

## Being Unreasonable

*“all progress depends on the unreasonable person” — George Bernard Shaw*

One of the things we tried to show in last month’s article was that innovation is not just about advances in science and technology. Finding a way to re-think the way customers are served in a retail store or how people manage their finances, for example, can be just as effective as even the biggest technological leap. In many ways more so.

A friend in Austria, a full-time innovation consultant, tells a wonderful story of how he was trying to explain what he did for a living to a man who made his living renting out boats on an Austrian lake. After listening blank-faced for a while, the man’s eyes finally lit up. “I get it,” he said, ‘I too am an innovation consultant.’ “How so?” asked our friend. “Well, I rent out boats,” the man started, “and people pay me for every hour they use the boat. If they’re late back, they have to pay for another hour. No-one seems to like to pay for this extra time, and when I watch them, I can see how they are always watching the clock so they aren’t late. They’re rowing and rowing and watching the clock. So one day I started to think about all of the expensive houses on the lake shore, and some of the famous people who live in these houses. I started taking photos of the houses and making a map of who lived where. When I’d finished I got the map and the pictures copied and laminated and I put a set in each of the boats. Now when people take out the boats, they can use the maps and go and row past some of the famous people’s beautiful houses. Some of the most beautiful houses are the ones that are furthest away from my jetty, but people want to go and see them anyway. Now people take out the boats and they look at the houses and they don’t care how long it takes, and so they stay out for longer. They are happier and I get more money. And so I think that makes me an innovation consultant.”



Well, maybe he’s not a consultant. But maybe he ought to be, because sure enough what the boatman has found is a way of creating a very profitable solution where everyone ends up happy. He wants people to increase his revenue by encouraging people to take out the boats for longer, and at the same time he gave the people renting the boats a purpose that meant watching the clock wasn’t important any more.

Solutions where everyone ends up happy like this almost always involve the resolution of some kind of contradiction or compromise. We started to talk about this last month. Solving contradictions lies at the heart of the innovation story. The breakthroughs ideas, the ones that make us go ‘wow’, are all about finding contradictions and saying ‘I refuse to accept this compromise’.

Ironically this is precisely the kind of idea you won't find described in the text books of the world. Text books are written to describe how the world works and 'best practices'. Text books collect together, provided the author does a good job, represent a description of our understanding of the world of today. But unfortunately, today's world is not the same as the one we want to create tomorrow. And 'best practice' usually means 'best' in the sense of making the best of a bad trade-off. Read an economics text book and you will learn all about supply-demand trade-off curves; read an engineering text book and you will learn all about how to make a structure as strong and as light as possible. What you are being told in both of these and any other case is how to make the 'best' (often called 'optimum') trade-off between things that are in conflict with one another. Make the chassis of a car stronger and, the books will tell you, you will also make it heavier. And use more material. And make it more expensive. The economics books will do the same thing; increase the price and the number of units sold will decrease; decrease the price and the quantity sold will increase.

Of course all of this text book knowledge is vitally important. Efficient design and efficient businesses need this information. Unfortunately, when our job is innovating, none of this text book information is actually much use to us. If we say to ourselves, why can't I make that chassis stronger *and* lighter? Stronger *and* using less material? Or what can't I design a business model where the more expensive something is, the *more* people will want to buy it?

If we can pull off this kind of magic trick, then the world tends to take notice. And if we really do it and the world sees what we did, the text books get re-written, and the world gets a new definition of what best practice means.

Knowing this, we might wish to re-define what best practice actually means. Perhaps the new 'best practice' should be all about not accepting the trade-offs and compromises that the reasonable person assumes cannot be moved.

Something else we mentioned last month was that we have studied over three million innovations. Almost every one of them has involved exactly this kind of re-definition of best practice. Almost every one has come from someone sitting down and refusing to accept that they have to make a trade-off.

Well. Maybe this sounds okay in theory. But how is knowing that going to help me to create my own breakthrough innovation?

To help us to answer that question, consider the following four problems:

The first involves the problem of tear wear on large aircraft. Imagine an aeroplane coming in to land. When the wheels first touch the ground there is a loud noise and a puff of smoke and we leave behind a rubber tyre mark. This mark is all the rubber we just lost during the landing. It then doesn't take too many landings before the tyre is worn out and a new one has to be bought. The question here is, could it be possible to reduce the tyre wear somehow in order that the tyres last longer.



The next problem transfers us from the aerospace to the medical industry. This time the problem is all about blood poisoning. Sometimes, doctors have to remove blood from a patient (for example in a kidney dialysis treatment). The blood is usually pumped through and stored in tubes and bags made of PVC. PVC has been the material of choice because it is both cheap and safe. Or at least that is what was what designers originally thought. It turns out that the PVC can contain toxins, and that these toxins are able to leach out of the PVC and into the blood. Some patients can then have a very bad reaction to these toxins. The problem this time is about how to prevent the toxins in the PVC from leaking into the blood.



Let us now look at a third problem; this time one that is completely non-technical. The problem this time is knowledge retention. Think here about students in schools or in university. With the enormous amount of information available, and the rate of addition of new information, a big education problem involves teaching in a way that will make the knowledge stay in the students' minds while at the same time knowing that there is never enough time to teach everything.

Well, we could go on listing more and more of these types of problems, but let's just include one more. For this fourth problem our attention moves into a typical company and the issue of effectively managing projects. One of the big problems of project management – particularly in the software sector today – is that we promise delivery dates to customers and then find that critical members of the team leave the company or become ill or transfer to other departments mid-way through the project. So how do we maintain the promised date even though we have lost our resources?

All four of these problems are difficult problems. Rather than ask the reader to try and solve any of them, we ask a different question for you to think about: What do each of the four problems have in common with each other?

Any ideas? No? How about if we take the question a step further and suggest to you that according to us all four are not only similar but identical.

Think about this for a minute. This is important because if the four problems are even close to identical, then if any one of them is solved, we may also have solved the other three.

In fact, the four problems are identical. They are identical for various reasons. The first is that all four involve a contradiction; there is something we want to improve and something stopping us. If we ask the question ‘what do we want to improve?’ about the four problems, the answer in each case has something to do with the idea that something is being lost. Different things in each case – so rubber in the first problem, toxins in the second, knowledge in the third and resources in the fourth – but nevertheless something is being lost. Next if we ask the ‘what is stopping us from solving the problem?’ question – and this one is a little more difficult – the answer has something to do with speed. Take the aeroplane wheel for example; the only reason we have rubber being lost is because the aircraft has to be travelling forwards in order to be flying safely.

What aircraft designers do when they see a problem like this is to try and optimize the design so that they achieve the slowest possible safe landing speed in order to get the minimum tyre wear. There is nothing wrong with this approach. In fact it is precisely what the text books will tell us to do. But it is not a breakthrough solution. A breakthrough solution would allow the plane to land at any speed and there would be zero tyre wear.

As it happens, this is precisely the solution that has now been achieved. And now for the really amazing thing. The strategy that the designer of this ‘no-wear’ solution has used is exactly the same as the strategy that has also been used to solve the other three problems.

Four totally different problems, with four completely different groups of problem solvers from completely different backgrounds. They never talked to each other, and yet when we look at their solutions they are conceptually identical. Clearly they cannot be physically identical, because in the final analysis rubber is not knowledge is not the toxins in PVC. But conceptually they are the same.

We think the implications of this are very important for innovators everywhere. They say that whatever problem you would like to solve in an innovative way, someone, somewhere else – in a different industry for example – may well already have found a breakthrough solution. In fact, when we go back to our database of three million innovation examples, this is exactly what we find. Taking things a step further, as far as we can tell, no matter what contradiction you might be experiencing in your problem, someone somewhere will already have found a solution. Most likely that other person will be in a completely different industry to you (after all, you are highly likely to be an expert in your own field and therefore know all the other solutions in your field).

From an innovation perspective, what we are saying here is that provided we can find a contradiction in what we are doing, there is a breakthrough solution waiting around the corner.

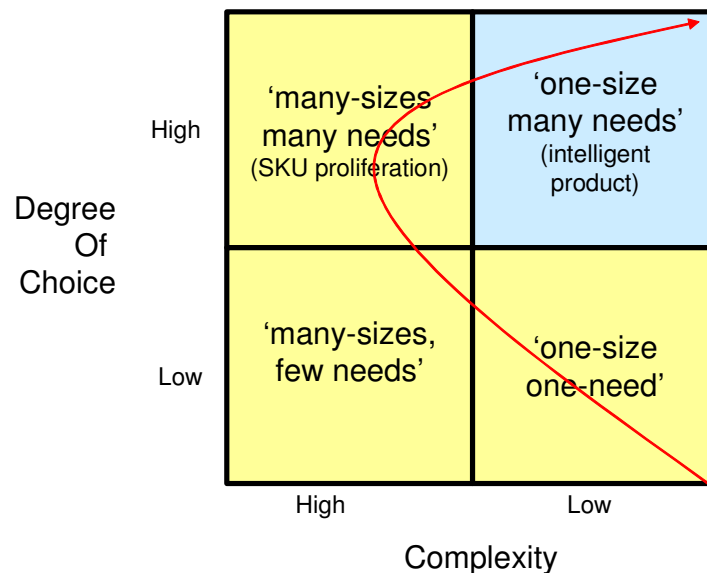
If you start thinking about it – what would you like to improve in your company, and then what is stopping you – it should be possible to find many, many such contradictions. Some

will be more important than others, but if we can solve any one, we are well on the way to creating a ‘wow’ solution.

This is a pretty big conclusion to end on, but we’re not going to end here because we think the story needs to be taken one more step forward.

If you look at some of the products and services around you right now, one of the things you will see very often is a really big trade-off between how useful something is versus how complex it is. Think, for example, about banking. In order to stand out from other banks, your bank has to try and give you a service that meets your needs and expectations. But you are different from every other customer of the bank and so if they tailored all their services to match your idea of perfection, they would be compromising on everyone else’s. So what the banks typically do in this kind of situation is to make a wide range of different financial products and hope that at least one comes close enough to your idea of perfect to make you want to use it. The only problem then is that because we are all different as customers, the banks have to create a wide range of different services. The difficulty that then creates for you is that the amount of choice on offer can become quite confusing. The same thing happens elsewhere too. Think of the range of different shampoos on the market or different makes and models of cars, or coffee, or just about any other consumer product or service you care to think about. High choice typically comes at the expense of high complexity.

We can draw this conflict like this:



Any time we draw this kind of 2x2 matrix we have drawn a contradiction: customers can have either high choice or low complexity. But this isn’t ideal of course. Ideally, the customer gets a solution coming from the blue box. This is the box where the contradiction has been solved. Ideally the customer gets a high degree of choice *and* low complexity; a high degree of capability *and* low complexity.

The company intent on giving their customers ‘wow’ solutions should always be looking to solve this capability-versus-complexity conflict.

In fact because this is such an important contradiction, we can often use it as a test to determine whether a new product will be successful or not. This then takes us back to the place we ended in last month's article. There we showed you four new products and asked which ones you thought would be successful and which ones would fail.

If we apply our contradiction test, and if we think about the choice-complexity contradiction in particular, only one of the four designs has created a solution that is both more capable and less complex than the things it is intended to beat on the market.

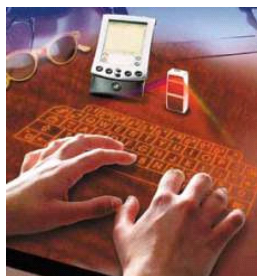
The razor, for example, offers the user greater capability by giving a smoother shave. On the other hand, the system is a lot more complex than the previous designs. Not only does it have more blades (now five!), but the user also has to go out and buy batteries. Perhaps the user doesn't care about this problem so much today (that is the hope of the makers anyway). But it is almost guaranteed that if another manufacturer produces a razor that shaves better and at the same time has one blade (or maybe none – this is breakthrough innovation remember) and no battery, then which one do you think customers will buy in the future?

It is the same problem with the bicycle seat. No doubt the one in the picture is very comfortable, but it is more complex than the usual seat. Compromise again. Why can't the user have a more comfortable saddle that is also simpler? Answer because the designers gave up too easily. They were too reasonable.

And so were the designers of the light-projection keyboard. Another nice idea that in the cold light of day really only shifts the trade-off between capability and complexity instead of trying to make the system more effective and simpler.

Only the bag of 'Equal' sand represents a genuine breakthrough. Equal is a product that balances car wheels. The normal way to balance a car wheel is to put the wheel on a special machine in the tyre shop and to attach lead weights to the outside of the wheel rim. Not very attractive and, even worse, if your tyre or your wheel gets damaged, the wheel is no longer in balance. Equal not only balances your wheel when it is new, but keeps on re-balancing the wheel throughout the life of the tyre. All this done with a handful of sand. High capability and low complexity makes for a far more ideal solution.

Ideal solutions are what the breakthroughs look like when we've finished. Ideal is what customers would ask for if they were looking for their perfect solution. The problem now is that as customers we're all so accustomed to accepting 'optimum' trade-off solutions, we don't even dare think about what ideal might look like. Or at least most of us don't. Someone somewhere, however, will often be so unreasonable that they insist on nothing less than that ideal, perfect solution. That's the subject and those are the innovation examples we will explore in more detail in next month's article.



In the meantime, start looking for the contradictions around you. And start thinking about how you might turn those contradictions into breakthrough solutions. This is what innovation is all about. Whether you are a boat keeper on an Austrian lake or head of a big company, the message from the breakthrough thinkers of the world is that we should be unreasonable.

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