BriefCase

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inflicted his employers had effectively undermined him and effectively constructively dismissed him. M's estate was awarded $50,000 for stress and humiliation.

Precontractual Representations Take Precedence

Button v *Aqua Filter Products*
30 March 2001, Palmerston North High Court, Justice Wild presiding.
Button appealed successfully to a District Court restraining order preventing him from continuing business as a water filter salesman after AF terminated his contract and claimed he had breached confidentiality agreements by using customer lists. The Court found that in precontractual representations AF had said that all new customers acquired by B were his own.

Expert Costs Not in Evidence

Airey Consultants Ltd v *Auckland Regional Council*
30 March 2001, Auckland High Court, Justice Morris presiding.
Airey had pleaded guilty to constructing a structure in a river bed without obtaining a resource consent and appealed against a $5000 fine and $3000 in court, solicitor and expert costs. The High Court found the district court was within its rights to set an admittedly high level of fine but that as no evidence had been called and made challengeable the expert costs were quashed.

Opportunity to Remedy Faults Required Before Contract Can Be Cancelled

Oxborough v *North Harbour Builders*
29 March 2001, Auckland High Court, Justice Nicholson presiding.
The O's sought to repudiate a contract to build a house on the

(Continued overleaf)

Thinking Together

Providing "thinking space" can sometimes solve what at first glance is a technical problem. MARTIN RINGER explains.

ONE TROUBLE with engineering is that it appears to be such a practical and unambiguous activity, whereas in reality all engineering projects actually begin their lives as conversations. What is more, these conversations occur in the context of a complex financial, environmental, political and corporate world. Nevertheless, provided that a project is correctly identified, defined and scoped, the task facing the engineer can be unambiguous and pragmatic; excellent engineering is all that is required to complete a project that has been developed from an accurate assessment of the engineering problem. However, my experience is that many technically excellent engineering projects are still being done without necessarily solving the problem that they need to solve or were intended to solve. Perhaps the Marsden B power station is a case in point. I'm sure that in that project a huge amount of top-class engineering was carried out, but it did not end up with useful end functions.

In my work with engineering companies in Western Australia, time and time again I was told of projects where high quality technical engineering resulted in outcomes that did not solve the problem for which they were intended. On the other hand, the application of quality thinking during the phases of problem identification and scoping was seen to save many thousands of dollars, and in one case, millions of dollars. What made the difference? Primarily, when engineering was seen to be a human process, the people involved found ways of thinking together about the nature of the problem to be solved and the possible engineering solutions in a new way. What then are the elements of effective thinking together for identifying and scoping engineering projects?

Thinking together: Developing Effective Solutions

I will use a real engineering project as an example, and identify as the story unfolds some points at which "thinking together" becomes essential, as a starting point for thinking about engineering projects in general. The project starts when a person (here, for convenience, called "the client", though in your workplace the equivalent person may work for the your own organization) requests an engineer to carry out an engineering task. Again, to be more specific, I will use a design task as an example.

The client (Sally) approaches the engineer. "Frank, we've got corrosion on the fresh-water piping on level two of the production platform. It's caused by a waste-water discharge pipe spraying dilute acidic waste onto the fresh-water reticulation pipe below it. Can you design a re-routing of the waste-water system in that region to solve the problem? We've checked out re-routing the fresh-water system and it's prohibitive."

Many technically excellent engineering projects are still being done without necessarily solving the problem that they need to solve or were intended to solve.

Here the client has identified the problem and the generic solution, and tells the engineer the specific nature of the solution. All that is left is for the engineer to do the technical engineering and submit the plans and costs. There is no collective thinking about the problem; so there is potential for a great deal of wasted time, money and resources, as we shall see…

Rather than accepting at face value the client's description, the engineer starts to create a thinking space: "Sally, I'm not familiar with that particular sector so, at the risk of going over old ground, can you tell me a bit of the background…" Here, Frank is demonstrating curiosity and opening up a space into which Sally can contribute her thinking/

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understanding. Now, as Sally describes the background, Frank notices that nobody has confirmed that *corrosion* is occurring in addition to *discoloration*. Furthermore, Sally makes it clear that the discoloration has attracted the disapproval of the CEO and so fixing it is as much as political act as it is one to ensure engineering integrity. Here is a dilemma for Frank. With the new information to hand he believes there needs to be more investigation before jumping into a project to re-route the waste-water pipe. But how does he communicate this in a way that keeps the thinking space between them, rather than turning the conversation into an argument?

Quality thinking will occur if *curiosity* is retained in the thinking space between Sally and Frank. Curiosity is destroyed if either party has to deal with feelings that are unmanageable. Most people, rather than feel disagreeable feelings, become defensive, and this defensiveness closes down the thinking space. Both Sally and Frank will abandon the thinking space and retreat into self-interest if their sense of "ideal self" is threatened by the conversation. For instance, Sally sees herself (more specifically, her "ideal self") as an intelligent, competent and experienced engineer who is taken seriously in this world dominated by men. Frank is a quiet person who avoids conflict at all costs. Nonetheless, he prides himself in not wasting clients' money on useless projects. His "ideal self" is a likeable, ethical and honest person.

If Frank challenges Sally to ensure that the pipe discoloration is really corrosion then she will feel her ideal self as a competent engineer threatened and she will retreat into defensive behaviour. If there is a heated disagreement, Frank will no longer experience himself a likeable person and so this aspect of his ideal self is at risk. However, if Frank does not challenge at all, he will experience himself as starting a project that he does not believe is necessary and so the "ethical" part of his ideal self will be challenged.

This kind of situation occurs many times each day in most engineering situations and all too often is not dealt with overtly, with consequent loss to the quality of thinking between those who need to be building and maintaining a "thinking space" between them.

Magic solutions?

As usual, there are no magic solutions or recipes for such human problems as how to build and create quality thinking spaces for engineers and their clients. Nonetheless, some helpful principles exist:

- The relationship between two people (or between the people in a team) is the bridge that carries the communication between the parties.
- The relationship is also the "thinking space" into which both (or all) parties "put" their thinking.
- The thinking space needs to be nurtured and it requires skill to utilize it well.
- Both (or all) parties need to be emotionally available to themselves so as to be available in the thinking space – rather than in defensive emotional modes that result from attacks on their ideal selves.
- There is a mandate to build and maintain an effective thinking space because this will help identify the most effective solution to the problem that really needs to be solved, rather than merely providing a good engineering solution to the problem that is first presented.

Apart from understanding the need to create thinking space, the core skill for engineers is to be able to manage their internal emotional worlds so as to stay curious when they experience attacks on their ideal selves. This is difficult but not insurmountable.

In the real-life version of the story about "Sally" and "Frank", they both demonstrated an ability to build and maintain an effective thinking space. In the event, the discoloration proved not to be corrosion. The solution to the problem was to tell the CEO that the discoloration had been thoroughly investigated, and, rather than resort to expensive engineering in order to preserve a nice image, they had chosen to leave everything in place. The CEO was impressed with the quality of thinking and the consequent cost saving.

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T. Martin Ringer *BE (Hons), M.Ed., started his professional life as a telecommunications engineer in New Zealand and now works in various parts of the world as a management consultant and trainer of socio-systemic principles in groups and organizations. martinringer@compuserve.com or www.martinringer.com*