



The T2 terminal at Sydney airport was closed last month when a power failure shut down a security screening device, allowing 16 passengers to walk through unchecked

NICHOLAS WALSH

Drift into Failure: From Hunting Broken Components to Understanding Complex Systems
By Sidney Dekker
Ashgate, 220pp, \$38.95

On the slide

As Bob Dylan sang, there's no success like failure

JOHN ARMSTRONG

FOR the past few weeks I've been excited by the title of this book. It speaks to all my anxieties: my marriage, my work, the university I'm employed by, the city I live in, the West as whole; they could all just... drift into failure. You don't see it coming, you make a little compromise here, you slacken a bit there, you delay one thing or avoid facing another. It all seems to be going along well enough, then the whole thing slides. You're getting divorced, you've pursued the wrong career, the institution has changed character, the civilisation is in decline.

One of Sidney Dekker's most shocking examples is the disaster that took place at Aberfan in Britain in 1966. A slag heap had been piled up on a hillside behind the village in South Wales, growing larger through the years. It was believed to be safe. But the stability depended on complex relations between all the bits of rubble. And one day the whole thing came down, resulting in appalling loss of life. We feel sure that someone, somehow, should have predicted this. Yet it is the perfect image of risk growing unseen, and all the more striking because the slag heap was a product of the mining industry, well recognised as dangerous and heavily regulated. People knew mining coal carried a lot of risk, but they had not managed to anticipate all the risks. Can one avoid thinking of the nuclear industry in Japan?

Dekker is a specialist in things going wrong. He is the world's leading thinker on airline safety. He is concerned about drift into failure in hospitals, on oil drilling platforms, in financial services, on NASA missions. But my hope that the book would somehow be about the human condition in a more intimate way was not disappointed.

Dekker starts, like most official analyses of failure, with the local, particular questions. What caused the problem? A broken component hadn't been replaced, information hadn't been correctly communicated, a regulation was ignored. Well, why not? People get tired, on the ground you make up a way of doing things that's faster, cheaper and easier, and seems to work. You don't have to tell your overseers every last detail. And everything seemed to be fine anyway. Nobody was taking a risk or doing anything they thought improper. They were doing the best they conscientiously could under the pressures of competition and scarcity of resources.

Try putting in more layers of redundancy; they add to the complexity of the system and generate new ways for things to fail. Try having more regulation, but will it be the right regulation, will it be better applied and checked?

Part of Dekker's humanity is his preference for

problems that arise without malign intent. He doesn't think the global financial crisis was occasioned by the greed of bankers. It's more intelligent to say: if we take greed or strong self-interest as a given in finance (as it is in much of life), why did the crisis occur where and when it did? It wasn't the greed that was new, what was new was the way in which financiers thought they could make quick and easy money.

Dekker's account of failure is distinctive because he shows that to understand a specific failure we have to spread our attention far and wide. As with the slag heap, the whole fabric of an enterprise may give way; the fault does not lie ultimately in any single part but in the overall state of the system.

I found this a little counter-intuitive (less politely, I didn't understand) until he introduced the idea of failure as an emergent property. Now, emergent properties are the fiefdom of culture and the arts; and their true home is aesthetics.

In an early Platonic dialogue, Socrates asks one of his companions, what makes something beautiful? "Gold," comes back the reply. It's not so stupid because at that time beautiful things were often made of gold. What excites Socrates is that this is fundamentally the wrong kind of answer. Some gold things are beautiful; some are not. Adding gold won't transform the ugly into the beautiful.

From such beginnings developed the insight that aesthetic qualities works of art can have, such as grace, tenderness, majesty or melancholy, cannot be produced by rote. There isn't a simple formula by which you can reliably make new works that have such properties.

Dekker's big point is that key properties in the worlds of commerce and government also have this character. We really want our operations to be safe. But safety is an emergent property, not a simple property.

Dekker has followed his own route to a Tolstoyan view of history. In *War and Peace*, Tolstoy is obsessed with two national catastrophes: for Russia, the catastrophe of being invaded by Napoleon and seeing Moscow burned; for the French, the catastrophe of invading Russia and seeing its huge army reduced to a frozen band of stragglers.

How did this happen? There seem to be major players. Did Napoleon make this happen? Was it the fault of emperor Alexander? Napoleon gives an order, but why is it obeyed?

In the end we have to look at why a particular sergeant decided to serve on another campaign rather than tend his vines in Alsace; why this youth from Normandy ran forward rather than backwards when he saw an enemy platoon approaching. But this, of course, is to admit that the complexity of the problem as a whole defies our understanding. We cannot grasp it in totality. We necessarily take shortcuts, and those shortcuts mean that our views of how things work are always (at best) subtly wrong.

So, if this account of failure is correct and important, what then? Suppose it explains the fragility and vulnerability of modern institutions; can this account be used to lessen risk and enhance security? Perhaps not.

At the end of the 18th century Edmund Burke gave a similar account of the irreducible complexity of society, and from that he drew conservative lessons. If we do not really understand how societies work, we should not set ourselves up as radical reformers. The error of the French Revolution, as he saw it, was that it embodied a naive thesis about society: that a group of lawyers who had read Voltaire and Rousseau might know how to improve the whole of a nation; that if you change the constitution you will remedy the ills of the world.

Or there is an even more sombre reflection: the better we understand catastrophes, the more we are driven to conclude that human institutions will always fail, and often fail badly, but in unexpected ways, and no degree of vigilance or care of planning can prevent this. One should become a stoic, resigned to the waywardness of the human world. You should concentrate on steeling your own soul.

Dekker resists such pessimistic responses. He thinks we have some hope of dealing better with complexity and hence with the failures to which it gives rise. Towards the end of the book he advances the claim that diversity is the key bulwark against the drift into failure. It's an intuitively appealing thesis. For many political and emotional

reasons, we want to think well of diversity. And Dekker's account of the deep problems of institutions seems to identify a diversity deficit. His analysis of the GFC homes in on the level of agreement among analysts and regulators about the mathematical formula used to assess default risk. But what is diversity, really? Generally, we think of diversity in terms of social categories: race, sex, class, age, status. But the kind of diversity that seems needed has nothing directly to do with that. The bankers needed greater diversity of mathematical models for pricing risk and, of course, of people to generate, sponsor and use those models. But this may not overlap at all with the social categories.

This isn't a literary book. It reads like a slightly breathless report from an explorer who is trying to map a really important bit of new territory.

Put it like this. The modern West is, of course, deeply committed to success and the avoidance of failure. And in a big society these goals have to be seen in basic terms: the plane must not fall out of the sky, the banking system must not collapse, the cost of insurance must not get too high.

Such prosaic goals have much more traction in the world than higher-sounding objectives of ushering in the reign of sweetness and light.

Dekker is developing a case that is precisely designed to speak to the prosaic problems but that then draws in the poetry that we need if we want to understand and deal with those issues. You need to get interested in aesthetics and history (he says) because you want to get better at running a profitable airline, a pension fund or oil company.

Generally, people suppose the message from the humanities to business should be a bit stern. The humanities (one feels) should upbraid commerce and government for their lack of imagination, their crass values and (ultimately) their lack of affection for the humanities. Of course, this has no effect on commerce or government. The message is scarcely heard and in any case sounds weird: "Do what we say because we don't like you."

Dekker, however, is starting to make the right kind of connections. He starts from deep sympathy with practical problems; he's on the side of the harried middle manager who somehow has to balance the competing demands for profitability and avoiding disaster.

He's on the side of the NASA administrator who knows that a whole slice of their budget will disappear if they delay and delay on missions but who also has a nagging doubt that some crucial technologies are still experimental and cannot be guaranteed. He knows that enterprise and corporations cannot exist unless they compete on terms set by the wider world. The wider world wants cheap oil and safety and no spills; it wants space missions and low taxation.

If we have two cultures today, they are not — as C. P. Snow thought — art and science. Our two cultures are commerce and the humanities. They need one another, but are like star-crossed lovers, always passing one another by in the woods on a dark night. Dekker is their dating agency. *