Einstein Was Right!

Karl Hess
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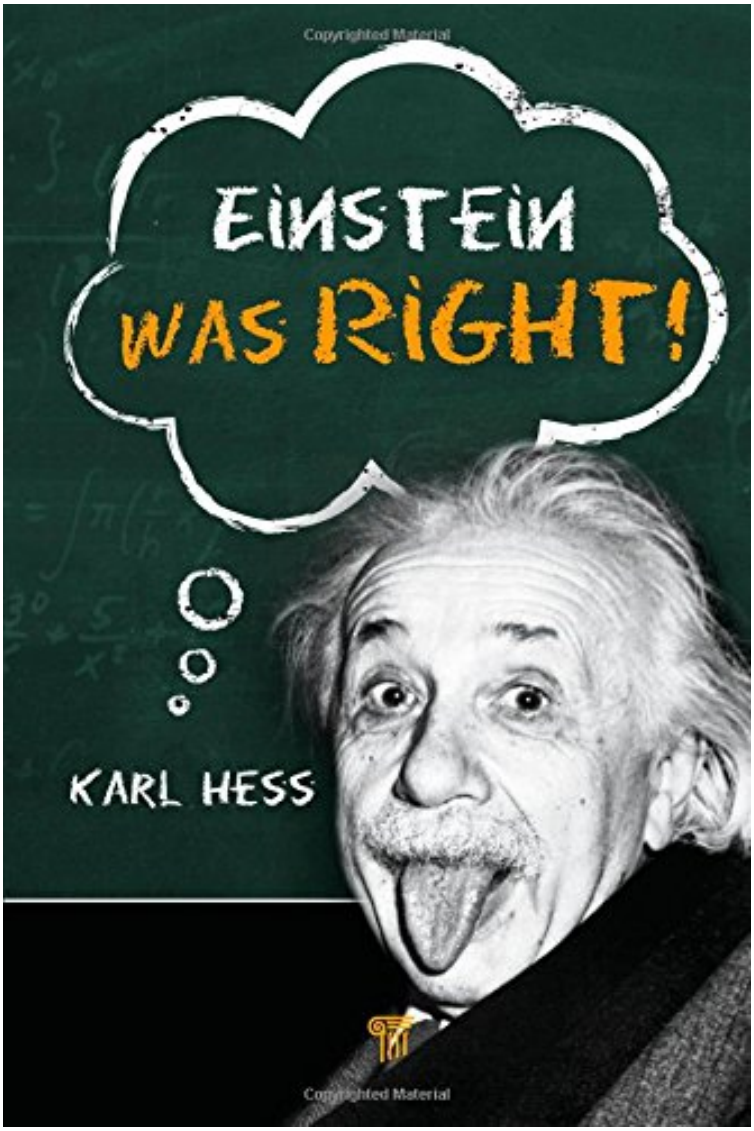

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Karl Hess : Einstein Was Right! before purchasing it in order to gage whether or not it would be worth my time, and all praised Einstein Was Right!:

7 of 12 people found the following review helpful. Hess was Right! (in hindsight)By gill1109 (Richard Gill)This book is fun to read. The main point of the author seems to be "Hess and Philipp were always right". The author tells, among other things, his side of the story of the conflicts between himself and his co-author (probabilist Walter Philipp), with statistician Richard Gill and physicist coauthors Gregor Weihs, Anton Zeilinger, and Marek Zukowski. What he doesn't tell is that the elaborate construction of an explicit counter-example to Bell's theorem, contained in Hess and

Philipp's 2001 PNAS papers, contained a little mistake - a forgotten subscript - which sank the mathematical part of their work. In our opinion, the more physical or meta-physical part was also flawed. We published our critique a year later in PNAS, http://www.pnas.org/content/99/23/14632The author also seems to think, in hindsight, that what Hess and Philipp had always been on about, after all, was actually the detection loophole (Pearle, 1970) and the coincidence loophole (Larsson and Gill, 2004). He suggests that J.-A. Larsson and R. D. Gill (2004) Europhys. Lett. 67 707 doi:10.1209/epl/i2004-10124-7 actually stole this whole concept from Hess and Philipp. Amusingly he also points out that another author had come across it some years before: Pascazio, 1986.So the author, Karl Hess, was always right. Perhaps Richard Gill should write a companion volume "Bohr was Right!!". But better still would be that a neutral third person wrote a history of these Bell wars. Passions ran high and people got very upset about one another. Hopefully everyone is now on speaking terms with one another again.After those stormy years (2001 - 2002), and after Walter Philipp's rather tragic death, Karl Hess teamed up with Hans de Raedt and Kristel Michielsen and worked with them on computer simulation of loophole models, as well as on re-discovery of the logic of Bell's proof (Boole ...).Interestingly enough, the original Hess and Philipp mathematical model could be "rescued" by renormalising. The point is that by forgetting the third index they had omitted to normalise probability measures to have total probability equal to one. Doing the normalisation properly corresponded to probabilistic conditioning on a detection. Thus Philipp's elaborate mathematical construction *could* in hindsight be interpreted as Yet Another Detection Loophole Model. The model of Pearle (1970) is a whole lot simpler, and later other authors came up with many alternative and simple models.However I don't see how the Hess-Philipp model can be rescued by converting it to a coincidence-loophole model. The *talk* in their paper (not the math) *was* all about "micro-time variables" and thus certainly sowed the idea in my mind of how the time of detections of particles needs to be taken account of in analysing experimental data of Bell-type experiments. Jan-Ake Larsson and I realised that if experimenters decide whether or not two detections belong to a pair of particles according to the time interval between the two detections, rather than according to the strict instructions given by Bell in his "Bertlmann's socks" paper, they are performing a *non-local* post-selection which could bias results one way or another. We definitely did not see any suggestion that this was what was going on in the Hess-Philipp work. But were gratified that Hess, de Raedt and Michielsen later also built on our findings!Nowadays experimenters are well aware of the coincidence-loophole problem and take steps to neutralise it. So indirectly, Karl Hess' work led to big improvements in the current experimental state of the art.Another amusing twist was that Hess and Philipp finally tried to "save" their own model in an unpublished paper (20 pages of small print) http://arxiv.org/pdf/quant-ph/0212085v1.pdf with the splendid innovation of local hidden variables in each wing of the experiment with probability distributions which depended on the settings in *both* wings of the experiment! Most people would not call this model "local" but Hess and Philipp gave themselves the prerogative to redefine the notion of "local" in order to get around this problem. And of course, these non-local hidden variables were not elements of reality, either. So Einstein was right: we just have to replace the word "spooky" by "local" and everything is fine again.6 of 8 people found the following review helpful. In this book, the author Prof. Karl Hess ...By Ursula CalefIn this book, the author Prof. Karl Hess enters the thought colosseum with physics giants, past and present, to debate a cornerstone of quantum physics known as Bell's theorem that is based on probabilistic concepts. It is the belief in Bell's ideas of instantaneous influences ("spooky action") at a distance that supports the popular notions that teleportation and parallel universes are possible. Einstein did not believe in such quantum non-localities, and instead put forth a local causal theory, based on his elaborate space-time concept, wherein elements of physical reality account for the mysterious correlations observed in experiments testing these ideas. This debate gets to the essence of the laws that govern nature. Karl Hess and his collaborator Walter Philipp argue "Einstein was Right!" all along, and that indeed "God does not play dice." These ideas are presented in terms of discussions and personal anecdotes, not in terms of mathematical theorems, that make them accessible to everyone who loves science. The book has the classic Karl Hess flavor... it is spiced with references to ancient philosophy and poetic quotations that inspire the reader to try to attain transcendent knowledge of the natural order of the universe.2 of 5 people found the following review helpful. The latest update to the Einstein-Bohr debate.By T. H. RayIt has been over a decade since Vienna-born-and-educated physicist Karl Hess and the late mathematician Walter Philipp (1936-2006) collaborated on a scholarly treatment that favors the Einstein-Podolsky-Rosen (EPR) local-realistic model of quantum theory -- popularly known by Einstein's famous quip, "God does not play dice." The key is to effectively include classical spacetime in the quantum formalism, such that demonstrating experimentally the role of time in correlated quantum events forms a deterministic model known as EPRB ("B" for the late theorist David Bohm, who conceived the framework). Such research is today considered flawed, by the great majority of quantum theorists and experimenters -- a priori and without debate -- who believe the question is firmly settled by the results of Bells Theorem and its experimental realization in the Bell-Aspect program (named for Northern Irish theorist J.S. Bell and French experimental physicist Alain Aspect), among others.Karl Hess is no fringe theorist, however. He is a professor (now emeritus) of a leading research institution (University of Illinois, Urbana-Champaign) with all the academic honors that usually attend such a position, and one high honor that few ever achieve: membership in the prestigious National Academy of Sciences (NAS) which is extended only by invitation, and whose Proceedings (PNAS) include influential papers of the world's top scientists.

This book is largely about Hesss failed attempt at getting the academy to recognize the Hess-Philipp result by publishing it. Because such publication is usually routine for academy members, and undertaken without independent review, question or reservations, the reader will be fascinated at the array of Whos Who in the physics world, lined up against Hess and Philipp to suppress publication and why.The seminal question that Hess asks about Bell-Aspect is, Does it do more than prove its own assumptions? This reviewer is not neutral on the question, and I make no pretense at objective detachment. I will say that being experienced in proving theorems, I have not personally found one proof of Bells theorem that can stand independent in its mathematical framework and proof method, from the assumption of its experimental results.Hess shows his considerable talent as a teacher, in setting up right away the mathematics and the physics of dependent and independent variables which motivates the question, and then drives straightforwardly by definition, mathematical reasoning, analogy, and example to where Bells physics fails to deliver on its foundational promise, and which leaves open the door to debate on whether a truly independent mathematical theory can, by correspondence with experiment in a local realistic manner, overturn the central conventions of quantum theory, such as nonlocality (action at a distance) and quantum entanglement. The book is easy to read, and requires no advanced mathematical knowledge.Whatever side the reader decides to take, Hesss story is sure to stir a chord that resonates with the liberating principle of fair play enshrined in the words of Joseph Joubert: It is better to debate a question without settling it, than to settle a question without debating it.~ T.H. Ray

All modern books on Einstein emphasize the genius of his relativity theory and the corresponding corrections and extensions of the ancient spacetime concept. However, Einsteins opposition to the use of probability in the laws of nature and particularly in the laws of quantum mechanics is criticized and often portrayed as outdated. The author of Einstein Was Right! takes a unique view and shows that Einstein created a "Trojan horse" ready to unleash forces against the use of probability as a basis for the laws of nature. Einstein warned that the use of probability would, in the final analysis, lead to spooky actions and mysterious instantaneous influences at a distance. John Bell pulled Einsteins Trojan horse into the castle of physics. He developed a theory that together with experimental results of Aspect, Zeilinger, and others "proves" the existence of quantum nonlocalities, or instantaneous influences. These have indeed the nature of what Einstein labeled spooky. Einstein Was Right! shows that Bell was not aware of the special role that time and spacetime play in any rigorous probability theory. As a consequence, his formalism is not general enough to be applied to the AspectZeilinger type of experiments and his conclusions about the existence of instantaneous influences at a distance are incorrect. This fact suggests a worldview that is less optimistic about claims that teleportation and influences at a distance could open new horizons and provide the possibility of quantum computing. On the positive side, however, and as compensation, we are assured that the spacetime picture of humankind developed over millions of years and perfected by Einstein is still able to cope with the phenomena that nature presents us on the atomic and sub-atomic level and that the "quantum weirdness" may be explainable and understandable after all.

"Professor Hess was the first (with Prof. Walter Philipp) who proposed to treat time as a kind of hidden variable and criticized the frequentist proofs of the Bell inequality. And this excellent book is about Hesss position, about stormy debates in which he actively participated during the Vxj series of conferences on reconsideration of quantum foundations. This book is about intriguing and still unsolved problems in the foundations of quantum mechanics as well as about its great future, its future beyond the Copenhagenian prison." Prof. Andrei Khrennikov, Linnaeus University, Sweden "This book is indispensable to anyone who is interested in knowing how paradoxes in physics are created, cultivated, and resolved. It paves the way for the demystification of the alleged mysteries of quantum physics." Prof. Hans De Raedt, University of Groningen, the Netherlands "This book describes in an empathic way the clash between two great minds in science. Did Bell definitely change the way we should look at nature, or was Einstein right after all? The author makes a convincing case." Prof. Theo Nieuwenhuizen, University of Amsterdam, the Netherlands "We often hear that experiments have revealed unmistakable violations of the Bell inequalities and, therefore, that nature allows instantaneous influence over long distances. In Einstein Was Right! Karl Hess convincingly shows that both claims are overstated. This happy blend of solid science, accessible prose, and personal recollections summarizes 15 years of research and debate with colleagues, collaborators, and opponents." Prof. Louis Marchildon, Universit du Qubec Trois-Rivires, Canada "Many books on this topic tend to either lose the reader in a mathematical maze or paint a picture with the broadest brushstrokes possible. Hess manages to strike an incredible balance, however. From the outset he candidly states to the reader that explaining such a complex subject is rather difficult without the use of some very basic mathematics. But he doesnt fall into the trap of relying on maths wholeheartedly to express his views. He continuously engages the reader by tackling concepts many have seen popularised throughout pop culture such as teleportation and space-time."Matt Gunther, Chemistry World, February 2015About the AuthorKarl Hess received a PhD in physics/mathematics from the University of Vienna in 1970. He has been a professor of both electrical engineering and physics at the University of Illinois at UrbanaChampaign since 1980 and has held the Swanlund Chair since 1996 (emeritus 2006). Hess has received a number of national and

international awards.