

Complex problems | Connectedness and feedback

Another example, which has been studied extensively of course, was the mortgage crisis in the US. It went much further than anybody predicted and one of the astonishing things about that was, that even at the time, nobody could explain it for a while. That was very disturbing to everybody. If only you could just point to, "*Well this caused this huge meltdown.*" But they couldn't. There were a bunch of theories that were floating around, none of it explaining the whole. It's taken years to unpack it.

It's like one thing would breakdown, then you would have these cascading breakdowns. I don't know whether you remember but ... I can't even remember the exact date, but it was at least ten years ago when you had the power outages that affected the whole Eastern Seaboard. There was a really technical case of the over-connectedness of the system.

The power grid might have a breakdown in one place, but the impact of that spread to very remote areas that weren't affected by the conditions that set the initial breakdown in motion at all, but were connected by that breakdown. We talk about these cascading

affects that you get in complex systems; herding behaviour where on the social side of it there's a hysteria where people tend to imitate the behaviour of others, while still being quite removed, perhaps, from the experience that—if you could use the word causality there—is causing that initial activity.

Collective opinion forms and becomes a reality, becomes treated as fact, even if it isn't fact. Who can control that? No scientist, that's for sure. The feedbacks cause extreme sensitivity to small perturbations. Some small thing that happens in what seems like a localized area can, because of this connectedness and feedback, come to affect a very, very large area. It's not just a different framework for looking at the world; *it appears to be a different world.*

Certainly, when you're talking about, as I said before, the intractable problems which concern us, the problems of environment, poverty, homelessness, mental health seem to be everywhere and seem to be very, very hard to solve; escalating conflict in certain parts of the world. It really behaves us to switch the glasses that we use away from a cause-and-effect theory, and start to develop

our capacity to look at this system through a complexity lens.