

**The research/ extension/industry continuum:
why does change occur?**

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INTRODUCTION

There can be no more fortuitous or important time for a sugar industry technologists' conference on the theme *Putting Research into Action – delivering industry benefits*. Last Wednesday the Sugar Industry Reform Bill was passed in the Queensland Parliament. And last Thursday the Prime Minister announced a sugar package that he stated was aimed to revive the cash-strapped industry. Thank you for the opportunity to offer some opening remarks to launch your conference.

My topic today is, *The research-extension-industry continuum – Why does change occur?* and in addressing it, I have in the back of my mind the following questions:

- *Why does change occur?* and
- *What is the role of the research/extension/industry continuum in the changes facing the sugar industry?*

Of course the challenge to this conference and for you as sugar industry people is to make the link – between the very serious thinking and decision-making about the future which will take place in the next few months in the context of these recent government decisions, and the contribution that research and extension might make to delivering the sort of future industry which you choose to seek.

I hope you will note from these opening comments that there are already three underlying assumptions in my presentation today –

- that the things that you as sugar industry technologists and other industry participants do, must make a difference to the future of the industry,
- that innovation will be the key to developing and maintaining a competitive position, and hence a satisfying future
- that the future industry will not just happen – that there will need to be clear decisions about its shape and about the products and markets that will be the focus of your endeavours.

In preparing this address I have drawn on what I hope will be some relevant experiences – some studies of the dairy industry post deregulation, my recent experience in consultations with the stakeholders of drought, some experience with new industries in my former role with RIRDC, and my thinking about research, development and extension (R,D&E) management. I have also drawn some inspiration from a talk given by Michael Quinn Patton – a famous name in extension and evaluation studies, to the first APEN conference which was held in Queensland in 1994.

A STRATEGY PROBLEM

I want to propose to you that your industry is faced with a strategy problem. The sugar industry has been given some breathing space to work out a strategy. Schon (1983) noted that strategy is creative and responsive as well as analytical and intended, and is about path finding as much as it is about problem solving.

A very simple model of strategy suggests that strategy involves matching capabilities and the environment to achieve performance. Let's look briefly at each of these components and what R,D&E might contribute.

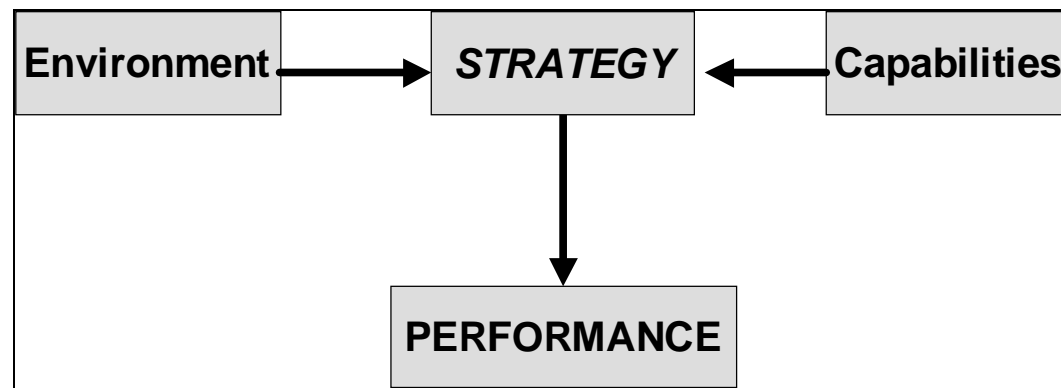


Figure 1 A simple model of strategy

(Lewis, G,1999 Strategic management concepts. In *Australian and New Zealand Strategic Management: Concepts, Context and Cases*, 2nd ed. Chapter 1: pp 5-36)

LOOKING TO THE FUTURE: THE ENVIRONMENT FOR CHANGE

There is no doubt that the prospects for Australian agricultural industries have changed significantly in the last 20 years and that they will change even more significantly in the next 20 years. We can be certain, for example, of several trends which will inevitably shape the sugar industry and the markets in which it sells its products.

For example:

- **Trend 1:** The centre of gravity for growth in food markets will be in Asia. Why? To put it simply, once you can afford enough to eat and a reasonably varied diet, then expenditure on basic foods does not grow much more – the growth in expenditure then concentrates on the growth of services attached to food. So:
 - as more women work, the demand for convenience foods increases, and people purchase the service of food preparation.
 - as the ability to have leisure and to spend on leisure activities increases, more food is purchased in restaurants and fast food outlets (people purchasing food preparation and leisure experiences).
 - as populations like ours age, more of us look to purchase a health service (food which will improve our health prospects) in addition to food which meets our nutritional needs.

None of these changes are directly likely to substantially increase the demand for sugar. However, the greatest number of consumers who will become able to afford more varied diets in the next two decades will be in the Asian region. And we can reasonably expect that as these Asian people exercise greater dietary choices they will increasingly include western style foods in their diet, and that will lead them to Coke, confectionery, beer and other processed foods containing sugar.

- **Trend 2:** The long term trend in the value of commodity products will be down – over time they will continue to become cheaper. Short term events (such as seasonal conditions in major production areas which cause under or over supply) or shifts in competitiveness will cause short term effects on prices, but in the long term the main basis of competition for commodities is price, and that leads to them becoming continually cheaper. This means that on the whole the basis for competition in the sugar market to supply to those new consumers in China or Vietnam or Indonesia, will be price.

The increasing demand for processed foods gives some scope for differentiation in sugar as a food ingredient with more tightly specified properties, but the nature of sugar – as a crystalline product – places a natural limit on the differentiation possibilities. So the long term pressure on prices inevitably means that costs must be reduced, and that means a continuing demand for better production technology.

- **Trend 3:** Industries and businesses associated with sugar production will therefore need to continue to focus on all the opportunities to extract value from the raw material of sugar cane and from its waste and by-products. The sugar industry is, I know, well aware of this, but at this point you are only part way down the road to putting the concept into practice. Each of the potential additional products has its own market, with a unique set of consumers and competitors, so the marketing side of the business will be more complex and require new skills and capacities. Some of you may remember the brave strategy of the Queensland fishing industry in the mid-1990s – to double the value of their industry in the next five years without catching an extra fish. The good news is that in broad terms they achieved that goal and it took them less than 5 years. So great things can be achieved!
- **Trend 4:** Community demands for environmentally sustainable performance by all industries – including the sugar-based industries – will be maintained or increased, so that all future operations – on-farm and in down-stream processing - will need to incorporate steady improvements in both production practices and the ability to measure and monitor their effects on the environment.

I think water and the most cost-effective ways to use it will be a dominant issue. I am well aware that the sugar industry occupies some of the highest rainfall areas in Australia. But the challenge for people in the sugar industry is to be increasingly outward looking and to be interested in opportunities resulting from trends in other parts of agriculture. And Australia is the driest

continent with many parts of Australia likely to get drier or have less predictable rainfall as climate change occurs. These changes will mean reassessing the locations of various industries. While ever returns from sugar are low, opportunities for alternative enterprises - using the industry's capabilities for different purposes - need to be considered.

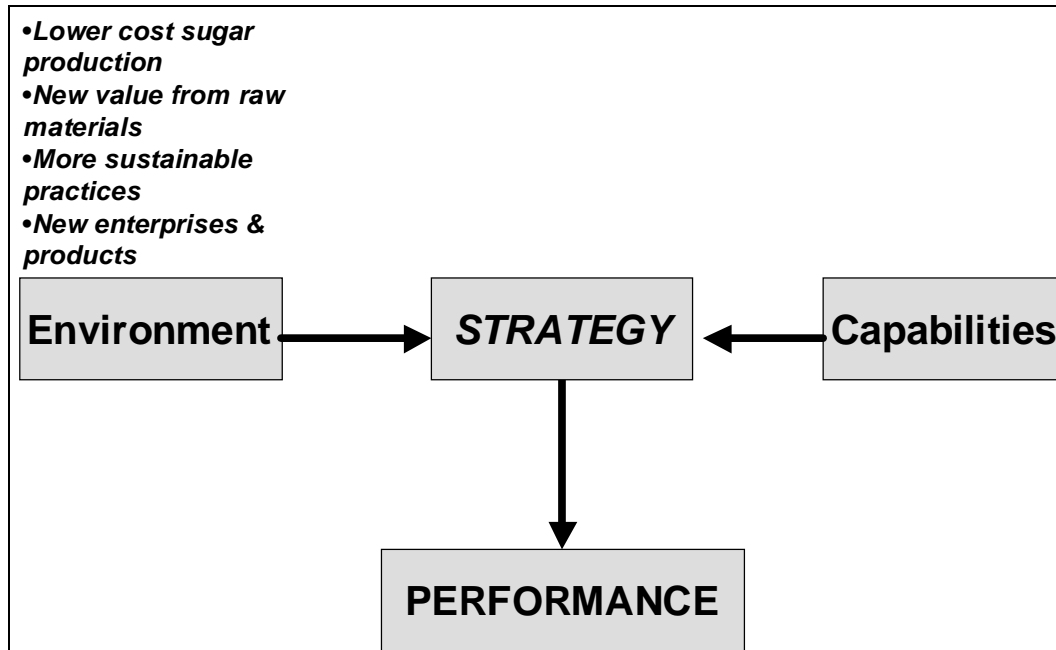


Figure 2 Some features of the environment in which the sugar industry will operate

So let me quickly summarise some of the changes in the environment and their implications for R,D&E:

- There will be a continuing focus on technology for reducing production costs because the competition for traditional sugar products will be on price
- Industry will need R,D&E to contribute to capturing more value from the sugar crop – utilising raw material better, and finding value in waste and by-products.
- Pressure to improve environmental sustainability will continue, and
- Climate change, along with other changes, will mean new opportunities – all a potential focus for R,D&E to work with industry.

Having thought briefly about some changes originating in the broad environment, let's go further with the topic for my address – *why does change occur?*, and look at the Performance box.

LOOKING TO FUTURE PERFORMANCE: MOTIVATION FOR CHANGE

I've already described some of the changes that are occurring in the external environment. But these are by definition external to the industry and to its decision makers. To think about performance we need to consider what is the motivation for change, asking, *What is your purpose for being part of the industry?* and considering how this will affect the choices people make about change. Change is implemented in any industry when members of the industry identify the need to change. My

observation over years of working with people in agriculture and agribusiness is that people almost always act rationally, if you see the world from their point of view. So it is worthwhile considering what the purpose of participation in the sugar industry might be for some of its members.

I teach my students that in the business world, the purposes of a business are to generate income and to create and preserve wealth. Coincident with achieving these purposes is likely to be the creation of an organisational capacity and image, and the survival or improvement of these entities also becomes incorporated in the purpose of the business. Farmers in recent years have become quite focused on farming as a business, and again, I am aware that at the farming end of the sugar industry you have moved in that direction. I assume that the downstream parts of the industry have to have a clear business focus.

But there continue to be additional goals – besides business success - which are important to farming families. They include preserving a lifestyle and values similar to those of the previous generation, and the close identification of the family with the farm's land, its business priorities and decisions. The goals that some industry participants choose to emphasise may not be the industry priorities that you as R,D&E people are focused on, so at least part of your role will be to clarify what are the goals, and to provide information and choices to industry participants about what might be possible. Over time it's important to re-assess goals, the feasibility of achieving them using the existing strategies, and what R,D&E activities can contribute to the process.

In the drought policy consultations, I was concerned that sometimes goals did not seem to be reassessed. To give an example, let me explain what happened to the dairy industry in the Murray Goulburn Valley.

Following industry deregulation numerous farmers moved to this area to expand production, and those already established invested in further expanding their herds. But for the first time in the history of irrigated agriculture in that area, in 2002-3 there was absolutely no water for irrigation. All the feed for the dairy herd had to be bought in, and high producing cows eat a lot. As feed became scarce the price soared and the gap between the cost of maintaining production and the value of the production widened disastrously.

Even families with off farm income kept feeding because they had debts and because they faced penalties for not producing contracted quantities of milk. Eventually the family was destitute, the water rights were sold, and finally the farms had to be sold, leaving very little to start a new life.

Let's review this situation. Peoples' decisions to keep feeding were based on their commitment to maintain production and their assumption that the goal to maintain production - that what applied in the past will always apply. But after a couple of hundred dairy farms have been sold up, and the cows have been sold and have gone out of the industry to south east Asia, the processing factories are looking for milk and the likelihood of penalties being imposed on farmers is low.

The banks now have the problem of how to rebuild any value in small farms where the land and the water rights have been separated. So with the wisdom of hindsight, it

is a pity that more of the people in that system did not start to question how to handle an extraordinary situation and to discuss among themselves the fact that sometimes the goals have to be rewritten, when the past cannot provide a useful guide to managing an emerging situation. They were caught staying too long with the assumption that the old goals still applied.

Similarly the farm activity might look the same from a distance (same hectares, same enterprise mix, same location) for the following three farms:

- a farming couple whose goal is for the business to survive for five years and then to retire completely out of farming to the coast, as for
- a couple of the same age whose goal is to hand over the business to their two sons (and their families) to be farmed as a partnership, prior to their retirement off the farm, and for
- the young couple who are trying to develop a farm business from a modest capital base using off farm income and share farming as an initial strategy to increase capital and production volume.

But the needs and choices of the key decision makers are likely to be very different, because they have different purposes.

For research and extension people assisting in the change processes which must occur in the sugar industry in the immediate future, the questions you need to encourage farmers to ask themselves include:

- Do previous assumptions about the industry still hold?
- Are you in the right business?
- Can you feasibly achieve your goals in this business?

There are also issues of purpose at the industry level. The need for rapid processing of cane post harvest has resulted in clusters of sugar farmers around a mill with a straightforward assumption that the local mill would process all the cane grown. But if the future purpose of cane growers is to maximise their incomes then these assumptions may not be so straightforward. At least some growers might be in a position to supply alternative mills, or cane might be delivered for alternative uses. Similarly the by-products of sugar production could have an increasing array of uses.

As the industry deregulates and alternative uses for sugar cane and sugar cane land and water are explored, there will be issues of how to secure future supply and how to compete (price-wise) for supply in industries with tight margins. Issues like this emerged in the dairy industry post deregulation, and highlighted that the industry structures and thinking which were appropriate in a regulated industry are not appropriate as the options increase.

An important role of extension staff in these circumstances should be to help people question the assumptions which underpin their operations, and to think in new ways about the opportunities available. What Parker and Issar noticed in their separate studies of the dairy industry post deregulation, was people thinking about new opportunities, but using the assumptions and structures which were part of the old industry structures. This led to inappropriate conclusions and decisions that added to the pain of change rather than helping them to adapt to the inevitable changes. Unfortunately extension staff were often just as unrealistic in their thinking about how systems would work in the future.

Even staff associated with processing businesses, like company advisers and supply managers, were initially caught thinking in old patterns, though the commercial realities of their roles more quickly changed their orientation.

The sorts of issues involved included:

- the prices that a particular farmer’s product could attract
- the quality parameters that needed to be achieved
- working through how future supply would be secured (from the processor’s perspective) or
- how an ongoing market could be secured (from the producer’s perspective), to enable each of them to make decisions about capital investments.

So the issues for a bio-plastics industry based on cane will probably differ from those of a biomass industry, or those for an industry providing a substrate for pharmaceuticals or another health application. In the R&D system an increasing range of options puts pressure on R&D funds and R&D capacity; inevitably new directions will need to be taken up, while long standing areas of research are streamlined or wound up.

Once again none of these are new to the sugar industry and to its R&D organisations, but previous assumptions are likely to be questioned more in the next five years than in past years. Perhaps the Sugar R&D Corporation of the future will look more like the Grains R&D Corporation, servicing a varied suite of related industries.

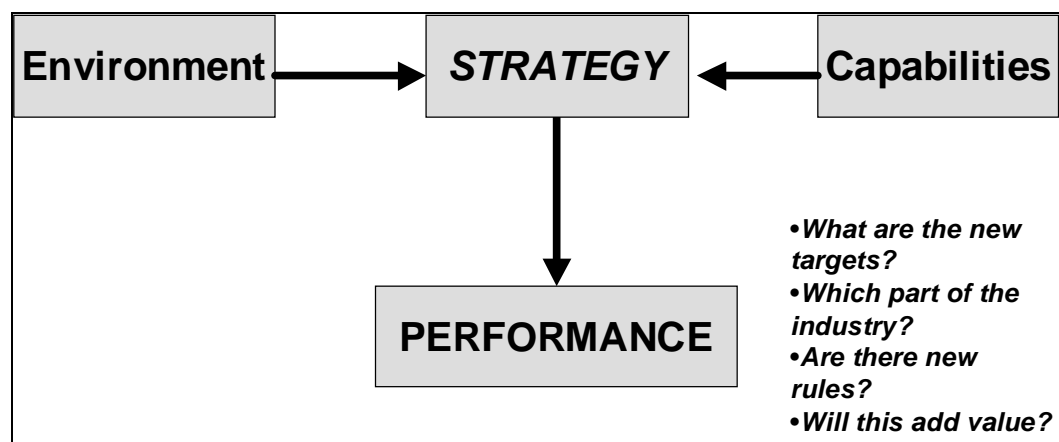


Figure 3 Key questions directing performance

So to sum up on performance, industry participants will need to work through important issues:

- What are the new targets in an industry which is more diverse than in the past?
- What part of the industry will be involved?
- Are there new rules for how the industry will work?
- Will the proposed changes add value to the value already generated from sugar as a sweetener and foodstuff?

with the involvement of R,D&E people and the conclusions incorporated in planning, direction and priorities for R,D&E.

The implications for R,D&E people will include how to:

- achieve more with less in the established areas of research, with a focus on matching Australian industry performance with their competitors in the cost-price squeeze
- redeploy resources in new areas,
- assist industry members (including themselves) to question the assumptions, and as importantly, the goals which guide their decisions
- assist industry members to acquire new skills and alliances and put them into practice (and be prepared to acquire new skills themselves)
- assist industry members to develop realistic estimates of future income flows and their timing, and to work through the transition period, which will inevitably involve further economic and social pain.

Change is stressful – particularly when the change is imposed rather than chosen, and the focus on innovation and change will need to be tempered with understanding and support. Providing information, choices, and the ability for people to feel that they have some control of their future is important. All professionals working with people in the sugar industry, but particularly farm families, will need to be alert for the financial realities and the associated social costs that will emerge for some industry participants and aware of where specialist help can be sought.

LOOKING TO CAPABILITIES: THE MEANS TO CHANGE

I said at the beginning of this talk that I would refer to Michael Quinn Patton, an acknowledged US expert on extension and evaluation. He argued ten years ago that the question that industry was posing to extension people was this - What have you done for me recently? I think it is just as applicable to research people as to extension. He went on to pose the question - when an industry runs into trouble what share of the problem should its R,D&E professionals, technology experts and organisations accept? After all, if we are the people who are charged with looking forward for the industry, with mapping opportunities for future progress, finding new technical solutions, and with leading the way, then we must question our effectiveness in circumstances where an industry is struggling for extended periods.

His view was that in our R,D&E roles we are not daring and brave enough in our attempts to lead; that we are captured by industry's comfort with maintaining the way that things have always been done and by industry's demands that R,D&E people leave the industry leadership to industry people - agri-politicians and business leaders.

Patton was not suggesting an R,D&E revolution. What he was arguing for was R,D&E people remaining in the heart of the dialogue about the industry's future. He was arguing for rigorous review of research and extension programs and priorities to ensure that they really included research and extension that, if successful, would allow the industry to take significant steps forward. He suggested that the drive for greater accountability and for industry funding had led to safe programs of incremental change which in the end, were unlikely to lead to significant forward steps. Very few programs contained the sort of brave goals that I described earlier which were set by the fishing industry. Can you in the sugar industry match them - doubling the value in five years without catching an extra fish or in your case, while keeping costs constant?

The success stories in rural industry turnaround are about communities that come together to help themselves, that take charge of finding solutions. That is self-empowerment. R,D&E people need to help it to happen and contribute to the processes of change. The key ideas are setting ambitious goals and then managing the integration to bring together the necessary inputs to make change happen.

You are already using processes like BMP and continuous improvement, with international benchmarking, to provide a framework for improving management, measuring improved outputs, and identifying areas which are limiting performance. They are vital but they will not be enough, because at their heart they are about matching the competition and the existing best practices. You will need to achieve these and go further!

Many of you will be familiar with the data which has come out of a productivity initiative involving CSR, BSES and the Productivity Boards. It shows that participants of groups which have been working on productivity for the last 5-6 years have gradually pulled ahead of those who have chosen not to be involved. The question which I can't answer, but which those of you interested in the future of the industry and its participants need to answer, is *Will progress at this rate keep the industry in business?*

The new industries associated with sugar that are being explored will need champions and investment. Industry participants will need R,D&E people to help supply them with realistic timeframes for returns to guide their investment decisions. As R,D&E people you will need to invest more in understanding markets. And because new industries and new enterprises will have strong commercial elements, you will need to operate with less perfect knowledge than has been the case in the past.

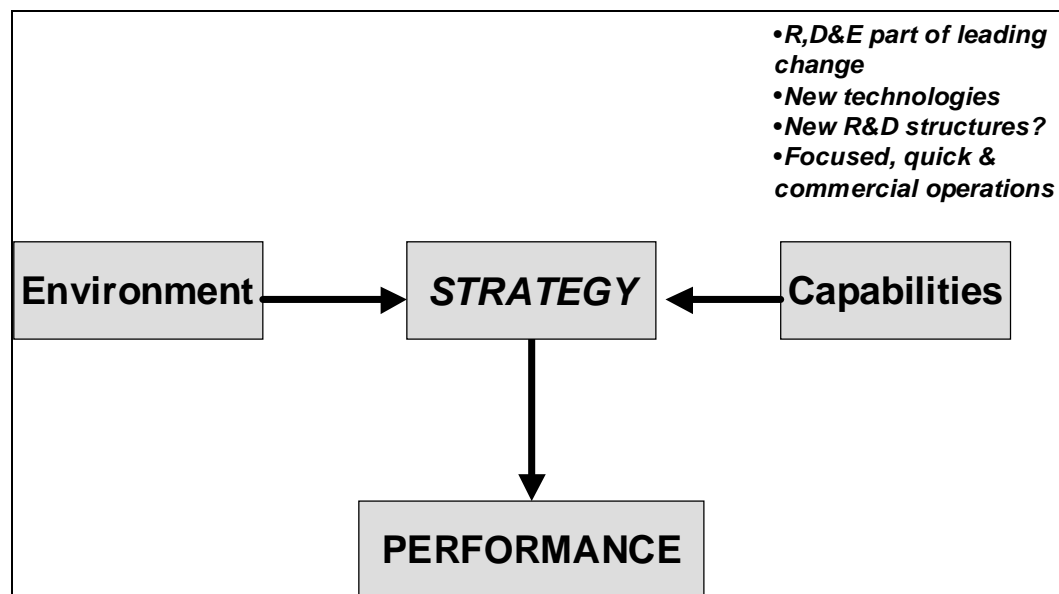


Figure 4 Key capabilities

So to sum up on capabilities, R,D&E needs to be:

- positioned as part of leading industry change;
- utilising new technologies and perhaps new R,D&E structures
- undertaking focused, responsive activities in an increasingly diverse commercial environment.

The implications for R,D &E include:

- working with new technologies – including biotechnology, materials science, marketing, economics – will almost certainly require willingness to build new partnerships and alliances, and
- stretching the limited pool of R&D funds available to cover these new areas. You are fortunate to have a CRC – are you doing the best that you can to ensure that the CRC will be able to provide an emphatic answer to the question – what have you done for me lately?
- utilising the principles we know about adoption – that change is easier when the new technology is trial-able, observable, compatible with existing practice, and affordable;
- and remembering that anything new will have systems implications (eg for environment) even if they are not immediately obvious. Careful work is required to integrate change into the system and identify the impacts.

I know from my experience in R&D provider organisations and in funding agencies that because of the length of research projects, budget cycles in the R,D&E world have considerable inertia. But because the need for change is pressing, and because you will be committed to making a difference, you will need to be moving quickly and re-checking the priorities and focus regularly. I am not convinced that you can do all this only using the traditional 3 yr and 5 yr project cycle. At this point I will have made nearly everyone in the room uncomfortable, because I am suggesting that you will all need to embark on significant change.

LOOKING TO THE FUTURE: EVALUATING STRATEGY

In periods of rapid change we need to be constantly evaluating the strategy and progress, revisiting the issues of:

- Where are we now?
- Where should we be headed?
- Are we making progress?

One of the roles of R,D&E is to update the industry on these issues.

Demonstrating to people the progress they are making is empowering. And if the outcome is unsatisfactory, it's better to know sooner rather than later! There are no positives in “blowing your equity” the way the dairy farmers did in my earlier example.

My last overhead summarises how R,D&E people might work with the industry on its strategies in the next few years.

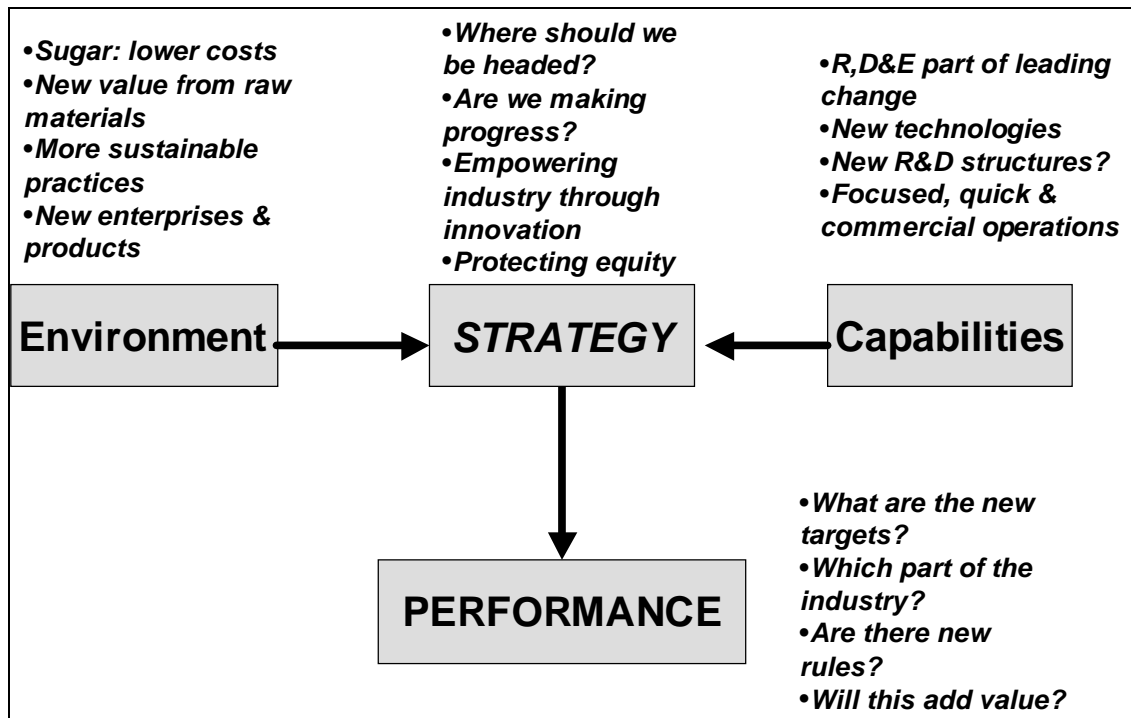


Figure 5 Summarising the strategy question and the role of R,D&E

IN CONCLUSION

I hope I have made all of you squirm in terms of the challenges that the future might contain for you in each of your roles, because in the end that is the answer to the question of *Why does change occur?* Change occurs because staying where you are is no longer sensible or comfortable!

I hope that each of you is able to take away from this conference some ideas about where and how you might contribute to a bright future for the people in the sugar industry, and it gives me great pleasure to open your conference for 2004!