

## Complex problems | Simple, complicated, complex

**One of the things that helps** to ground this, is to actually understand what *makes* a problem complex. While we can see that the world is more interconnected and that the world is becoming more complex as a system, not all problems have that same degree of complexity. Again, Brenda's developed in her work the notion of simple, complicated, and complex. She's not the only who uses these terms in complexity theory.

**She has some lovely examples** of what these different kinds of problems are. So, she says, "*Simple is following a recipe.*" You can say that a recipe's essential. You want to bake a cake. That's your problem, so you follow a recipe. You need it, because you don't know how to make a cake without that recipe, but they've been tested. The relationships that make that cake have been tested time and time again.

**Barring a real problem**, you don't have the ingredients or your stove is 100 degrees off what it should be, the likelihood is that if you follow the steps in that recipe, which tell you which ingredients to use and how to combine them—it is a system, because it has different elements you need to combine—you're likely

to be able to produce a decent cake. You don't need any particular expertise. You don't need to be trained for ages. This is the whole point of recipes. Knowing how to cook will maybe increase the success because you can understand some aspects of it, but you don't need to have a vast amount of training to follow a recipe. They produce standard products over and over again. You have a high certainty of getting almost exactly the same result each time.

People who are good at cooking—you go into a French bakery, for example, looking at the bread—they absolutely produce the same result time and again. They're very exact about the temperature of ingredients, exactly which ingredients combined when, what temperature room, but they have those different elements. They know how to combine them, and they get the same result over and over again.

**Many of our problems** are simple problems.

**Complicated requires** a bit more expertise. What Brenda uses to talk about complicated is sending a rocket to the moon. This is a lot more complicated than getting dressed in the morning or baking a cake. You do need

more elaborate formulations. There are subsets of formulations. It isn't just shirt, pants, shoes. There are different components and each one has its formula. When you're successful in sending one rocket to the moon it increases assurances, but it is a lot of experimentation to develop something as technologically sophisticated as a rocket. You can have disasters even when you think we've had it right, as we know from the space program.

**A lot of high-level expertise** is required—so, unlike getting dressed or baking a cake. If you're going to work on the design and launch of a rocket, you have to have a lot of training in very specialized fields. Then you have to be able to coordinate with other people who have specialized areas.

**Once you've got the prototype** down, most rockets that are made are similar in some very key ways. There are some basics of physics and material, and engineering that are going to be similar across all rockets. Every rocket is not different in all its unique properties. After that experimentation with the right expertise and the right materials,

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you still have a high degree of certainty about the outcome.

**Most of our technology** is based on this kind of complicated thinking. Building new technologies, building new machines, is a complicated challenge. In human systems some of our basic organizational challenges are complicated in that kind of way. You may be wanting to produce a car. You need to design your workforce, and the flow, and their connection to that in certain kinds of ways. There's a repertoire of that. One of the things that business schools and management talks a lot about is different ways of organizing in order to produce different kinds of things. It's not infinite. With the right expertise you can sort it out. This is really the dominant approach. We tend to treat most problems as if they're complicated. It's still the dominant mindset, but you can see how linked it is to the Newtonian approach that I talked about before.

**Complex problems**, in Brenda's example—which I've always thought was brilliant—is raising a child. When you raise children ... you may not have children yet, but you can also

think of this in terms of relationships that you form, romantic relationships for example. Formulae have only a limited application.

**If you go into a bookstore** there's an infinite number of self-help books about how to have a relationship or how to raise a child. However, none of them work particularly well. People read them because of their anxiety. You can try it, and it's pretty hit-and-miss whether it works or not.

**Part of the challenge** is that having one relationship that seems to go well, or raising one child and it works out, is actually no guarantee that the next one is going to work out equally well. Similarly, if one works out badly, there's no guarantee that the next one won't work out perfectly well. What that means is that your expertise doesn't do you much good.

**It's hard to be on a learning curve**, despite what experts say, about how to have romantic relationships or raise children. Why is that? Because every child and every person that you would become involved with romantically is unique. They're quite different. The *relationship* is what is key.

**Depending on who** that person is and their nature, or that child and their nature, you become a different person. It calls out different parts of you. Because they're different and they're essential, the relationship between you and that person is also different. It really brings out different parts of the self. Whether it works or not is a constant process of tuning your own expectations and desires to the shifting, changing expectations and desires of the other person. It's a constantly evolving landscape.

**Many, many problems** these days are complex. When you look at those aspects that you don't need expertise, relationship is everything, it's constantly changing, and each one is unique and different, you begin to see how you have to bring a different mindset to the notion of *solving* that problem.