SAVIOURS IN CRISIS:
BUILDING UP OR BURNING OUT?

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Overworked, **burned** out and underpaid, crisis managers are running out of paths to move forwards. Some are leaving their public sector jobs for 'greener' pastures, not out of ambition, but more out of necessity. It takes insurmountable talent to extinguish a burning house when one is doing so from a sinking ship; I'm not quite sure how fair it is for us to expect practitioners to continue doing so.

CRJ's community has informed the pages of this edition in more ways than one. On p22, Beverley Griffiths talks about how crisis managers are failing owing to a lack of planning on how they can find more stability in their careers and, ergo, their lives. Similarly, Jeannie Barr breaks down all the different ways in which the pressure on crisis managers has never been higher, while simultaneously, the resources they have available to them have never been fewer.

This issue has also examines conflict. On p46, Gilles Pache points out that while we focus on immediate humanitarian crises, there is a longer-term bomb waiting for us in the form of environmental decay caused by weapons of war. Stefano Betti dissects terrorism concerns for the upcoming Olympics in France, and Andy Blackwell and John Wood write about how we're increasingly facing blended physical and digital threats and how our defences must be blended too (p50). Nicolò Broglia explores methods for building resilience against digital threats.

It is somewhat poetic that we are also introducing a new section called 'Next Gen' within an edition focused on so many things that are going wrong. Through it, we will explore conceptual solutions with the potential for significant impact. For instance, on p74, we take a look at Gracie Broom and Magdelana Garibaldi's 3D housing concept, which aims to provide immediate and affordable housing for victims of domestic violence.

Where there is darkness, there is light indeed. We just need to acknowledge that there may be a few light bulbs missing.

Surveillance p58

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Affordable housing p74

Gracie Broom

Budget in crisis:
Lessons from complexity theory

Unexpected budget problems can occur in any organisation. The many crises of the past few years have increased the financial uncertainty of public institutions and private companies. **Pavel Kiparisov** investigates...

There are a number of techniques for managing budgets in a crisis. This article will review some of these techniques and discuss why it is important to understand the statistical nature of budgetary risk and what complexity theory can teach us about it.

In a fairly modern sense, budgeting theories began to emerge in the late 19th – early 20th centuries, when the need to address problems of inefficiency and waste in government grew strong. In the US, for example, there was an urge to make the operation of the government more business-like to counteract the strong, centralised top-down management style that was normally used. A traditional budget had no predictive value, and attention was focused on how budgeting should be done, not on what the budget was and why it existed. It became clear that the approach of focusing only on the items in the budget lines did not provide information about overall programmatic goals.

Public budgeting thus gave way to performance budgeting, which focused on government functions and activities. In the 1960s, performance budgeting was replaced by programme budgeting, in which the focus was on the objectives of government spending. In the 1970s, the next budget reform introduced zero-based budgeting – instead of basing budgets on previous years' spending, each programme and activity had to be evaluated and justified from scratch, regardless of whether it had been funded before or not. This made the budgeting process more difficult, although it did reduce costs in some areas. Later, the US shifted to a mix of performance-based and outcome-based approaches that focused on achieving results by maximising the efficiency of resource allocation.

Private companies tend to be the most daring in experimentation and innovation. Faced with increasingly complex uncertainties, companies around the world have been searching for new approaches to budgeting that allow for greater flexibility, adaptability, and learning. One of the earliest examples of a company that based its decisions about budgeting techniques on the environment in which it operated was Guinness. In the wake of World War I, Guinness began charging an imputed interest rate of three per cent its loan to the War Risk Insurance Fund from general reserves. This led to the creation of a
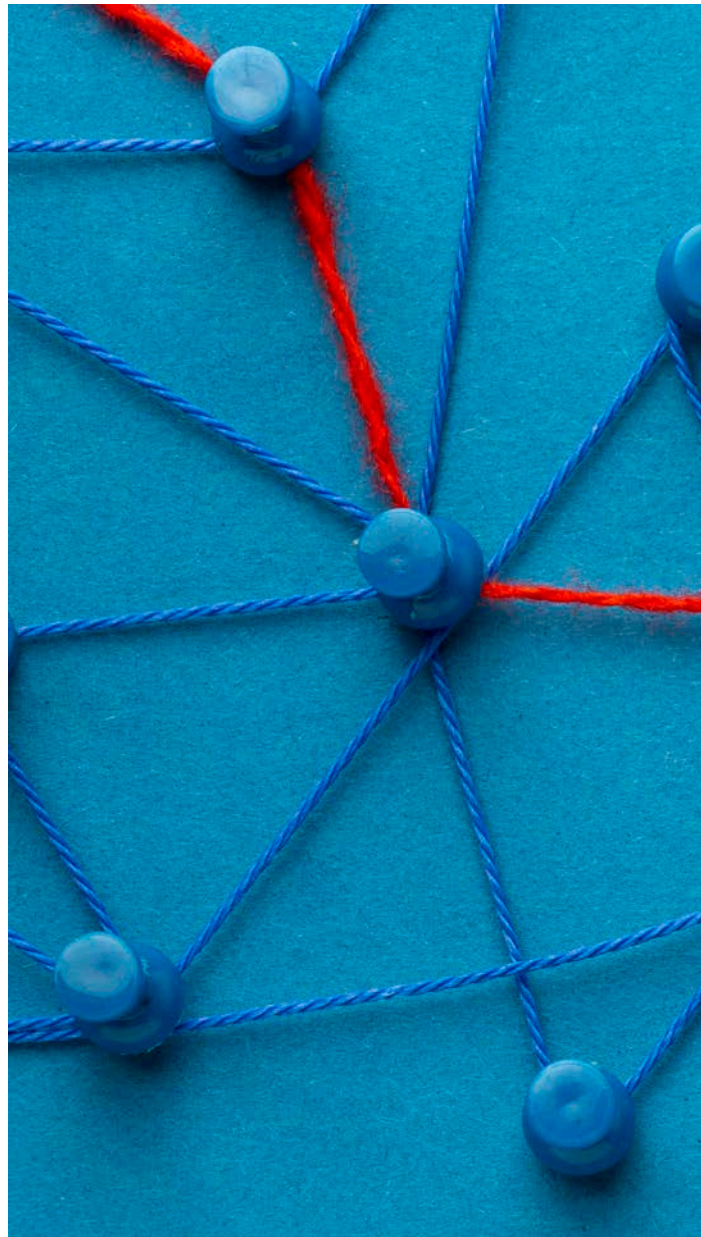
War Risk Insurance Fund account, thereby creating new management accounting procedures.

Gradually, private companies moved further away from traditional command and control techniques towards a 'facilitate and empower' logic. Overall, this is characterised by devolving power to front-line teams, improving linkages between units, flattening hierarchies, fostering horizontal communication, establishing collaborative networks, and creating multipurpose project teams.

Off with the old
In the late 1990s, a group of companies and academics dissatisfied with the limitations of traditional budgeting practices began to develop a new philosophy of budget management. The Beyond Budgeting Roundtable was formed in 1998 as a broad network of companies and thinkers committed to the principles of a more flexible approach. This principle focused on providing flexible budgets that were better prepared for less-expected events. Some of the modern approaches to budgeting include the balanced scorecard, activity-based budgeting, results-based budgeting, more frequent budgets, rolling forecasts, and a more radical no-budget approach. The most significant change that companies with less conventional approaches have made is to move from fixed targets to relative performance contracts and, as a result, significantly decentralise performance responsibility to frontline employees. Some companies went even further in their decentralisation. The idea of radical decentralisation is to move power almost entirely from the centre to frontline teams. Without any restrictions on plans or agreements, these teams have full authority to develop solutions and initiatives. In this way, local decisions are enabled rather than dictated or directed.

The introduction and adoption of modern budgeting techniques, however, does not mean the end of
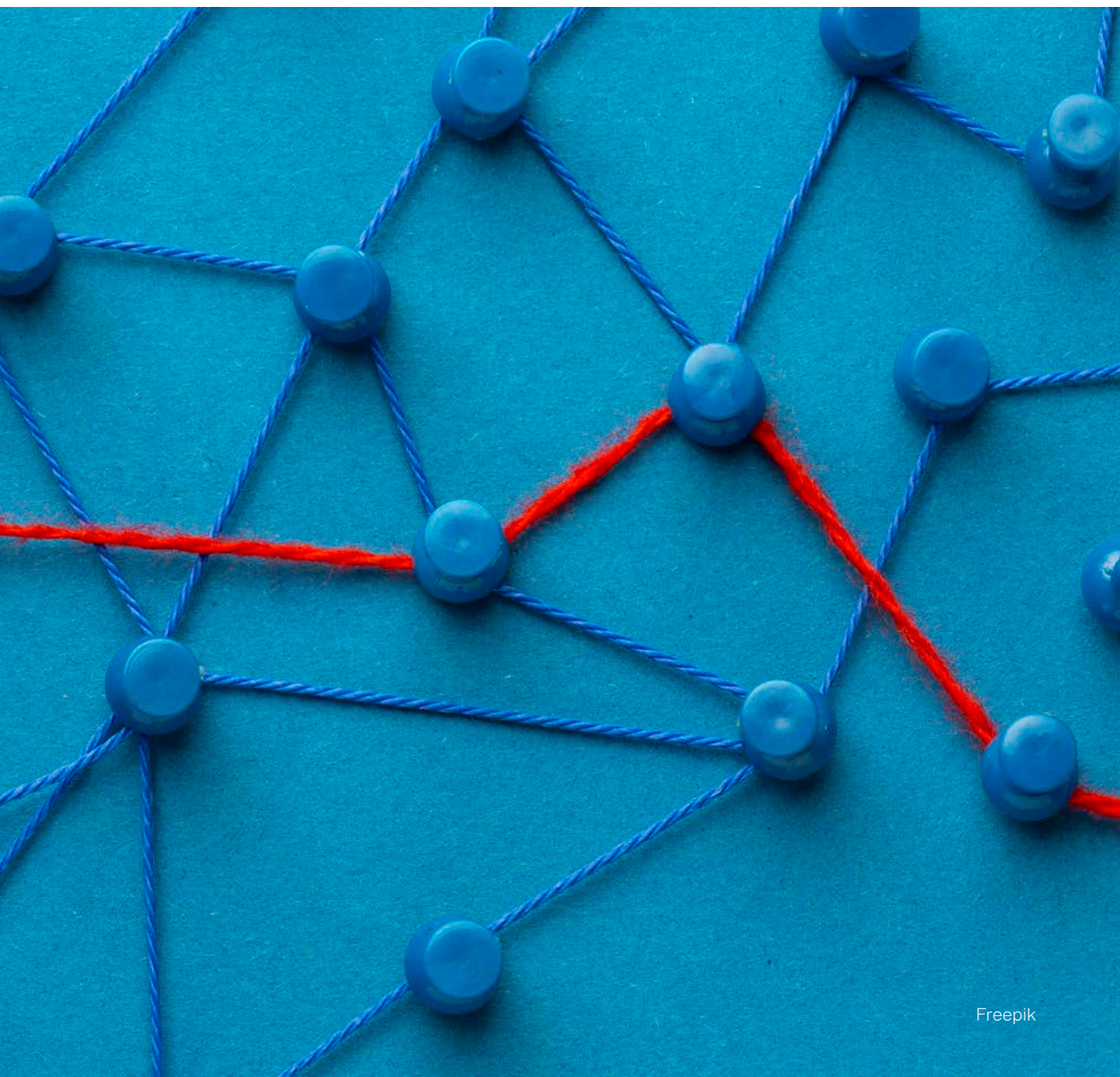
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traditional budgeting, which still proves to be a useful compass for planning. Rolling budget and conventional annual planning can be complementary, and some companies introduce a hybrid model where fixed budgets are used in areas defined as low uncertainty and flexible budgets are used in areas of high uncertainty. This reflects the organisation's commitment to budget targets and the flexibility to deal with future crises and opportunities. For example, continuous budgeting attempts to reduce the restrictive nature of budget control when an unexpected event occurs so that managers can decide to launch new products and make revisions and reallocations of resources while still maintaining a traditional view of the budget. If other organisational resources and practices provide sufficient support, budgeting under conditions of uncertainty can contribute to effective management control.

Frow, Marginson, and Ogden examined the case of a modern company that successfully reconciled the two seemingly contradictory approaches, namely traditional budgeting, which requires meeting financial targets, and more flexible management, which allows adaptation to market volatility. The company in question was a large multinational document and services company, which the authors referred to as Astoria for the sake of anonymity. Astoria adopted an unconventional budgeting process that considered the changing environment and created procedures that empowered management to consider the seriousness of the problem it faced. It works like this: If a shortfall is not significant and it is clear how to fix it, a manager makes a local decision to deviate slightly from the original target to bring performance back to what was planned. If the situation is more complicated, managers can discuss solutions with other managers. They are empowered to take the necessary corrective action to get back on track. But the flexibility mechanisms do not stop there. If the solution requires even more radical steps, managers can set a new goal that will be measured against the goals of the organisation. The authors call this process 'continuous budgeting.' The key feature of this technique is that while it allows flexibility, the pre-set targets serve to discipline and motivate managers. This budgeting style has a solid theoretical foundation, namely complexity theory.

Evolution of dynamics

The evolution of budgeting techniques has coincided with the development and spread of complexity thinking. In short, the main difference between complexity thinking and reductionist thinking is that complexity thinking is based on the notion of wholeness. The whole, although made up of different parts, emerges as something new and unique. For example, civilisation is not a simple sum of the technologies and cultural achievements of its members, and the human conscience is more than a simple collection of cells in the human brain. Complex systems are generally characterised by the existence of many interwoven, dynamically operating elements that together form a unique phenomenon whose dynamics are difficult or almost impossible to predict.

Complexity science distinguishes between closed and open systems. The closed system is characterised by certainty, static equilibrium, and no transfer of energy outside its environment. The future of the closed system depends on its existing or initial conditions. Open systems,

on the other hand, are characterised by growth and survival. Equilibrium in such systems is dynamic. Some relevant properties of the open system are self-regulation (ability to take corrective action), equifinality (ability to reach the same final goal regardless of initial conditions), and negative entropy (ability to create reserves of excess energy to counteract future perturbations). In closed systems, the internal organisational structure plays the most important role, with an emphasis on individual components. In open systems, the environment plays this role, and the emphasis is on the interaction between the components. Social organisations are usually partly open and partly closed; they are never exclusively open

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or closed, so it is a matter of degree of openness when describing a system. Depending on the circumstances, it may be appropriate to describe the predominant characteristics of either a closed or an open system. The discussion of budget in the context of systems thinking dates back to the 1970s, when systems research was on the rise. Researchers then demonstrated that budget control cannot be developed separately from its organisational context, which means that the budget should be able to adapt to and reflect external reality. Technological, social, economic, and political systems change much faster than the average budget cycle. An unforeseen event can change the environment and make a pre-allocated budget inappropriate. The researchers note that conventional budgeting rewards competition, not co-operation. In closed-system budgeting, managers focus on solving local problems rather than global ones, and time and resources are spent investigating causes that are beyond the control of budget authorities. The failure to recognise a dynamic environment leads to an inability to meet the demands of changing circumstances.

Another important notion that characterises complex systems is the power law. When the probability of an event varies as a power of its magnitude, this principle is clearly at work in many phenomena around us. Put simply, the larger the event, the less likely it is to occur, and vice versa. One of the first major contributors to the discovery of this law was Pareto, with his famous observation that 80 per cent of the effects come from only 20 per cent of the causes. We now call this type of distribution the Pareto Principle and attribute it to the notion of 'long' tails, named for the way the tail of the distribution looks on the graph. There are also 'fat' tails, which, if ignored, tend to distort risk estimates. Throughout the 20th century, the power law has been found in the distribution of the frequency of word usage in language, the magnitude and frequency of earthquakes, the size and number of cities, and even the frequency of citations in scientific articles. Scientists now know that this

law applies to many other natural and social events, from the frequency of natural disasters, the size of meteorites, and gamma rays from solar wind, to the number of war deaths, terrorist attacks, power outages, interbank loans, family names, train delays, website hits, and movie sales. Yet many systemic failures in finance occur because the statistical tools used to assess risk are outdated. They do not account for the fact that most power law moments are infinite, so traditional statistical intuition inevitably fails. There is always a chance, however small, that something unprecedented will happen.

Budget volumes also follow the power function, so there are periods of gradual change and bursts of intense activity. In public finance, budgets reflect the priorities set by states, so an increase in frequency implies a change in priorities, which in turn indicates bursts of urgency caused by external circumstances. The changing external conditions force the system to respond proportionately. If the institutional structure is stable, the system will begin to accumulate errors, and eventually the friction will occur anyway. This is the budgetary law. In federal systems of public budgeting, the friction is greater. Overall, the more stable and rational the system is and the more it demonstrates the ability to react steadily to exogenous situations, the more normal the distribution of budget changes will look. In fact, stability and flexibility are mutually exclusive, meaning that any improvement in one is a loss in the other. More flexibility means less stability, and vice versa. You cannot have perfect predictability and full flexibility in a single system. Sacrifices are inevitable. The goal of budgetary authorities is to strike a reasonable balance between these conflicting elements. In systems characterised by the separation of powers, such as in public finance, this balance is achieved through constant competition between the authorities that seek stability and those that seek flexibility. Traditionally, the executive wants as much flexibility as possible to allow room for manoeuvre in policymaking, while the legislature seeks stability because it guarantees easy budgetary control and scrutiny.

Since we cannot have stability and flexibility at the same time, we should view the budget as a complex system, which suggests that the more uncertain the times, the more flexible the budget should be, and the more stable the times, the more stable and predictable the budget should be. More uncertain times, therefore, require more budget flexibility. From a budgetary point of view, the most appropriate approach will then be a hybrid approach that allows for this adaptability given the environment in which the system operates. The examples of Guinness, which created the War Risk Fund at the outbreak of the war, and, in particular, Astoria, which uses a continuous budgeting approach that successfully reconciles budget targets with flexible adjustment mechanisms, put these ideas into practice. When the crisis hits, the budget should be more like an open system, characterised by growth and survival, able to take corrective action, that is, self-regulate, achieve targets regardless of initial conditions, and build up reserves in good times to spend when times get worse.

Ideally, systems should be prepared for everything. But in a world of limited resources, how can we prepare for anything without preparing for everything? This is the question that complexity scientists will eventually answer.
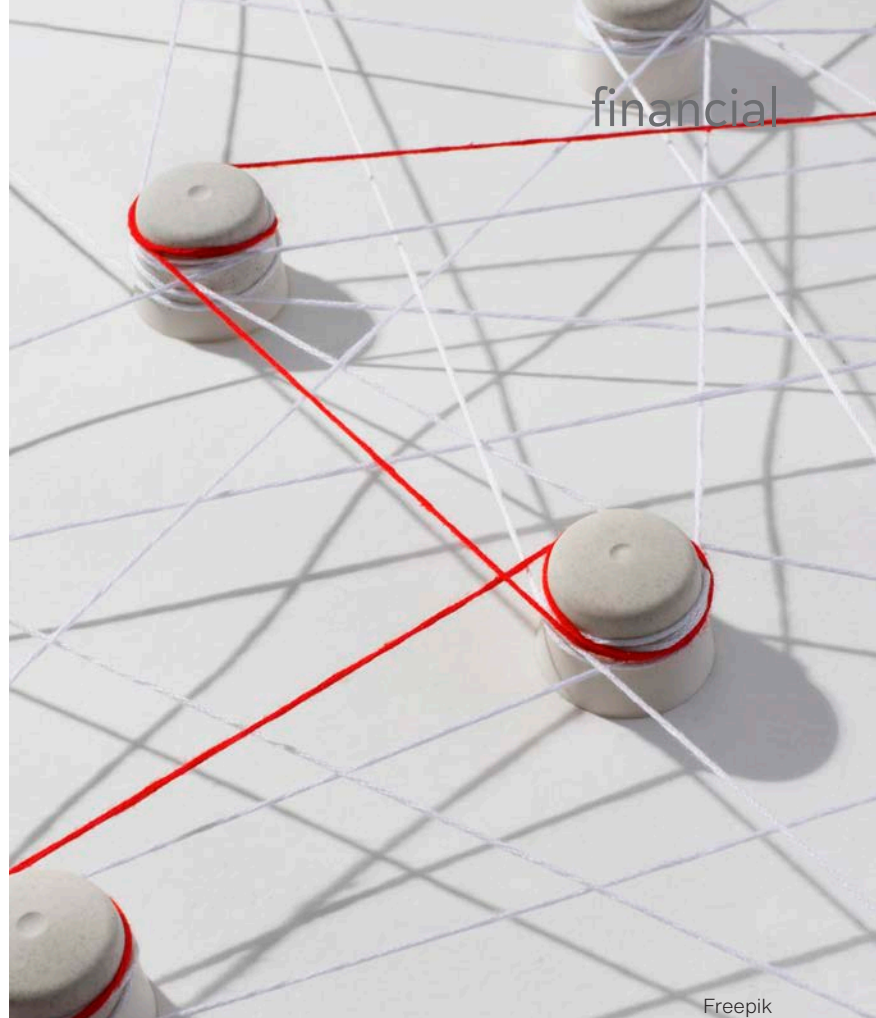
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In the meantime, developing the dynamic capabilities of people and organisations is a necessity for successful navigation in a world of complexity. There should be no stigma attached to failing to achieve a goal because of a changing environment. In most cases, if every effort is made to stay on track, another course of action that also serves the organisation's goals can always be found. Training managers to understand this complexity and to move beyond traditional statistical perceptions of risk is critical, as is introducing adaptive budgeting techniques into the work process. All of this is relevant not only to private budgeting, but to public finance as well. Today, governments have an unprecedented need to become more adaptive, and complexity theory could help. C·RJ

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