

# Butterfly management

It is said that the gentle fluttering of a butterfly's wings in one remote corner of the world can create a tornado in another. **Dr Leandro Herrero** pins down the butterfly effect – when small actions can have big results – in organisational management

**L**ife, and change management, and people's behaviours, are not linear. Excuse my language – I'm assuming the reader's understanding of mathematics is similar to mine, which is that I just about get it, and I'm ready to go back to the textbooks if necessary. So don't panic, bear with me. There is something about our education that assumes linear connections and the proportionality of cause and effect. After all, ideas such as 'the punishment must fit the crime' are deeply embedded in our culture. We praise measured responses and balanced reactions. 'Proportional response', for example, is a military term indicating the degree of force to use when attacked. The language of cause and effect is well-embedded into our education, too, so it's no surprise that the idea of output being proportional to input seems eminently logical. 'So much of this, will produce so much of that.' 'You increase this, you get more of that.' There is a predominant, learned mental model within us. In mathematics and physics, it would be called linear. We could say we are educationally, socially and epistemologically (the theory of knowledge) comfortable with linear systems. Sorry, it sounds grandiose, but it isn't.

Paradoxically, our linearity-comfortable minds are surrounded by a non-linear-systems world. In reality we are prisoners of a particular

thinking model in a land where the alternative is the norm. This paradox has implications for the way we manage and lead organisations. I'll get to that later. Here, a good distinction between linear and non-linear systems is described by Jeffrey Goldstein in his book 'The Unshackled Organization' (1994): "In linear systems, change is gradual and incremental, whereas in non-linear systems, change can be precipitous and revolutionary. In linear systems the whole is merely the sum of the parts, whereas in non-linear systems, the whole is greater than the sum of the parts. In linear systems, interaction is only one-way, whereas in non-linear systems interaction is multidirectional. Linear systems have predictable outcomes, whereas non-linear systems may have unpredictable outcomes."

Here is a test: What kind of world do you see when you look around? If you are like me, you will see it as precipitous and revolutionary, the whole greater than the sum of its parts, multidirectional interactions, unpredictable outcomes. A non-linear-systems world. I feel cheated by my maths teacher! He told me  $4+4=8$ . Not only that, he didn't mention what

**Our linearity-comfortable minds are surrounded by a non-linear-systems world. In reality we are prisoners of a particular thinking model in a land where the alternative is the norm**

Albert Einstein said about mathematics: "As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality."

### Learning from others

Next stop, economics. Paul Ormerod did not invent non-linear economics but he is known as an advocate and controversial economist. He says that traditional linear economics don't work and that the social effect on individuals, copying or learning from

**Most management thinking is pretty linear. Big problems, it says, need big solutions, big organisational messes need a big shakeup, big issues need a radical, surgical approach**

others, alters the equation. The social factor is a big modifier of man's rationality, and often what would be expected in traditional economics doesn't happen

because people behave in an volatile manner. At first glance, the view from this position is disturbing: things are more unpredictable than you think, surprises occur, swings in markets are common, traditional forecasting models are weak. Cause-and-effect language is still present but often we are happy just to be 'fooled by randomness', as a recent book by Nassim Taleb illustrates.

Some of Ormerod's positions were reviewed by Bob Rowthorn, professor of Economics at Cambridge

University, in a recent issue of *Prospect* magazine. One is worth quoting in full because of its clarity of message. "Most empirical work in the social sciences is based on the assumption that relationships

are linear, so that small changes produce small effects and large changes large effects. However, if relationships are non-linear, the link between cause and effect is more complex. Over a certain range small changes may produce small effects, but at a 'tipping point' a small change may produce a very large effect. Moreover, this very large effect may be extremely hard to reverse."

Rowthorn reminds us that this forms the basis of many assumptions in political systems, often without the politicians knowing it. "This is the vision that underlies the conservative argument on crime," he says. "The extent of criminality in a society, it is argued, is partly a matter of material incentives in the form of rewards and punishments, and partly a matter

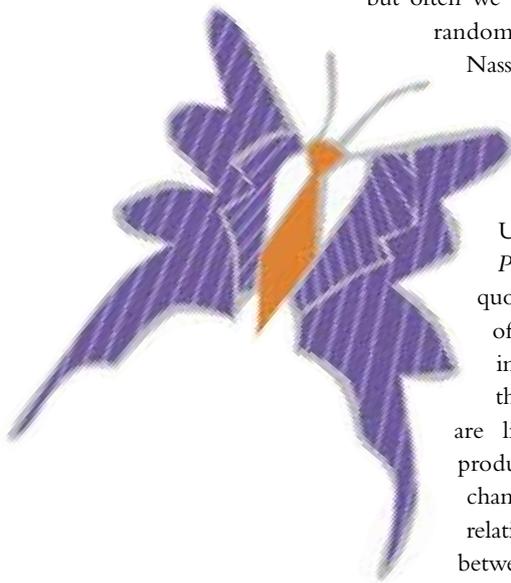
of socialisation. Consider a society in which the crime rate is initially very low and young people rarely meet criminals who lead them into crime. Suppose that punishments are gradually reduced, with the result that crime slowly increases. In itself, this may not be a serious problem. However, at a certain point the crime rate may suddenly shoot upwards, perhaps stabilising at a new and very high plateau. Policymakers are likely to respond to this development by reverting to the harsher penalties which they had previously abandoned. Unfortunately, such penalties may have only a limited impact on the crime rate because decades of liberal policy have given rise to a criminal underclass which reproduces itself by transmitting its values to young people.

Conservatives, Rowthorn continues, offer similar arguments in many other areas, such as divorce law and welfare for lone parents. In each case, they believe liberal policies set in train social processes which eventually end in disaster and create situations that are very hard to reverse. The liberal response is to dismiss such fears as paranoid and unsupported by the evidence. This is not the place to adjudicate on the issue. The point is that liberals have a rather linear view of social policy in which small changes normally produce small and reversible effects, whereas conservatives have a non-linear view, believing that small changes often give rise to large, unpredictable and irreversible effects. On environmental issues such as global warming and biodiversity, the positions of these two groups are reversed. Liberals tend to believe that the world is on the brink of disaster and if we do not mend our ways there will be huge and irreversible changes, whereas conservatives take a more relaxed view.

### Life's non-linear framework

I have taken this long verbal promenade to stress how our social, political and economic worlds are well served by understanding their inherent non-linearity, or at least how the way we understand connections matters, and how adopting a linear or non-linear approach to that reality makes a lot of difference. I have also mentioned how the pervasive non-linear world contrasts with our more linear-thinking education. This framework has significant implications for the management of organisations, which is why I am bringing it to the table. Here are some key points:

1. Most management thinking (but not all) is not surprisingly pretty linear. It says that big problems need big solutions, big organisational messes need a big shakeup, big issues need a



radical, surgical approach. Goldstein has described it well: “Conventional approaches to organisational change assume the system is linear. Hence management usually assumes that a major change initiative requires extensive advance planning, that resistance to change must be anticipated, when resistance arises you overcome it with persistence, determination and skill, and that large change requires large-scale efforts. This approach is based on a number of questionable assumptions, notably that organisations are ‘largely predictable enterprises’ that do not change naturally, and are ‘inert masses’ which require a ‘proportionality between effort and results.’”

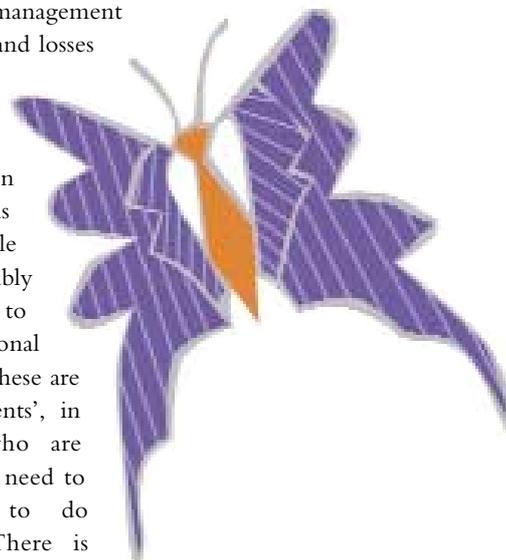
2. The instinctive “let’s have small wins or quick wins” is using *de facto* non-linear thinking. It is banking on socialisation a la Ormerod. It means that if you create some change which, even if small, is very visible and which people can copy, that small change may trigger big change. It may look, however, like a tipping-point effect, that is, not much is going on or little visible effect at the beginning but, suddenly, things start looking different and people start doing things differently. You will probably recognise this, and may have often used ‘quick wins’ terminology and practice intuitively. Interestingly, the big critics of this thinking are those in the change management industry, whether consultant, academic, or both, which says that most of these things are superficial and don’t account as real change. This is very often too cautious a view and an underestimate of the power of a non-linear intervention.

3. The socialisation aspects of change are well known. People need to see things happening to believe them. Cynicism is a chronic illness in many organisations. People often respond cynically to mission and vision statements, lists of ‘seven key values’ and ‘the 10 new commandments’. It is only when leaders start behaving in particular ways that people pay attention. There is a term for it: walk the walk. But the non-linear aspects of organisational life tell us that you may not need massive interventions or postures by management, just small, concrete actions that can be seen and imitated. The tipping-point effect will spread small actions faster than any gigantic change management interventions labelled ‘The Big Change Management Initiative’. Tipping-point effects are notoriously present in organisational issues such as trust and reputation. Both are gained and lost at different paces that remind us of non-linear mechanisms. For example, by

doing ‘small’ things such as responding to requests for help, trust appears ‘at some point’, beyond which it is pretty much established. Conversely, a possible ‘small breach of trust’ can trigger a cascade effect and destroy years of gains. It sometimes seems irrational to the observer, and it seems so because it is not a ‘logical’ linear effect. Experts in reputation management see it all the time: gains and losses often depend on small actions or chains of events.

4. Because of the hidden power of socialisation it is worth identifying people in the organisation, probably a few, who have the power to spread the change. Traditional approaches will say that these are the natural ‘change agents’, in other words, those who are already converted to the need to change are willing to do something about it. There is nothing wrong with this – this sub-population is a crucial part of many change management processes, and these people are often used as internal facilitators. This convention also supports the idea that there will always be a pool of people who are very resistant to change and ‘may not make it’, in other words, it may be necessary to invite them to leave. Very true, but the spin-off from this thinking is, ‘let’s give up on them and concentrate on everybody else’. Non-linear change management is more interested in the faster seeding of change. It looks at ways to inject small changes that can be amplified. So in parallel to working with ‘converted’ change champions, non-linear management thinking would suggest identifying key visible and vocal sceptics and work on them too. Perhaps some of those may be in the list of ‘possibly will-never-make-it’. Visible sceptics that adapt to changes and buy in are worth 50 already-converted who show compliance. Suddenly, some of the people on your blacklist may become your assets with their counter-intuitive power to spread change fast once they ‘convert’.

5. In my previous article, ‘Forget culture,



**By doing small things like responding to requests for help, trust appears ‘at some point’, and becomes pretty much established. Conversely, a small breach of trust can destroy years of gains**

change behaviours', I suggested focusing on a small set of non-negotiable behaviours and applying behavioural change mechanisms, based upon real behavioural sciences methodology, can have a significant impact in the form of real cultural change – all that, without even calling it 'cultural change'. This seeding of change via behaviours is more effective and faster than traditional change programmes. It relies in part on non-linear thinking – the triggering of large effects through apparently small and focused

initiatives. The question is how to identify those levers or behaviours that have the power to create the big impact. It is true that this requires some thinking and possible external help for the average organisation

unused to dealing with true behavioural change management, but the knowledge and skills can easily be transferred to the organisation.

**Solutions to some of the complex problems in the life of an organisation may rest on the simple injection of some butterfly effects**

### Echoes of the chaos theory

An old adage says that the flapping wings of a butterfly can create a hurricane thousands of miles away. There are at least two interpretations of this. The first is philosophical, and possibly New Age: that through small actions you can create significant effects in the world. The second belongs to technology: computer models of the weather can be so sensitive to initial conditions that the outcome may be changed by the flapping of a butterfly's wings.

This is often called the 'butterfly effect'. Butterfly effects are powerful components of a non-linear change management, and far from esoteric. We have a pretty good idea today of how to inject these small wing-flappings within organisations to create a true hurricane-sized change, and to do so without destroying the organisational fabric and without paralysing it in the way some Big Expensive Change Initiatives do. Once again, many clues to modern management and leadership come from the social sciences, not from traditional management thinking. The bad news is that

many are counter-intuitive and, in the first instance, difficult to sell. The good news is that you don't have to recycle your MBA or business studies degree; just open the window to the outside world and observe.

Traditional management approaches would often ask you to brainstorm and list the problems, group them and define them, then apply solutions to each of them. Although not always the case, people attending those in-house big change and strategy seminars end up with a list of 50 or so actions that match an equally long list of identified issues. It is pretty much what was described before: big problems, big solutions, or a big list of issues, a big list of actions. Unfortunately, this is often just an exercise that makes people happy by being able to produce activity lists and giving a false sense of control, not to mention a false sense of scientific process. Wearing non-linear spectacles, it's possible to see how a few small actions might have the power to produce the change, and these are the ones to focus on, making sure that they will be very visible. I can hear some people saying: "We do this already, we prioritise, we don't go for everything at the same time." However, most of this so-called prioritisation is usually based on pure resource parameters, that is, this is too much to do, let's try the things that are do-able, concrete, focused, etc. Prioritisation in that scenario is pure pragmatism. The kind of prioritisation I am talking about is very different: it is the search for those actions that can trigger butterfly effects, regardless of any other judgements about resources needed or the complexity of the task.

If we apply the simple principle of asking ourselves if we are acting on linear or non-linear mental models and assumptions, we will understand better the complexity in the life of organisations, and begin to see that the solutions to some complex problems may rest on the simple injection of some butterfly effects. A series of 'small-radical' initiatives create radical change faster than a big radical turnaround. It's a model and technique I have used with clients for a long time, under the banner 'r+r+r=R', or 10+10+10=1000. I can almost hear  my maths teacher now: I told you so.

*Dr Leandro Herrero writes on a management topic each month in Scrip Magazine. He is CEO and founder of The Chalfont Project, an international consulting firm focusing on organisational innovation, behavioural change management, leadership and human collaboration.*