



# THE ROYAL BANK OF CANADA

## MONTHLY LETTER

Vol. 37, No. 3

HEAD OFFICE: MONTREAL, MARCH 1956

### *Analysing a Problem*

When we analyse a problem, so as to see what its parts are, we are on the way to solving it. When we analyse a trouble or worry, so as to reach the centre of it, we are on the way to doing something about it. These are constructive and effective ways of dealing with problems and worries.

There are some business men and some authors who prefer people to think that they solve problems and write books by a sort of frenzy or intuition. The truth is that behind every sound creative act, whether in business or in art or in everyday living, there is a history of crudities of thought, of dim and distantly seen ideas, of fully-matured fancies discarded in despair because they were found to be unmanageable, of acceptance, rejection, erasure and correction.

These cannot be wholly avoided in constructive, original work, but this essay will attempt to show a way by which the load of them may be lightened. The secret of it lies in a telescopic looking ahead. No one of us wishes to be in the class of the African tribe told about by the fable-making Baron Munchausen. It is made up of people who can see just three and a half inches beyond the extremity of their noses.

But that is what people are like who find themselves rushing upon problems unprepared. They don't know where to hit the problems, or grasp them, or avoid them. They don't know how far they can hope to go in solving problems.

Vital personalities seek to foresee the future so far as is humanly possible, and to take the necessary steps to bring about fulfilment of their aims. They define their problems, amass and consider the pertinent facts, and formulate solutions. Dull personalities, on the other hand, drift up to problems. An amoeba, the lowest form of animal life, solves problems by butting up against them and flowing around and past them; but who wants to be an amoeba?

Every major modern industry puts forth great efforts to improve products and processes, but this essay is concerned with non-technical problems. The chemist has the data of the ages to work with; he adds this and that, in carefully measured quantities, and he knows, quite closely, what may be expected to result. The engineer solving a problem must calculate stresses and apply intricate but established knowledge. But we, trying to solve the problems of everyday life, must weigh many intangibles and calculate many imponderables. Before we start to take them into account we should, for self-protection, register all the qualities and quantities of a factual sort we can learn about.

#### *Why analyse?*

Analysis means picking data to pieces. Charles F. Kettering explains it this way: "The process of research is to pull the problem apart into its different elements, a great many of which you already know about. When you get it pulled apart, you can work on the things you don't know about."

The result of analysis may be to upset our complacency, and that is all to the good because it pushes us into the position where we recognize a conflict, where we are compelled to answer a question, where we uncover an unmet need. Thus we become thinkers: people who see where others do not.

Business men, like others of the human race, occasionally feel an urge to play along, to ignore safety measures, to act as the spirit of the moment bids them. Many business deals that go sour have bases like those of the common detective story wherein some victim follows his impulse to "play it alone" and is rescued — if, indeed, he is rescued — by common-sense professionals on the last page. It is infinitely better for our manhood that we should arrive at a decision about what to do after a close and critical analysis of the problem, aided by all the resources within ourselves and from others' knowledge that we can command.

It may be fitting to compare the sort of analysis we are writing about to the "dead reckoning" of the navigator and the airman. Originally called "deduced reckoning", then "ded. reckoning", this was once a good part of the navigator's art and it is still used on ships and air liners. It is simply the process of keeping track of how fast you are going, in what direction, and of when you change to other speeds or directions. It means, as described by Guy Murchie in *Song of the Sky*, plotting your hourly and daily positions on your chart as you go, and being able to deduce the net result of your various tackings into a definite position for any moment of time.

A destination is a fine thing to have. If a man does not know to what port he is steering, no wind is favourable to him. And if he doesn't know where he is now, he cannot very well set a course. How hard he rows, or how good his engine is: these do not count in his favour unless he has good definition of his objective. Hard work is often robbed of its reward by poor planning.

Edgar Allan Poe started his poem *The Raven* at the climax. He first established in his mind the concluding query, the query in reply to which "Nevermore" should be a last answer. Then, by analysis, he built up an interesting introduction, a conceivable reason for the presence of the raven which spoke only the one word, and a complete setting for one of the most poignant poems ever written.

### *What is the problem?*

When we ask "What is the problem?" that is a good question. It starts us at the end and we work backward to a solution. It is a great asset to pose problems precisely and clearly.

There is a solution to every problem, but reaching it may not be simple. We must change vague difficulties into specific concrete form, and we must break down difficult problems into parts that can be tackled individually.

Einstein remarked in *The Evolution of Physics*: "the formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill."

Suppose your problem is a financial one. What is it specifically? Do you really have a problem, or are you just worrying on general principle about "what may happen . . ."? Do you need to expand your business or your job so as to bring in more income, or retrench so as to conserve what you have?

If your situation seems serious, you will gain comfort and peace of mind by stripping it down to essentials and wiping out associated problems, fears and wishes,

thus reaching the point where you have a pertinent question free of the apparently hopeless welter that is getting you down. When you stop your mind from dodging issues and from wandering off on detours of wishes and fears, the problem may solve itself.

### *Methods of analysis*

One may take his choice of several plans of analysis, but they all boil down to a simple outline: search for the point of the problem, sort out the information about it into rational and easy-to-understand divisions, scrutinize the evidence for this and that point you have uncovered, and settle the matter. If you are analysing a difficulty, you need to identify it clearly, ascertain the cause and find the remedy.

One writer, Alex Osborn, gives this outline of problem-solving: orientation, to pick out and point up the problem; preparation, by gathering material relevant to the problem; analysis, to break down the material into manageable form; hypothesis, in which we pile up optional courses we may take; incubation or meditation, to invite illumination; synthesis, in which we put the pieces together; and verification, in which we judge the resultant plans.

As a starting place you may prepare a list of subject headings and key words to be checked, consulted, modified and extended during the search.

This sort of analysis might start with the broad statement: "There's something wrong with my business," and divide this into two statements that cover all possible causes: (1) the trouble is inside the business or (2) it is outside. Each of these is broken down in turn, until you exhaust all possible causes and list the remedies to be applied. You narrow down the search by successive division and subdivision.

Notice the difference between this intelligent procedure and the ineffectual floundering of the person who leaps from point to point without linking them, skipping other points that may have a definite bearing upon the problem. Under the rational system no factor that can be thought of is omitted; every one is assured of careful scrutiny on its merits; connections between points are seen; the weight of this or that factor relative to others becomes manifest.

Consider the further break-down that might be made if our analysis of business trouble led us to suspect that our advertising might be partly to blame. We might ask: Is colour advertising necessary if we are to meet competition? Is it nice to have but too costly? What would be its effect on prospective customers? Then, if we should decide that colour illustration is necessary, we would go on to ask: How much should we use? In what proportion? In what pattern of arrangement with the rest of our advertising campaign?

## *Break down the problem*

The first step in analysis, then, is to break down the problem by splitting it into its components.

We must, said Massachusetts Institute of Technology's great Professor Erwin Schell, distinguish among problems, objectives and rewards. "A young man may state his problem to be that of increasing his remuneration. Yet this is really a reward for attaining the true objective of increasing his value. The young man's problems relate to the seizing of opportunities or the overcoming of difficulties surrounding his objective."

The easiest way to break down a problem is to ask questions. Socrates, the Greek philosopher who gave rise to the "Socratic method", a special kind of questioning, remarked "Life without inquiry is no life for man." The man who does not habitually wonder about things is nothing more than a pair of spectacles behind which there is no seeing eye. It is imperative that men and women seeking the good in life should keep alive the faculty of asking questions.

Before making even simple decisions, it is well to ask questions. For example, if you are asked to head up a campaign to raise money for some charitable purpose, you might make your analysis along these lines: What is the purpose of this campaign? What is my motive for accepting the job? To whom shall we appeal? Whom can I count on for help? What organization do I need? There might be twenty or fifty headings and sub-headings, clarifying your objective, confirming your decision, revealing what data is to be sought, and helping you to get on faster with the creative thinking and organizing that such a campaign requires.

The man facing a business problem will wish to go further: he will ask "else" questions, like "what-else, where-else, when-else, how-else, who-else, and why-else". This can be the most revealing part of the analytic process. If you ask enough questions, covering a wide enough area, you will eventually ask one that leads to the solution of even the most obscure problem.

We should try to make our questions significant. If we ask what would be the effect of a spark falling in a room full of gunpowder that is quite different from asking the effect of a spark falling amid the satellites of the planet Jupiter, says A. B. Johnson in *The Language of Wisdom and Folly*. The first is significant; the second would solve no problem and work no change.

## *About definition*

What does "significant" mean in everyday life? The dictionary defines it as "having a meaning; not negligible."

Definitions are useful starting points, if that is all we use them for, and if we keep them significant and

understandable. They are to explain something to somebody. We don't need to define everything, but only things that may not be clear.

A definition must not be circular, like the description of a demon as one having demoniacal powers, which brings you right back to "one having demoniacal powers is a demon." Analysis, we must remember, is an effort to clear away the dead-wood and make the important thing clear.

## *Summing up*

Having analysed our problem, we must arrive at a judgment about it. This might be called evaluation.

We have now, in the last column of our analysis, isolated all the facts needed to reach a solution. We must weigh them carefully, being sure that what we have found out is what we have been looking for. Is it satisfactory, and not merely "good enough"? Guard against jumping to the conclusion that because the last-column facts are not what you expected or wanted them to be they must be wrong.

Here is the time for deliberation, a rehearsal in your mind of possible competing lines of action. Shakespeare called this incubation "the spell in which imagination bodies forth the forms of things unknown."

It is not a time to seek solace for mistakes the analysis has uncovered, nor is it an occasion to concoct escape routes from them. What we are seeking is a truth upon which to build the future. We wish to resolve existing entanglements, recover harmony, and redirect our energies and thought toward solution of our problem. We want a judgment on the facts we have uncovered, and to use that judgment as a base for action.

Every completed analysis yields material for at least one hypothesis. We should go the limit in thinking of or devising many possible ways of acting.

Hypotheses are not necessarily learned formulae. They may be only choices of action based on the possibilities revealed by your analysis. Here is your problem: here is your analysis: what is to be done about it?

Just to take a few of the many forms of action, your hypothesis may lead you to *adapt* yourself to a new situation, or your goods to a changing market, or your production schedule to new delivery demands; it may prompt you to *substitute* a new worker for one who is unsatisfactory, or a new machine to speed lagging production, or a cheaper ingredient for the too-expensive one now used, or a novel approach to the hard-to-get potential customer; it may show how you can *re-arrange* your way of living so as to make time for what you want to do, or your staff so as to

distribute the load better, or your plant, store, home or workshop so as to increase efficiency and comfort. Hypotheses covering these three possible ways of action — adaptation, substitution, and re-arrangement — will solve many problems.

### *Two sorts of information*

Analysis demands two sorts of information: what we already have from experience and past study and what we can obtain now. Solutions come by putting together bits of what we know and pieces of things we learn.

We should not be small in our fishing for knowledge. Mark Twain wrote in *Life on the Mississippi*: "I use the meridians of longitude and the parallels of latitude for a seine, and drag the Atlantic Ocean for whales. I scratch my head with the lightning and purr myself to sleep with the thunder."

Most of our problem-solving truth is arrived at by successive processes of correcting error. The educated man keeps his mind open on every question until the evidence is in. He knows that on the shady side of a picture there are sometimes truths quite as interesting and necessary as those on the bright side. As Schopenhauer put it: "It is only when a man looks at his knowledge from all sides, and combines the things he knows by comparing truth with truth, that he obtains a complete hold over it and gets it into his power."

The fuel behind our reasoning is factual information. Facts are the quick glimpses we get of a ceaseless transformation, like the separate frames of a moving picture.

We need a certain sort of integrity in gathering facts to analyse and solve our problems. Darwin had it; when he came upon data unfavourable to his theory he hastily made a note of them. He knew that things disagreeing with our preconceived ideas or contrary to our wishes have a way of slipping out of our memory rather readily.

Some facts come from records of the past, some from our observation, and some from the discoveries made by other persons. Records are important, because things that affect business and social life don't happen only at this time, at one minute of one day; they happen yesterday and a week ago and a year ago.

### *Warning signals*

In analysing records, observations and discoveries we should pay attention to four little warning signals extracted from Alfred Korzybski's book *Science and Sanity*: (1) the symbol *etc.* to remind us that what we have found is only part of the whole; (2) *dates* to remind us that things change; (3) *index numbers*, to keep our identifications of things clear; (4) *hyphens*, to remind us that events are connected.

Whether a statement incorporated in our analysis is true at this moment, what its connection is with other facts, and whether we have given undue emphasis to it: these may be tested by the warning signal device. It becomes evident that our conclusion cannot be accepted as valid until we have applied wisdom to the knowledge given by our analysis. Information and facts are for thinking with: after knowledge comes insight.

Imagination is needed from beginning to end of this problem-solving process. We need imagination to think up what new knowledge to seek, where to obtain the needed information, how to see the connections between facts, and how to weigh and consider so as to arrive at a true decision. "There may be," says an appropriate paragraph in *Managing Your Mind*, a book by Kraines and Thetford, "a best way to skin a cat or solve a problem; but usually we need to formulate several ways, try them out in imagination, and then choose the one which seems most likely to work."

### *A few pointers*

We are not seeking, in analysing a problem, arguments for going on believing or acting as we already do. That would be a witless pursuit indeed. What we seek is to expand our horizons, to bring within our view all that will help us to reach wise decisions, and then to concentrate our thinking upon the things that are significant: from the telescopic to the microscopic, as it were.

Strange facts coming to view may beget strange thoughts and suggest revolutionary ideas: he who seeks a right solution of his problem will be receptive to them all, and will test them, but he will not go beyond his evidence.

The wise analyst will not be fanatical. He does not wish to become so occupied in tearing flowers to pieces and studying their mechanism that he neglects to stand back and see the daisy whole. He will not become such a slave to analysing and planning that he has no time left to do things. There is no necessary virtue in "planning" itself: we must have a purpose, knowing what justifies the ends served by the planning.

A good analysis cannot be made by a person who is satisfied with things as they are, or who, being dissatisfied, accepts complacently the thought that it is impossible to improve them. There is a better way of doing most things, and the purpose of analysis is to find that better way.

Chance and change are preparing an ambush for the man who is coasting without a plan, but they will not catch unawares the man who maintains an inquiring attitude.