

# How can I prepare my business for future risk?

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## Introduction

### Risky business

Risk refers to unexpected results from future events, often referring to results that are worse than expected. Risk can be evaluated based on the probability of an unexpected event occurring multiplied by the severity of the event. Future risk includes both our inability to accurately predict future events and the characteristics of possible results.

Although we can't predict the future, it is clear that the decade ahead will be characterized by increasing uncertainty and increasing volatility, both of which increase the probability, variety, and severity of future risk. Surviving and thriving now and in the foreseeable future will require business to develop innovative and dynamic strategies for managing future risk.



A business shaped by nature prepares for future risk by emulating the successful strategies from nature that have been honed over 3.85 billion years of relentless trial and error. With a 99.9% failure rate, organisms that thrive in nature today represent the crème de la crème of risk management strategies.

### Nature's Resilience

How does nature prepare for future risk? Unlike in the business world, in nature there is no ability to analyze data and to predict future events and possible outcomes; organisms have to deal with whatever occurs whenever it occurs. To survive such uncertainty, nature manages future risk by focusing on resilience, the ability to recover after a disturbance.



[http://www.alaska-in-pictures.com/data/media/6/after-a-wild-fire\\_2487.jpg](http://www.alaska-in-pictures.com/data/media/6/after-a-wild-fire_2487.jpg)

Nature's strategies for resilience fall under three basic categories: decentralization, redundancy, and diversity. **Decentralization** means performing a function or responding to a disturbance in many distributed locations throughout an organism or system rather than in a single or centralized location. **Redundancy** means performing a function or responding to a disturbance in more than one way. **Diversity** means constantly seeking new and different ways of performing functions or responding to disturbances.

Let's look at an example. Photosynthesis – the process that plants use to convert carbon dioxide into food using the sun's energy -- is the basis to almost all life on earth. It is such an essential process that plants have evolved myriad strategies for resilience that allows photosynthesis to continue in some shape or form within the ecosystem regardless of the disturbance.

Decentralization is perhaps the most obvious. When you think of nature you think “green”. It is everywhere! Leaves, the plant organs specialised for photosynthesis, are located throughout the ecosystem, taking advantage of opportunities of sunlight and optimizing over the full range of available conditions, scales, niches. For example, plants growing on the forest floor are often equipped to be able to absorb light from parts of the spectrum that have not already been absorbed by the leaves of the tall trees above them; their leaves are also often comparatively larger to maximize the surface area exposed to light. And, in areas subject to disturbance from fires, plants utilize underground storage organs that allow the plant to survive the fire and then regrow when conditions are right. In these circumstances plants may also produce a lot of seed—the plant itself dies in fires, but a new generation is ready to leverage post-fire conditions.

Leaves also provide a good example of redundancy. In areas with low moisture levels, the pores [stomata] in leaves are often closed to prevent water loss through transpiration; as a result, carbon dioxide levels within the leaves can become low, leaving plants susceptible to photorespiration, a process inefficient for the plant because it reduces the amount of carbon available to photosynthesis. Perhaps in response to this pressure, alternative strategies for carbon fixation for photosynthesis have evolved. “C4” plants, for example, have a different leaf anatomy to the typical C3 plants, allowing carbon dioxide to be fixed as a different compound, keeping its concentration high, minimizing photorespiration and resulting in a higher yield of sugars than C3 plants can produce in the same conditions. In “CAM” plants, stomata are closed during the day in times of drought to avoid water loss, and then opened at night. Carbon dioxide is stored overnight until it can be processed in the photosynthetic pathway during the day.



[http://farm1.static.flickr.com/53/118701165\\_1cef814c07.jpg](http://farm1.static.flickr.com/53/118701165_1cef814c07.jpg)

If you go outside or to a botanical garden and begin to observe the plants around you, the incredible diversity will become apparent.

You will quickly find that leaves come in an almost infinite array of sizes, shapes, and structures, and are positioned differently in different plant species - some are in opposite pairs, others are spirally arranged or in whorls around the stems, some are even modified into different structures such as spines. Each plant and leaf performs the same basic functions, but each uses different strategies, optimizing in their own unique multiple-functionality, and managing different conditions and disturbances in their own unique way.

## The bridge from biology to business

What can business learn about managing future risk based on nature’s strategies for resilience?

### Resilience through decentralization

Most business functions are centralized, feeding into the top-down hierarchy that characterized most business structures. This structure emerged from military structures where centralized top-down command-and-control decision-making is essential. In most businesses, however, such hierarchy undermines the knowledge, learning, and real-time responsiveness capabilities in their employees. Businesses can leverage the resilience of decentralized and distributed decision making

by establishing a diversity of effective internal feedback loops. In nature, feedback loops are perfectly choreographed to minimize effort, avoid information overload, and ensure appropriate response. In business, well-designed feedback loops can reduce response times, reduce unnecessary communication, optimize knowledge and information resources, and increase the capacity for agile decision-making.



<http://samplekickz.files.wordpress.com/2007/0>

Nike started out designing running shoes and evolved into global leaders in the design of an expansive variety of sports clothing and equipment. Although well known for fantastic and progressive design, Nike realized that even their top design and marketing decision-makers could not satisfy every customer -- unless the customer becomes part of the decision-making team. Nike-iD allows customers to design their own shoes online, specifying color and style, fit and materials. The customer gets the perfect shoe and Nike gets market feedback and new ideas.

### Resilience through redundancy

In addition to having more than one person capable of playing the same role, one way that business can increase resilience through redundancy is by developing an interdependent interconnected multi-functional employee base. If employees are interconnected and capable of playing more than one role, then the business can rapidly shift employees to where they are needed, effectively providing redundancy without increasing employee numbers. Combining this with effective feedback loops results in a dynamic, responsive, agile workforce that can respond rapidly to changing conditions.

Deutsche Bank recently recreated their IT architecture and employee structure by eliminating departmental silos and creating myriad interconnections and rapid feedback loops. These changes resulted in not only effective redundancy and resilience, but also resulted in 90% reduction in paper costs, 50% reduction in internal process cost, and a dynamic work distribution. Clients enjoyed 80% reduction in process costs and 50% faster implementation time.



### Resilience through diversity

In nature, diversity is maintained through adaptation and mutation. Mutations are constantly occurring in nature, sometimes leading to subtle and apparently inconsequential changes and other times resulting in fatal failures. When there is a disturbance, however, sometimes it is the individual with the mutation that has an advantage, allowing the species to survive.

In business, diversity can be induced by constantly driving creativity and innovation. As in nature, many of the innovations will be subtle or prove to be failures, but they can also be the very thing that provides the business with a distinct advantage. Successful businesses encourage disturbance, creativity, and innovation – and provide feedback loops to make them work.



One well known example of this is Google, which requires all employees to devote one day a week – 20% of their time – to innovations, to creating mutants. This 20% time has produced some of Google’s greatest success stories, including gmail.

To meet the challenges businesses are facing, Biomimicry for Creative Innovation (BCI) and The Royal Botanic Gardens, Kew (RBG Kew) have formed a unique partnership focused at helping organisations adapt to a more sustainable future, as ‘Business Shaped By Nature’.

To find out more about how nature can help your organisation develop a culture that fosters creativity and co-operation please contact Biomimicry for Creative Innovation (BCI) or The Innovation Centre at the Royal Botanic Gardens, Kew.

To learn more, visit our websites:

BCI: <http://biomimicry-bci.squarespace.com/>

Kew: <http://www.kew.org/news/kew-blogs/business-shaped-by-nature-about-us.htm>



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