I'm first going to start out talking about what is complexity theory. In this I owe a great deal to a colleague at York, Brenda Zimmerman. She is one of the co-authors of the book *Getting To Maybe*, that we worked on together. She's also someone who really mastered the whole concept of complexity theory, which came out of physics initially, and one of the first to realize the implications of that kind of theory for managing and leading and transforming systems in our world. She developed a whole series of ideas and tools and techniques one can find in her writing, particularly in a book called Edgeware. She wrote it a number of years ago. And it still remains a cutting edge piece of thinking about complexity theory.

One of the questions which she poses very often when she first starts talking about it is to say, to the extent that you have tried to create or activate change in the world, which of these two pictures is closer to the experience? Is it one of saying I'm taking a walk on a quiet morning, I'm trying to get down to where those trees are and I'm going to walk along this beach until I get to them, with really nothing to distract me but the sun and the sound of the lapping water and maybe a few birds? Or am I trying to navigate that stormy ocean where whatever I do only lasts for a second before another wave slaps me and I have to move in a different direction?

Most people who have been working extensively to try to create change will say that it's absolutely the second picture. That they don't experience their work, their lives, their relationships as a calm walk down the beach. That they're continuously taken off-guard and surprised. That there isn't a straight line leading from where they are to where they want to go, but it's a constant process of adjustment, while still trying to maintain the direction in which they're heading.

At an experiential level, many, many people have already got this idea that they're living in a complex world. There's some empirical data that we are. For many years most of our theories in management and leadership, etc., and even about change, were based on the work of Isaac Newton. It was a Newtonian approach to the world. If you're in social science or in science you'll know that most of your methods, or certainly a large part of the methods we use, are based on this notion of cause and effect. We believe that if we just collect enough data in a rational and systematic way that we can know the future as well as the present.

But behind that assumption is the assumption that the world is something that you can take apart. You can dissect the discrete parts one from another and see how it works, much like taking a clock apart. Sometimes Brenda refers to this as *clockware*, because it's the idea you can take a clock apart, you can see how all the pieces function, then you put it back together again, the clock will continue to work. It has these separate mechanical parts, each doing its own job.

The early theories about how social systems worked had an aspect of this kind of clockware: every piece of the social world had a function. The church had a function, the family had a function, the corporate sector had a function, and they all helped to keep the body social healthy. If you could really understand what made it tick by just looking at each of the parts, understanding exactly what it was doing and assuming that it contributed this function to the whole.

In this model too, phenomena were a simple cause and effect relationship. Many of the statistical and methodological practices in science and social science are still geared to that notion that what we're looking for is cause and effect, and that our role as scientists or in technology or as leaders is to predict that future by understanding cause and effect, and by getting enough data to do it.

For many years this seemed to prove to be true. One of the big intractable problems that we're involved in right now, which is the problem of the natural environment and its rapid deterioration, climate change being a good example of that, stems from our belief that with this understanding of cause and effect and data, we could get a lot of control over nature. In getting control over nature we don't have as many things that disturb and get in the way between ourselves and the goal. The idea was of taming all of nature so that it *did* look like that beach that we could just stroll along.

We've had a fair amount of success in doing that. In medicine we've eradicated so many of the childhood diseases through vaccines or through antibiotics. When you think how many children died even 150 years ago, the notion of having a family was a very different one than today. We ironed that out. We developed the antibiotics and the vaccines that meant that we could depend on most of our children living to adulthood at least. We have found ways to shelter ourselves from the weather, to ensure that we get from one place to the other in the same amount of time; to mine and bring fuel to the surface that can power the machines that can reliably produce what we need to produce to keep the economy alive.

It was a metaphor, a way of looking at the world, which worked, and it worked for a long time.