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Abstract for an Invited Paper
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Leo Szilard Lectureship Award Talk: From Reductionism to Complexity; A Theoretical Physicist's Journey into Biology and the Social Sciences
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In this talk I review how a high energy physicist serendipitously migrated from quarks and gluons, dark matter and string theory to thinking about equally big topics like why we live for 100 years (and not a thousand or 2-3 like a mouse), how is this generated from molecular time scales, why do we sleep and where does 8 hours come from, and how is this related to the rate at which we evolve, can there be a quantitative, mathematisable science of cities and companies, and can our exponentially expanding socio-economic universe be sustained, etc, etc? I consider these as integral parts of physics, related to the interface between Reductionism and Complexity, Thermodynamics and Information Theory. The saga will be a personal one ranging from issues connected with the demise of the SSC and attacks on science to the future role of physics and transdisciplinary thinking.