A Real Life – Freeman Dyson

Mathematician and physicist Freeman Dyson has died at the age of 96 recently. He was a legend and a 'Polymath' – *a person of wide ranging interests and learning*.

He grew up in England and was engaged in WWII think tanks to solve the Hitler Problem. The most interesting ideas he had were a precursor to his mathematical insights.

He advocated some strange theories, but under closer examination, they were always interesting.

For example, he theorized that it would be well to let Hitler think that the V2 Rocket was a great success. Feynman said that the Nazi's were draining their resources and talent backing an ineffective weapon. He said that their steel and manufacturing know how was wasted on the 'super weapons' They would be much more dangerous if the material and skill were devoted to ME-109 Fighters and more Tiger Tanks.

London was already a fortress and the V2, although spectacular, did not affect the Allied War Effort in the way envisioned. So, he advocated the Allies to encourage Hitler to invest more in an effort that would drain Nazi Germany quickly.

His main claim to fame centered on his ability to recognize combinations of things that led to new things. He was a great teacher/collaborator and raconteur. This turn of personality is often ignored, but it is vital. Scientists of Dyson's caliber are often charming and interested in music and art.

His principal contribution to physics was to marry ideas of Richard Feynman, Julian Schwinger and the Japanese physicist Tomanoga. To the astonishment of all, he showed that the seemingly disparate ideas were really one, single and powerful idea. Click Here to see the YouTube Video as Dyson explains how he became famous.

I had one interaction with the great man. It was a casual exchange of thoughts on an unsolved problem. He was very gracious. I was directed to him by a personal friend of his, who thought that we should meet. That was really a stretch. What the person really may have thought was that he and I share similar work habits.

Being a Polymath, his interests ranged far and deep. He helped design very small nuclear reactors for medical use that are still in service. Pivoting on that thought, he wanted to build space craft powered by tiny nuclear reactors firing off controlled explosions. This was killed by those worried about radiation effects on Mars or something. <smile> The usual social backlash stopped the Space Ship adventure.

He had a lot of ideas about the future, namely how would the universe occupy itself when dealing with infinity and expansion? Acceleration that was constantly increasing intrigued him and led him to postulate the meaning of a complex last moments of the universe and the possible nature of a supreme being. He was a fan of science fiction writers.

He became a fixture at the Princeton Institute for Advanced Study, where he obtained a full tenured professorship. Being open allowed him to interact with all the great minds of the 20th Century.

His relationship to Nobel Laureate Richard Feynman was particularly formative. Dyson exploited their relationship to the betterment of all. According to his own self-analysis, he was very good at mathematics, but not a great and intuitive physicist like Feynman, Hans Bethe, Einstein, Dirac, Heisenberg, Bohr, Fermi and others.

His great contribution was a marvel of observation allowing him to see and make others see that the complicated mathematics was really simplified by drawing his diagrams. That Feynman's Diagrams were really the complex mathematics explained clearly was a bombshell. It was a tour de force of observation that Polymath's are very good at. They understand widely because they observe closely.

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