

Chapter 5

The Global Knot: How Problems Tangle in the World's Economy

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ABSTRACT

This invited chapter offers a new view on the tangling of problems, and suggests a new problem solving approach to how they might be untangled, based on a complete taxonomy of their interrelatedness, illustrated with examples of how economic value is or might be delivered by those involved in problem solving.

“Oh, what a tangled web we weave...”

Sir Walter Scott

INTRODUCTION

The digital economy has opened new doors for business through its fusion of digital and material business worlds. It has opened cracks, too, not filled by traditional product and service offerings, that offer a business home for a myriad of new entrepreneurs eager to hop the tiny hurdles to marketplace entry. For the foreseeable future, all will be innovation resulting in huge engineering challenges for those involved in business: the con-

tinued delivery of transparently adequate products and services to this new tangled marketplace is an incredible challenge. Business problem solving in this new landscape depends critically on understanding the linkages between the players, their contexts and their needs.

Previously, problems like these have been called ‘Wicked’, and everyone knows that ‘Wicked problems have no solutions.’ In my opinion, that’s a defeatist attitude unworthy of business and academia, we must simply find new models from which analysis, prediction and synthesis of fit-for-purpose business solutions can be forged. This essay explores how recent research, by the author and his colleague Lucia Rapanotti at The Open University, can be extended to give problem solving techniques that deal with this ‘wicked’ tangle of business problems.

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Tangling might seem to suggest that problems are extended objects, like pieces of string, capable of wrapping themselves around themselves and each other, tending to clump together in knots. It may also be suggestive that they're difficult to follow through the tangle: focussing your gaze on only one part of the tangle and trying to follow how it weaves in and out, how it relates to the other problems, is difficult if not impossible.

THE BUTTERFLY'S TANGLE

The large blue butterfly (*Maculinea arion*) is an extraordinarily beautiful creature that lives most of its pre-butterfly life underground with a (very) distant relative, the red ant (*Myrmica sabuleti*).

Simply put—and to cut a long story short—the large blue became extinct in 1979 in various parts of the UK. Professor Jeremy Thomas didn't like the cut-short-story: it's a complex web he discovered. The butterfly, as a caterpillar, is parasitic on its red ant relative, spending quality time within their nest duping them into treating it like royalty. The butterfly cannot live without the ant.

Now, like many natives of the UK, the red ant likes the sun, but—sadly—doesn't get enough of it. As it burrows underground—under grass—it grows cooler as the grass grows its shade, as might happen, for instance, when rabbits (*Oryctolagus cuniculus*) are not grazing it. Without rabbits the ants die off. And why didn't the rabbits graze? Well, the poor things were stung in the 1970s by myxomatosis.

The butterfly needed the ant and the ant needed the sun and they got it as the rabbit grazed. No rabbits, no shade; no shade, no sun; no sun, no ants; no ants, no large blue butterfly. It's a simple chain when you've heard the story, but until Professor Thomas came along no-one understood just why the big blue butterfly was fluttering into obscurity.

It's a salutary tale: the problems of the butterfly—how to live—and the ant—needing the sun—and the rabbit—in a world with myxomatosis—tangle

together. But, fixing the focus on the butterfly's problem, or the ant's or the rabbit's alone gets you nowhere. It's only understanding the tangle that solves the problem: Professor Thomas has seen that the reintroduction of the large blue is succeeding.

TANGLED PROBLEMS EXIST IN THE BUSINESS WORLD TOO

Meet Kate and Daniel—fun-loving small entrepreneurs—working full-time in organisations facing the credit crunch. They have lowered their expectations of job security. They pay their bills and taxes. They face an unsatisfactory educational and health system and choose independent schools and private healthcare for their children. They worry about green-house gases as much as anyone and want to do their bit. Their life is already a tangle of problems. But, in the spirit of innovation that characterises the best entrepreneurs, K&D make a molehill out of their mountain and begin an online energy-saving light-bulb web-store. Of course, K&D's step on-line doesn't solve their problems. Indeed for a short time it makes things much more complex: now their friends become potential customers, now they have to rely on their bank manager for advice and funds, now they have creditors and suppliers—some in the UK, some in Asia—legal and business advisors, an accountant, each of which has their own problems to solve.

K&D's problems are of a different nature to those of the butterflies/ants/rabbits. But they're still all-a-tangle: their business environment is tangled with their business is tangled with their family life is tangled with their social life is part of their business environment (see Figure 1).

To get a handle on the complexity of a tangle, we will first look at individual problems, beginning with an engineering model of a problem, adapted for the business.

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