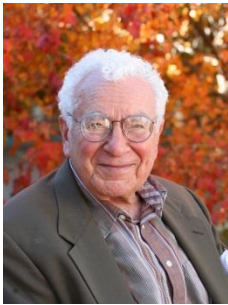


MURRAY GELL-MANN**Trustee, Science Board & Distinguished Fellow, Santa Fe Institute**

Murray Gell-Mann received the 1969 Nobel Prize in physics for his work on the theory of elementary particles. He is currently Distinguished Fellow at the Santa Fe Institute (which he helped to found) as well as the Robert Andrews Millikan Professor Emeritus at the California Institute of Technology, where he joined the faculty in 1955. Gell-Mann's seminal contributions to physics include work on the renormalization group, the theory of the weak interaction, quantum field theory on the mass shell, and the theory of quarks and gluons, which are the fundamental building blocks of the strongly interacting particles. Recently Gell-Mann has worked on issues of simplicity and complexity and on alternative forms of entropy. In addition he has worked with James Hartle on the interpretation of quantum mechanics in terms of decoherent histories. He has also spearheaded the program at SFI on the Evolution of Human Languages.

A Crude Look at the Whole (CLAW): A Reflection on Complexity

When we think about the future of a very complex system (which could even be the human race and the rest of the biosphere of our planet) we naturally break up the subject matter into many parts or aspects, for example, security issues, economic issues, social issues, environmental issues, cultural and ideological issues, and so on and so forth. We might produce a shelf of books on these various aspects of the world "problématique". But we should not believe that those books would give a valid picture of the problems of the world. The world situation is not even approximately decomposable. The various parts or aspects are all in strong interaction with one another. In that sense, the whole is not equal to the sum of its parts. At the very least, we might supplement our shelf of books on the various sets of issues with at least one volume, a very fat one, on how they fit together and influence one another. In that way we could begin to study the whole without attempting to identify it with the sum of its parts. But of course dealing with the whole human race and all of its major problems is not a straightforward matter. It can only be done very crudely. That is why I speak of CLAW, a Crude Look At the Whole. We must learn how to take such a look and not be discouraged by dwelling on all the errors and incongruities that must inevitably leak in. We can hope that with practice we can get better and better at this task of taking a crude look at the whole.