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1: Faust in Copenhagen: A Struggle for the Soul of Physics by Gino SegrÃ¨

Gino Segre's book, "Faust in Copenhagen: A Struggle for the Soul of Physics" (), is a delightful narrative on the early development of quantum mechanics. Niels Bohr is the central character in Segre's refreshing story set in and around the Danish capital in those fruitful interwar years - the s and s.

That year was the hundredth anniversary of the death of Johann Wolfgang von Goethe, the passing of the man, both humanist and scientist, widely regarded as the last true universal genius. As commemorations marking the occasion took place all over Europe, this small band of physicists at the annual informal gathering decided to have a celebration of their own. He is the author of A Matter of Degrees: A Struggle for the Soul of Physics. To be honest, only six of them were actually there. The seventh, Wolfgang Pauli, had originally intended to go, as he had in earlier years and would do so again, but he decided that spring instead to take a vacation. He was there in spirit, as you will see. All of them taught and mentored a generation of future scientists. The last of the seven, Paul Ehrenfest, was perhaps the greatest teacher of them all. Physics was fortunate to have at one moment a remarkable number of individuals to help create and shape the great revolution in science called quantum mechanics. Indeed, one could say that the revolution occurred because of them. Relativity, in the special theory of and the general theory of , was the work of a single individual, Albert Einstein. Quantum mechanics, on the other hand, emerged in â€”26 only after a long buildup. Its details evolved over time, and its meaning continued to be debated for years. Its final version, the so-called Copenhagen interpretation, was contested even by some of the creators of the revolution. The questioning has not ceased. Together Pauli, Heisenberg, Dirac, and the others created something remarkable, something that has changed all our lives in a practical sense more than any other twentieth-century scientific upheaval has. The inventions it led to, such as the transistor and the laser, are both implements that affect our daily activities and tools for future research. Among them we find the gregarious and the withdrawn, the philanderers and the faithful, the rooted and the wanderers. Some were abstemious and others drank too much. There were perhaps a disproportionate number of music lovers and mountain climbers among them, but that may be because they had been told these are things physicists do. Their working habits differed: Some always worked alone and others required discussions with their peers. But the founders of quantum theory had one thing in common: They had a second common trait, perhaps not independent of theoretical-physics genius. Three of the scientists, all born between and , stand out for their precocity: All of them had revealed their powers and were famous in the field by the time they were thirty. Among all these physicists, one stands out for his personal impact on the field and on the others, not simply for his thought or achievements. I was surprised to read it, for my generation does not think of Bohr this way I confess to being a theoretical physicist myself, though hardly in the range of geniuses. But the more I delved into the matter, the more I came to understand its truth. In the process of wielding this power, Bohr also became the most loved theoretical physicist of the twentieth century. Respect and admiration were feelings young physicists had for all of these greats, but love is something different. Yet it is a term that appears again and again in memoirs when physicists speak of Bohr. They were all secure in the knowledge of their own stature, but Bohr had an almost childlike innocence about such matters. There are countless examples of people owing him their positions, their careers, and sometimes their very survival. He had a sense of who was in need, when and how to intervene, and how to make a difference. But combined with all this was something else that seems to have played a role. His discussions were carried out as a kind of Socratic dialogue in which he slowly shaped and molded his thoughts, so much so that some said he was a philosopher, not a physicist. Bohr also loved paradoxes, believing that seeing the many sides of a problem was the way to reach resolution and clarity. His close friend Einstein described him as uttering "his opinions like one who perpetually casts about, and never like one who believes he holds the whole defining truth. He made others feel needed because he did need them. Bohr was certainly a great man and without guile, but his constant engaging of those he was involved with was a major factor in creating the love they felt for him. Another of these theoretical physicists was also much loved, though his peers would use that word guardedly. Later generations find the love for him to be even more puzzling than that for Bohr. He forms an interesting contrast

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2: Faust in Copenhagen | Gino SegrÃ¨

In "Faust in Copenhagen", Gino Segre takes the reader through the history of the development of the theory of quantum mechanics by looking at the people and their work that made the revolution possible.

First edition, first printing. Signed by the author on the title page. He writes here about a pivotal time in the history of science as well as the history of the world and how they intertwined. Payment is expected via PayPal within 48 hours of auction end. Items are guaranteed as described. Please see "condition" section for a description of any flaws or condition issues. Additional images available upon request. International shipping may be extra; international customers please contact before paying. Items may be returned within 14 days in same condition as sent for a full refund. Buyer pays return shipping. Please contact before initiating a return. Seller assumes all responsibility for this listing. Shipping and handling This item will ship to Germany, but the seller has not specified shipping options. Contact the seller- opens in a new window or tab and request a shipping method to your location. Shipping cost cannot be calculated. Please enter a valid ZIP Code. Lansdowne, Pennsylvania, United States Shipping to: Worldwide No additional import charges at delivery! This item will be shipped through the Global Shipping Program and includes international tracking. Learn more- opens in a new window or tab Change country: There are 1 items available. Please enter a number less than or equal to 1. Select a valid country. Please enter 5 or 9 numbers for the ZIP Code.

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A Struggle for the Soul of Physics Finalist in the Los Angeles Times Book Fair Winner of the American Institute of Physics Award for Best Science WritingÂ-Â-Â-Â-Â-Â-Â-Â-Â- In the glorious years of quantum mechanics' discoveries were coming to an end and the focus was now turning to the atom's very core, its miniscule but.

By Gino Segre [6. That year was the hundredth anniversary of the death of Johann Wolfgang von Goethe, the passing of the man, both humanist and scientist, widely regarded as the last true universal genius. As commemorations marking the occasion took place all over Europe, this small band of physicists at the annual informal gathering decided to have a celebration of their own. He is the author of A Matter of Degrees: A Struggle for the Soul of Physics. To be honest, only six of them were actually there. The seventh, Wolfgang Pauli, had originally intended to go, as he had in earlier years and would do so again, but he decided that spring instead to take a vacation. He was there in spirit, as you will see. All of them taught and mentored a generation of future scientists. The last of the seven, Paul Ehrenfest, was perhaps the greatest teacher of them all. Physics was fortunate to have at one moment a remarkable number of individuals to help create and shape the great revolution in science called quantum mechanics. Indeed, one could say that the revolution occurred because of them. Relativity, in the special theory of and the general theory of , was the work of a single individual, Albert Einstein. Quantum mechanics, on the other hand, emerged in â€”26 only after a long buildup. Its details evolved over time, and its meaning continued to be debated for years. Its final version, the so-called Copenhagen interpretation, was contested even by some of the creators of the revolution. The questioning has not ceased. Together Pauli, Heisenberg, Dirac, and the others created something remarkable, something that has changed all our lives in a practical sense more than any other twentieth-century scientific upheaval has. The inventions it led to, such as the transistor and the laser, are both implements that affect our daily activities and tools for future research. Among them we find the gregarious and the withdrawn, the philanderers and the faithful, the rooted and the wanderers. Some were abstemious and others drank too much. There were perhaps a disproportionate number of music lovers and mountain climbers among them, but that may be because they had been told these are things physicists do. Their working habits differed: Some always worked alone and others required discussions with their peers. But the founders of quantum theory had one thing in common: They had a second common trait, perhaps not independent of theoretical-physics genius. Three of the scientists, all born between and , stand out for their precocity: All of them had revealed their powers and were famous in the field by the time they were thirty. Among all these physicists, one stands out for his personal impact on the field and on the others, not simply for his thought or achievements. I was surprised to read it, for my generation does not think of Bohr this way I confess to being a theoretical physicist myself, though hardly in the range of geniuses. But the more I delved into the matter, the more I came to understand its truth. In the process of wielding this power, Bohr also became the most loved theoretical physicist of the twentieth century. Respect and admiration were feelings young physicists had for all of these greats, but love is something different. Yet it is a term that appears again and again in memoirs when physicists speak of Bohr. They were all secure in the knowledge of their own stature, but Bohr had an almost childlike innocence about such matters. There are countless examples of people owing him their positions, their careers, and sometimes their very survival. He had a sense of who was in need, when and how to intervene, and how to make a difference. But combined with all this was something else that seems to have played a role. His discussions were carried out as a kind of Socratic dialogue in which he slowly shaped and molded his thoughts, so much so that some said he was a philosopher, not a physicist. Bohr also loved paradoxes, believing that seeing the many sides of a problem was the way to reach resolution and clarity. His close friend Einstein described him as uttering "his opinions like one who perpetually casts about, and never like one who believes he holds the whole defining truth. He made others feel needed because he did need them. Bohr was certainly a great man and without guile, but his constant engaging of those he was involved with was a major factor in creating the love they felt for him. Another of these theoretical physicists was also much loved, though his peers would use that word guardedly. Later generations find the love for him to be

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In the Copenhagen "Faust" he has a cameo role â€" the king leading his pet fleas. In Goethe's telling, no one in the court dared complain about the pests, and so it was, the devilish Pauli.

Mephistopheles says that while formal education The Matrix Werner Heisenberg, whose development of matrix mechanics yielded the uncertainty principle, said that one challenge of quantum theory is that it does not have an adequate language beyond mathematics to describe it. One treadle moves a thousand lines, Swift dart the shuttles to and fro, Unseen the threads together flow, A thousand knots one stroke combines. Heisenberg, while arguing that science must be as attentive to imagination as to logic, also seems to be suggesting that novel sciences must be described by novel languages. Since the primary concern in theoretical physics today is reconciling quantum mechanics with relativity through proposals such as string theory, poetry can be thought of as an experiment in physics and physics as a field test for poetry. Physics is the study of physical reality, which, to my mind, includes spacetime, language, poems, people, consciousness, and agency. In literary terms, string theory could be considered to be a critical theory; it not only describes physical elements, including elementary elements, within spacetime, it attempts to describe spacetime itself. What is the significance of these open and closed strings in relation to clinamen occurring in not just artistic contexts but in physical reality, as demonstrated by how probability functions in subatomic phenomena of mechanical systems? Poetry, which could be considered a mutation on physical and conceptual reality, replicates through the ricochet of pattern periodicity, symmetry, order and swerve deviation from pattern, chance toward novelty, or what might be thought of as the poem itself. Along with the expanding and accelerating multiverse, our understanding and experience of physical reality expands and accelerates at varying scales subatomic, eye level, astronomical. We create and use technology like our microscopes and telescopes to interact more deeply with these scales, and as such technological advances proliferate so do our capacities to perceive, perform, and create through other mediums. Poetry that is attentive to its multiversal form as a novel technology also operates within and beyond these varying scales through the known and unknown dimensions of physical reality. Applied to scales at eye level, the notion that the future cannot be predicted with any certainty because it is impossible to describe the present without ambiguity reinforces the idea that time operates outside of conventional notions of linearity. Within the context of a poem, where ambiguity can operate on multiple levelsâ€"in meaning, sight, and soundâ€"time as a linear or nonlinear experience can occur or not occur in a recognizable pattern. This is one way that quantum mechanics conceives of timeâ€"and logicâ€"in a novel way. In quantum poetics, such breakthroughs in physics can be applied to physical reality at all of its scales, visible and invisible, including cultural and creative scales, and, more specifically, to language and what I might call its matrix mechanics, poetry. In contrast to notions that electrons in atoms moved in orbits like planets, matrix mechanics describes the motion of electrons as jumps or leaps from one quantum state to another, reminiscent of clinamen, and evoking the possibility that clinamen could be a physical force like electromagnetism or gravity that exists not only in creative systems but also in physical reality. However, poetry can usurp conventional interactions with reading with the reader experiencing language outside linear notions of time, which might include time slowing, speeding up, or inducing a sense of no time, or a sense of all times at once, where the simultaneity of times can occur between differing or distinct time scales. In poetry, like in quantum mechanics, the future cannot be forecasted with certainty, and any measurement of its physical reality, including its meaning, might only be described in terms of probability. Of course, applying discoveries and theories in the natural sciences to sociological, phenomenological, or artistic interpretations of reality can be problematic because correlations sometimes assume a causal relationship between what are conventionally thought of as different modes of inquiry. At the same time, the academic and practical divisions between the natural and human sciences seems to be part of a systemic artifice perpetuated by cultural institutions that serve to protect distinct disciplines from interdisciplinary, and therefore competing, authorities. To my mind, whatever human consciousness is, it must be partly comprised of electronsâ€"the subatomic material of physical realityâ€"and breakthroughs in describing subatomic or even astronomical

phenomenon are also breakthroughs in describing reality at eye level, which is just one, though perhaps our most obvious, encounter with existence. A great example of successful translation within a discipline is the time in which Faust in Copenhagen focuses, where open, respectful, and rigorous discourse among the practitioners of physics was practiced. The community that Heisenberg, Niels Bohr, Wolfgang Pauli, and others created and maintained in those years before World War II revolved around institutional and personal mentorships, thinking together and debating in both formal and informal settings, and finding ways to disagree and persuade while furthering conversation. I was especially interested in how peaceful the intellectual conflict regarding quantum mechanics between Bohr and Albert Einstein played out. Einstein never really came around to quantum mechanics as interpreted by Heisenberg and Bohr, and continuing debates about relativity and quantum mechanics are at the center of theoretical physics today. Bohr and Einstein seemed to both feel deeply about the accuracy of their positions but also seemed to understand the value of inquiry enough to debate without manipulation, aggression, defensiveness, or personal attack. Translation is also a political discourse with its inherent interest in expanding communication and experience between cultures. It also seems to be a conceptual discourse in its iterations where translations occur between distinct creative genres. In other forms, translation is a discourse of imaginary solutions that occurs between disciplines like physics and poetry, computer science and visual art, philosophy and ecology. Perhaps due to the inescapable result of mistranslation, the act of translation is thus always a creative act, evoking more questions than it can resolve. This is one result of communicating across languages, disciplines, genres, and forms in the multiverse.

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faust in copenhagen By Gino Segre [] The contrast between the two [Bohr & Pauli], the affection felt for both of them, and the affection they felt for each other, is manifest in a skit put on by the young physicists at the April Copenhagen meeting.

7: FAUST IN COPENHAGEN | www.enganchecubano.com

In Faust in Copenhagen, Gino Segre, nephew of the great Italian scientist Emilio Segre and himself a physicist of distinction, has found a fresh approach. He uses as backdrop a tradition among the.

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About Faust in Copenhagen. A physicist himself, Gino SegrÃ¨ writes about what scientists do?and why they do it?with intimacy, clarity, and passion. In Faust in Copenhagen, he evokes the fleeting, magical moment when physics?and the world?was about to lose its innocence forever.

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FAUST IN COPENHAGEN. In April seven physicists, six men and one woman, attended a small annual gathering in Copenhagen. To be honest, only six of them were actually there.

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