: 36.Mb

Stuart A. Kauffman : Investigations before purchasing it in order to gage whether or not it would be worth my time, and all praised Investigations:

6 of 10 people found the following review helpful. Intellectually daringBy ACCGTGGTGACA...One of the most profound scientific books I have ever read...profound in its ambition to integrate results from so many (supposedly) distinct fields and weave them into a sort of grand unification theory of organizational dynamics.It is not laid out with the formality of a scientific paper or the rigor of a mathematical proof (and it doesn't claim to be), but the arguments

are very coherent and compelling, based on equal parts "hard" empirical results and computer simulation. It is above all clear that this is a culmination of Kauffman's 30+ years of work and that of his many colleagues.One word of caution: If you're not comfortable with basic physics, thermodynamics, and some non-trivial mathematical concepts, many of Kauffman's metaphors might be lost on you. It also helps to have read his earlier works and those of authors in related lines of research (John Holland, Ilya Prigogine). He tries very hard to make this accessible to readers with basic scientific literacy, but this is NOT layman's reading.0 of 1 people found the following review helpful. Five StarsBy Robert CallanUpdates Kauffman's previous work, and provides strong explanations.0 of 1 people found the following review helpful. Five StarsBy CustomerI love it

In the tradition of Schrdinger's classic What Is Life?, this book is a tour-de-force investigation of the basis of life itself, with conclusions that radically undermine the scientific approaches on which modern science rests-the approaches of Newton, Boltzman, Bohr, and Einstein.Kauffman's At Home in the Universe, which The New York Times Book Review called "passionately written" and nature named "courageous," introduced pivotal ideas about order and evolution in complex life systems. In investigations, Kauffman builds on these theories and finds that classical science does not take into account that physical systems--such as people in a biosphere--effect their dynamic environments in addition to being affected by them. These systems act on their own behalf as autonomous agents, but what defines them as such? In other words, what is life? By defining and explaining autonomous agents and work in the contexts of thermodynamics and of information theory, Kauffman supplies a novel answer to this age-old question that goes beyond traditional scientific thinking.Much of Investigations unpacks the progressively surprising implications of his definition. Kauffman lays out a foundation for a new concept of organization, and explores the requirements for the emergence of a general biology that will transcend terrestrial biology to seek laws governing biospheres anywhere in the cosmos. Moreover, he presents four candidate laws to explain how autonomous agents co-create their biosphere and the startling idea of a "co-creating" cosmos.A showcase of Kauffman's most fundamental and significant ideas, Investigations presents a new way of thinking about the basics of general biology that will change the way we understand life itself--on this planet and anywhere else in the cosmos.

.com How can you tell when a scientific theory is revolutionary? As a rule, when a distinguished scientist says he's come up with a fourth law of thermodynamics, he's wrong. Stuart Kauffman may be the exception. The three laws of thermodynamics have been summarized as: You can't win, You can't break even, and You can't get out of the game. Kauffman's candidate for fourth law is: But the game keeps getting more complicated, and there are always more different ways to play. One of Kauffman's key concepts is that of the adjacent possible. Imagine a set of things that exist in a particular system (such as a group of reacting chemicals, or an ecological community, or the kinds of toys available in a capitalist economy). The adjacent possible is the set of things that are only one step away from actual existence. Like potential energy in physics, the adjacent possible is a metaphysical idea with real utility. You can think of "normal science" (as described by Thomas Kuhn in The Structure of Scientific Revolutions) as proceeding step by step into the adjacent possible. Most self-styled revolutionary scientific treatises are really crackpottery. They don't stop in the adjacent possible; they go wandering across the landscape and over the speculative horizon. Investigations may be the real thing. Kauffman is pushing into the adjacent possible at many points, from biology, chemistry, thermodynamics, and economics. As he says, "whatever Investigations is--useful, as I hope, or foolish--it is not normal science." --Mary Ellen CurtinFrom Scientific AmericanKauffman's investigations concern nothing less than the nature of life. "It may be," he says, "that I have stumbled upon the proper definition of life itself." His deep and challenging argument runs as follows. Much of the order in living organisms is self-organized and spontaneous. "Self-organization mingles with natural selection in barely understood ways to yield the magnificence of our teeming biosphere. We must, therefore, expand evolutionary theory." The living organism, be it bacterial cell or human being, is a " 'propagating organization,' that is, that it literally constructs more of itself." This activity "has no statement in current physics or biology but constitutes that which constructs a bio- sphere." Kauffman, a founding member of the Santa Fe Institute, calls his actors autonomous agents and says we are on the verge of the capacity to create novel molecular autonomous agents. "When we do, or if we discover life on other planets and solar systems, science will enter a vast new phase in which we will create a 'general biology,' freed from the limitations of terrestrial biology." EDITORS OF SCIENTIFIC AMERICAN [REVIEW FOR AT HOME IN THE UNIVERSE:] "One of the pioneers of complexity theory is Stuart Kauffman, who lays out its rudiments in an accessible way with this challenging and audacious book."--The Economist[REVIEW FOR AT HOME IN THE UNIVERSE:] "Kauffman's explanations of his scientific work are concise and convincing.... Whoever reads Invesigations (At Home in the Universe) for its account of Kauffman's insightful models of adaptation and self-organization will find that the scientific results speak for themselves."--Seth Lloyd, Scientific American[REVIEW FOR AT HOME IN THE UNIVERSE:] "At home in the Universe is a condenmsed, passionately written version of Mr. Kauffman's 709-page magnum opus, The Origins of Order."--John Horgan, The New York Times Book "Investigations is fun in a way not many books of this intellectual magnitude are. Kauffman cuts the hard science with wit and pondering of the utmost human persuasion....With a mix

of speculation, cutting-edge science and hypothesis steeped in years of grappling with hard questions,...[this book] is sure to inspire and intrigue."--Frontwheeldrive.com"I have watched the long gestation of Investigations with some apprehension but more anticipation. Its reach is gigantic, from the most primitive origins of life to the macroeconomics of innovation. What comes up in its grasp is original and stimulating. This is a must read for anyone interested in the outer edges of understanding of the world around us."--Philip Anderson, Nobel Laureate, Princeton University