

## *Practical Thinking*

By [Edward de Bono](#) (includes links to many of his other books)

practical thinking

Amazon link: [Practical Thinking: 4 Ways to be Right; 5 Ways to be Wrong; 5 Ways to Understand](#)

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**How is it that in an argument both sides are always right?**

How is it that no one ever makes a mistake on purpose but that [mistakes get made](#)?

[How to guarantee non-performance](#)

[The short life-span of the business enterprise](#)

These are some of the questions that [Edward de Bono](#) answers in this book.

His theme is **everyday thinking**, how the **mind actually works**—not how philosophers think it should work.

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### Introduction

**Everyday thinking** is what fills in the time when you are neither asleep nor dead.

Just as you notice a car engine only when it is not running smoothly so you become aware of everyday thinking when it is [not running smoothly](#).

Everyday thinking is involved in

family squabbles;  
making mayonnaise;  
planning a holiday;

what to do about the dog when you want to go away for the week-end;  
thinking of an excuse for getting to work late;  
finding an easy way of getting through your [work](#);  
[educating](#) the children;  
opening a bottle of beer when you have lost the opener;  
keeping your end up in a [political](#) argument;  
and possibly trying to make the world [a better place to live in](#)

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There is no law requiring one to think for oneself or to make one's own ideas.

In important matters it is usually easier to accept other people's ideas ready-made and this saves one the trouble of doing any thinking for oneself—though one may still have to do it in minor matters.

Often one has no choice but to accept the ideas of others because thinking things out for oneself can be so difficult.

[Education](#) unfortunately provides little help in this matter.

You can probably remember things you were taught at school

about geography (valleys, river deltas, rice-growing countries, etc.) and

about [history](#) (dates of battles, names of kings, etc.).

**But can you remember what you were taught about [thinking](#)?**

Or is thinking something that one knows all about anyway—like walking or breathing?

The **truth** is that thinking is too important a matter to do anything about.

So we have left it to the philosophers who over the ages have amused themselves with the most intricate analyses which have little relevance to everyday life.

Some time ago a man (Rudolf Carnap), who was described as being one of the most influential philosophers of the century, died.

Influential on his fellow philosophers, but hardly on anyone else.

Just how much influence does logical positivism have on everyday thinking?

[Why \*\*truth\*\* is best described as a particular constellation of circumstances with a particular outcome.](#)

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In everyday thinking **both sides in a fight are always right**

This is because being right is the **feeling of being right**.

**This is what guides your actions**, not the abstract philosophical rightness of your ideas.

In this book the four practical ways of being right are explored:

currant cake (emotional rightness);

jig-saw puzzle (logical rightness);

village Venus (unique rightness);

measles (recognition rightness).

In addition to picking out and **naming** the four different ways of being right the book

also picks out and names the five levels of understanding and the five major mistakes in thinking.

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The purpose of picking out and **naming** these patterns of thinking is to make them recognizable.

It then becomes possible to recognize these patterns in your own thinking and in the thinking of others.

You can also talk about them in as definite a way as you might talk about a car or a hamburger.

Without such **named** patterns thinking is vague and intangible and hence very difficult to talk about.

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As soon as one can talk about thinking one is on the way to regarding it as a skill like playing tennis or cooking.

## Far too many people regard thinking as a matter of inborn intelligence—which it is not.

In my researches and experiments I have again and again come across very intelligent people who turned out to be very poor thinkers.

Nor have I found that thinking skill has much to do with education, for some of the best educated people (Ph.D.s, university lecturers and professors, [senior business executives](#), etc.) have also been poor thinkers.

To regard thinking as a skill rather than as a gift is the first step towards doing something to improve that skill.

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The book looks at practical everyday thinking which allows us to use something effectively without knowing all the details—for instance a TV set.

Other aspects of thinking explored include imagination, creativity, the YES/NO system, the deadly danger of arrogance and the huge importance of humour in thinking.

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Thinking may seem to be too complex a process to be understood but the **two basic steps** are quite simple (**carry on** and **connect up** further down the page).

The book also explains the extraordinary paradox that man may be able to think so much better than animals only because he is stupider.

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In writing about thinking it is very easy to get lost in word dances with ideas chasing ideas in a confused whirl.

In order to avoid this confusion the book is based on a direct experiment (the black cylinder below) in thinking and not on fancy speculation.

This simple experiment provides the backbone that runs through the book and keeps it from flopping into a shapeless metaphysical mess.

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I really do believe that the most optimistic thing about the human race is its **relative**

stupidity.

There would be little hope if the human race was as bright as it thinks it is and still got itself into so much trouble.

I believe that if we started paying [attention](#) directly to the subject of everyday thinking it would be rather more useful than shooting for the moon.

At the moment, for instance, there are more professors in England concerned with Sanskrit than with thinking as a skill.

Why not try a page search for “right” on [this page](#) and [this page](#)?

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    - Imagine a tall black cylinder standing on a white table in front of you.
    - No one is near the table and there is nothing on the table except the cylinder which stands stark and alone.
    - About twenty minutes pass.
    - Suddenly, without warning, the cylinder falls over with a crash.
    - Why?
    - No one has gone near it.
    - Nothing has been seen to happen.
    - There is no sound except the crash of the falling cylinder.
    - You are asked to try and understand what has happened and to write down your explanation on a card.
    - But you have only ten minutes in which to think of an explanation—and you are not allowed to examine the cylinder in any way.
  - Experimental subjects
  - **Relevance**
    - The black cylinder experiment was deliberately kept simple so that the thinking processes involved in trying to **understand** the phenomenon could be easily

analysed.

- What relevance does this experiment have to everyday thinking?
  - There are the following points which are common both to everyday thinking and to the black cylinder experiment:
    - Not enough information is given.
    - There is no opportunity to collect the data one needs.
    - Trial and error experimentation is not possible.
    - There is no way of checking whether an idea is right or wrong.
    - It is not a closed situation in which one can prove that one is right.
    - There may be several different explanations.
    - One is dealing with vague ideas and not with precise numbers which can be put through a mathematical formula.
    - It is not so much a matter of checking ideas but of thinking of them first.
    - In spite of the inadequate information one is required to come to a definite conclusion.
    - There is no one to ask.
- Out of the thousand people who took part in the experiment only three wrote on their cards: 'I do not care.'
  - This is a perfectly valid response for no one is obliged to **understand** anything.
  - If you do not care to **understand** something then you must borrow an explanation from someone else or do without one.

## ○ Process not content

- In looking at thinking the usual difficulty is to separate the thinking process from what is being thought about.
- The atomic physicist may be thinking in terms of quarks and neutrinos.
- The housewife may be thinking of the price of mutton.
- But the actual thinking process may be the same.
- This thinking process is determined by the nature of mind itself.
- There is no switch that can be flipped as one moves from trivial matters to more serious ones.
- It is the same thinking engine that is working.
- The thinking behaviour shown in the black cylinder experiment is determined by the characteristics of the same mind which has to deal with such things as politics and passion and peeling potatoes.

## ○ Raw thinking

- The experimental subjects were at a disadvantage because they had insufficient data, insufficient chance to examine the cylinder and insufficient time to think up an explanation.
- The intended result of this insufficient 'cooking' was raw thinking.
- Given enough time and information the explanations would have been much better.
- There would have been a careful process of analysis and checking until, everything either seemed right or was rejected.
- From the perfection of the result it would have been impossible to tell anything about the process behind it.
- **But in a hurriedly constructed building the joints, cracks and method of construction are much easier to see.**

## ○ Results

- Some of the results confirm what one might have expected.
- Others are quite contrary to expectation.
- The main use of the results is that they provide a tangible framework for identifying the basic features of thinking:
  - the **four ways to be right** — further down the page
  - the **five ways to be wrong** — further down the page
  - the **five ways to understand** — next section
  - and such things as **humor, creativity, imagination** and **attention**. — further down the page
- These are the stuff of everyday thinking.
- If one can learn to look at these aspects of thinking objectively then one can start to do something about them.
- The black cylinder experiment provides a magnifying glass with which to look at thinking.

## • **The Five Ways to Understand** ([here](#))

- L-1 Simple description
  - Impossible to say nothing
  - Pass it on
  - A Valid First-Level Explanation of What Happened
- L-2 Porridge words
  - Very useful meaningless words
- L-3 Give it a name
  - Magic and magnets
  - Modern magic
  - Minor magic
  - Names mean a lot
- L-4 The way it works
  - Cause and effect
  - Name or process
  - Follows on
- L-5 Full details
  - How full are full details?
  - Combination of third and fourth levels
- Summary of levels of **understanding**
  - Levels used everywhere

## • **The Use of Understanding** ([here](#))

- How much detail
  - Scientific analysis
  - Everyday thinking
  - Doing something
  - Need and use
  - Detail danger
  - Usefulness is what matters
- Black boxes
  - Press the right button
  - Spells and special gods
  - More primitive but more advanced
  - Automation age
  - Ignorance tools
  - Leap-frog
  - To use a black box one has first to recognize it in order to know which is the right button to press
- Named-ideas and bundle-ideas
  - Contents
  - Movement
  - Requirements
  - Requiron
  - Modification
  - Named-ideas and action
  - Trapped
  - Stock
    - 1. Precise named-ideas
    - 2. Vague named-ideas (porridge words)
    - 3. Interaction named-ideas
    - The vague ideas and the interaction ideas are the ones used to make up bundle-ideas
    - Third and fourth level of understanding
      - Bundle-ideas tend to correspond to the fourth level
      - Named-ideas on the other hand correspond to the third level
- Precise principles and vague general ideas
  - [Ignorance or knowledge](#)
- Summary

## • **The Basic Thinking Processes** ([here](#))

- Carry-on
- Connect-up
  - Movement
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  - Jump ahead

- Known and unknown destinations
    - Porridge words
  - Man is stupider than animals
    - The short-sighted hen
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- The **Five Ways to be Wrong**
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    - Weight to one side
    - Top-heavy
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    - Shift in centre of gravity
    - Monorail mistake is easy to make
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    - Abstract ideas
    - Measurement
    - Names not measurement
  - M-3 The misfit mistake
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  - M-4 The must-be mistake
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    - Shuts out alternatives
    - Culture and personality
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    - Gut feeling
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      - The ideas it supports may clash with the interests of others
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  - R-2 Logical rightness (jig-saw puzzle)
    - Funny-shaped pieces
    - Choose your own pieces
    - Make the pieces fit
    - Using the wrong pieces
      - Which bowl is more contaminated ...
      - Increasing the ratio of boys to girls
      - Reaching the wrong conclusions
    - Limitations
      - 1. Incorrect basic ideas are ... properly fitted into a logical structure
      - 2. Conclusions can never be more valid than the ideas one starts with
      - 3. A clever person can prove just about anything by skillfully fitting together ...
      - 4. Incorrect basic ideas at the bottom ...
      - 5. Arrogance and a belief in the absolute rightness
      - 6. Being right at each step is the essence of logical rightness
      - Main limitations of logical rightness can be summed up as the arrogance ...
  - R-3 Unique rightness (the village Venus)
    - de Bono's 2nd law

- Soft sciences
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    - 5. Diagnosis name you use has the same meaning for other people
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    - 7. Recognition rightness does not in any way prove that the basic picture is itself right
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## Knowing What to Do

Thinking is that waste of time between **seeing something** and **knowing what to do about it**.

The time is filled with ideas which lead on from **one to another** as we try and sort out the unfamiliar situation and **change it into a familiar**, one with which we know how to cope.

Later on man learns to amuse himself by fooling around with ideas for their own sake.

But the **basic biological purpose of thinking** is to enable a living organism **to survive** by getting the things it needs and keeping clear of the things that are dangerous.

It is a matter of **knowing what to do about a situation**:

does one run **forwards in greed** or **backwards in fear**?

## Three basic know-all processes

There are three basic processes used by living organisms to know enough about things to react to them properly.

### Instinct

This is a fixed reaction built into the organism so that a special situation will automatically elicit a special response.

The response is pre-wired.

It is as direct, automatic and unchanging as the illumination of a room if you switch on the light.

The response is built into the organism just as the electric wires are built into a house.

No learning is required.

Animals show instinct responses to situations which they could not possibly have encountered before.

A particular black silhouette moved above naïve nestlings will make them cower in fright because it suggests the shape of a hawk moving through the sky.

Exactly the same shape moved backwards has no effect because it looks like a harmless swan.

Instincts are precise responses set off by precise situations.

Young gulls open their mouths for food as soon as a beak-like shape with a red spot on it appears above them, because this is how the mother gull looks.

A piece of wood bearing a red spot will produce the same response.

This type of direct response has been beautifully worked out by Tinbergen.

#### Advantages

1. An instinct response is immediate and perfect and requires no learning at all.

2. An instinct response is predictable and its meaning does not change. This makes it useful for communicating with other animals.

#### Disadvantages

1. The instinct response is fixed and cannot be adjusted to suit the situation. Nor can it be abolished if the response is inappropriate.

2. The number of fixed inbuilt responses is limited so there is no way of coping with new situations for which there is no ready-made response.

## Learning

### *First-hand learning*

This is a slow process in which an organism finds a suitable response to a situation **by trial and error**.

A secretary finds out how her boss prefers his letters typed.

A circus horse learns how to stand on its hind-legs.

A cat learns to find its way home.

A tennis player learns how to serve.

Learning involves doing something about a situation and then seeing what happens.

The outcome may be good, bad or indifferent.

If you eat red berries the taste may be very nasty.

If the circus horse stands on its hind-legs it gets rewarded with an apple.

Gradually one learns to shape the response so it produces **only pleasure** and **no pain**.

Once it has been shaped in this way the response is elicited by special situations just as an instinct response might be.

#### Advantages

1. The advantage of learning over instinct is that one can develop responses to new situations.

2. Responses can be exactly adjusted to a situation. Bad responses can be improved or abolished.

#### Disadvantages

1. Learning is very slow as one has to mess around with trial and error. This is especially so with long-range learning where the reward does not come at once but only after a long

sequence of responses (so you cannot tell at once whether you are on the right track or not).

2. Direct learning can be dangerous. It would be very dangerous if everyone had to find out about an electric socket for themselves by putting their fingers into it.

### ***Second-hand learning***

This is a sort of artificial instinct.

It involves acquiring immediate responses to situations without having had to go through the slow trial and error process for oneself.

It is passed-on or second-hand learning.

It comes from books, TV, school, parents, other people, etc.

A child learns that a car is dangerous without having to find out for himself.

A student learns that vitamin B12 can cure a certain type of anaemia because his medical textbook tells him so.

A man learns that an investment is risky because his broker tells him so.

#### **Advantages**

1. Second-hand learning is very much quicker and safer than first-hand learning.

2. Second-hand learning can apply in advance to situations which have not yet been met.

3. Second-hand learning can apply to situations which would never be encountered (for instance geography lessons about far-away lands).

4. Second-hand learning can be stored and passed on (books, etc.) so that the total body of learning grows and grows.

5. Lots of different minds (some much better than one's own) can get to work on a situation and produce a much better response than one could by direct first-hand learning.

#### **Disadvantages**

1. You depend entirely on the trustworthiness of the source that is passing on the learning. Since you do not encounter the situation directly you can only meet it through the possibly prejudiced eyes of the person who is handing on the learning.

2. The second-hand response is a sort of average response suitable for everybody and not as finely tuned to individual requirements as a response learned at first hand.

3. There may easily be conflicting responses passed on by different sources of second-hand learning (e.g. parents, teachers, pals). This can be confusing.

4. Since reward and punishment are less direct there is not so much keenness to learn as with first-hand learning.

## Understanding

An instinct is a response fitted to a special situation.

The smell of a female moth entices the male moth from miles away.

In first- or second-hand learning responses are also fitted to special situations.

These become 'familiar' situations because one knows what to do about them.

But what about new situations?

What about unfamiliar situations which do not have any ready-made responses?

A strange woman appears on the doorstep.

Immediately you try and put the situation into a familiar category to which you know the response.

Is she carrying out some sort of poll?

Is she trying to sell you a flag for charity?

Has her car broken down?

Has she just lost her way?

Is she an old acquaintance whose face you have forgotten? ¶¶

Understanding is the process of changing an unfamiliar process into a familiar one so that you know what to do about it.

This changing around takes place in the mind as you go from one idea to another until the unfamiliar situation is seen to resemble or be derived from familiar situations.

This **going from one idea to another is thinking**.

Understanding is thinking. ¶¶

If you see a white sheet flapping in the night it is frightening because it is an unfamiliar situation, but as soon as you can see it as a sheet on a washing-line then you know what to do—nothing.

In a foreign restaurant you try and relate the strange words on the menu to words you already know in order to understand what dishes are available.

In the end you find that some of the most exotic names refer to very familiar dishes. ¶¶

Understanding is a very powerful process

because it is the means by which man multiplies his knowledge.

He can only learn responses to a few special situations but through understanding he converts any number of new situations into already familiar situations and thus knows what to do about them at once (without having to develop a response through first-hand learning or ask for one from second-hand learning).

Advantages

1. Understanding allows one to multiply learning by using old responses in new situations.
2. With understanding you can explain new situations to other people so that they can choose their own responses instead of having to accept second-hand responses blindly.

Disadvantages

1. Understanding is limited by the available old responses (or ideas) with which to explain the new situations.
2. In trying to understand a new unfamiliar situation in terms of old ideas one may leave out a lot or distort the actual situation to make it fit the available ideas.
3. It is usually possible to understand an unfamiliar situation in several alternative ways but one is apt to settle on the first way and believe this to be the only possible way.
4. Different people may understand the same situation in quite different ways and act accordingly.

## Thinking in practice

In practice modern man does not use instinct very much.

Nor does he have much time for direct first-hand learning.

He depends **nearly all the time on passed-on** second-hand learning **and on** understanding.

His basic knowledge and ideas

come from the second-hand learning that is deliberately passed on to him in education

or which he picks up through interest or accident.

He then uses his understanding

to break down new unfamiliar situations

into familiar parts

so that he can

apply his basic knowledge.

## Why bother?

Why should man bother to try and understand things?

1. In order to react suitably: avoid, ignore, alter, enjoy, use, examine, etc.
2. In order to bring about effects: cure disease, produce better crops, overcome poverty, fly faster than sound, prevent crime, win yacht races, etc.
3. In order to tell what is going to happen later: to a child with a high temperature, to the stock-market, to the weather, to the polluted environment, etc.
4. Curiosity.

## Basic thinking process

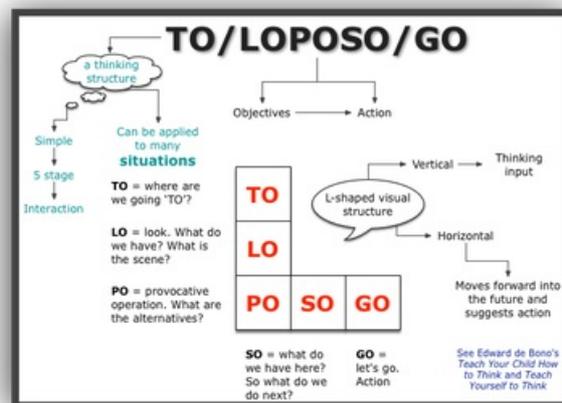
The change from unknown to known is understanding, and the way this change comes about is thinking.

It may be a matter of understanding what something is or it may be a matter of understanding how to bring about some effect.

Understanding is finding out what to do.

This finding out is thinking.

## Understanding is thinking.



[TO-LO-PO-SO-GO](#)

# teach people to think

## The Five Ways to Understand

How do you **explain** an event you cannot understand?

It may be an eclipse, it may be a strange illness in which a person falls to the ground in a sudden fit, it may be the failure of a crop, it may be the way young people take to drugs, it may be the way a solid black cylinder falls over.

In everyday thinking five levels of understanding are used to explain such things to oneself or to others.

## **L-1 Simple description**

'It fell.'

'The black cylinder suddenly fell over.'

'It changed position suddenly.'

'Fell over on its side.'

'The tube fell over.'

'Changed from a vertical to a horizontal position.' ❧❧❧

These explanations of why the black cylinder fell over are simple descriptions of what happened.

A description is the simplest possible level of explanation.

You simply say what you saw happening.

The only way to say less would be to say nothing at all. ❧❧❧

Well over 20 per cent of those taking part in the experiment used simple descriptions.

But do these simple descriptions actually tell us anything at all?

Do they not just say: 'The black cylinder fell over because it fell over'?

At first sight it would seem that this sort of circularity is no better than saying nothing at all.

But if you look more closely you can see that these simple descriptions do actually say quite a lot.

They are true explanations because they commit the viewer to a definite point of view.

In order to realize what these descriptions do say you need to consider not their content but *what they leave out*. ❧❧❧

If I had pulled the tube over by a nylon thread which was so fine that it was invisible to most of the viewers then those who could not see the thread would write as above:

'The tube fell over.'

But those who did see the thread would write:

'The tube was pulled over by the lecturer.'

### ***Impossible to say nothing***

It is impossible to say nothing at all if one says something.

This important point arises directly from the validity of simple description as a type of understanding.

The simple descriptions which explained that the cylinder 'fell over' all imply that this falling over was to do with the cylinder itself.

This excludes the idea of the cylinder being 'knocked over' as suggested by many other people in the course of the experiment:

' ... blown over by the wind.'

' ... shot at by an accomplice in the audience.'

' ... table was tilted.'

' ... table was shaken.'

' ... lecturer walked over when no one was looking and knocked it over.'

' ... pulled over by invisible wire.'

The person putting forward the simple description may not have meant to exclude all these possibilities but in committing himself to a description he is already making a choice of explanation.

Any description which does not include all possibilities is a commitment to those it does include.

In practice descriptions never do include all possibilities, for the person making the description is not describing the *actual situation itself* but the *way he sees it*.

### **Pass it on**

The person offering the simple description may keep his options open by being prepared to go back to the actual situation and describe it in another way.

But once he has passed his description on to someone else (as a journalist might pass on a description) then the receiver is committed to that point of view since he does not have the real situation itself to examine.

I would certainly accept the simple statement,

'It fell over,'

as a valid first-level explanation of what happened.

### **L-2 Porridge words**

'Cylinder had time controlled "knocking over device".'

'Device in tube caused it to unbalance.'

'Device inside to make it fall over.'

'Timing device which re-distributes balance.'

'It was unbalanced by a time device of some kind devised for this purpose.'

'The cylinder had a mechanism to make it fall over after a certain time.'

'The cylinder fell due to some mechanism putting it off balance.'

'The switch eventually released something inside the object which disturbed the balance and so it fell over.'

'The black thing contained a mechanism to make it fall over.'

Porridge words indicate definite ideas but when you go to examine the ideas you find that like porridge they have no form, no shape, and there is no definite meaning that can be grasped.

Yet the ideas do exist and one reacts to them in a real way.

The French have succeeded in reducing traffic accidents by putting plywood silhouettes of policemen and police cars beside the roads.

What matters is not the emptiness behind the image but the surface appearance to which drivers react.

In the same way porridge words though empty of meaning do have a real and useful effect. ¶¶

If anything at all happens you can say that there is a 'mechanism' for making it happen.

Thus to say that there is a mechanism or 'device' to make the cylinder fall over is not really different from saying, 'The cylinder fell over.'

For instance the following explanation may seem to be a rather elaborate way of saying nothing at all: ¶¶¶

'Black cylinder has some mechanism which once set takes a given time to destroy the equilibrium which enables the cylinder to remain upright.

The cylinder fell when the vertical equilibrium was destroyed by the mechanism.' ¶¶¶

While waiting at an airport to catch a flight you often hear announcements that certain flights have been delayed for 'operational reasons'.

Since operational reasons could include everything from the lateness of the incoming plane to a bomb scare the announcement really says no more than that the flight has been delayed 'because it has been delayed.'

But if you made that sort of announcement the passengers would riot.

### ***Very useful meaningless words***

Porridge-word explanation (L-2) is much more specific than simple description (L-1).

A definite reason is now given instead of just a simple description.

The reason is stated as follows:

- 'knocking over device'
- 'device'
- 'timing device'
- 'mechanism'
- 'something'

Instead of just saying, 'The cylinder fell over,' the explanation reveals that the cylinder fell over 'due to something'.

This something may be called a '*something*' or it may be given the more impressive name of 'mechanism' or 'device'.

Further elaboration gives:

'a knocking over device'; 'a device devised to knock the cylinder over'; 'a timing device'. ¶¶¶

The use of such porridge words is not a cheat.

It is not a way of seeming to say a lot without actually saying anything.

The use of meaningless porridge words is a hugely important part of human thinking.

Because man is able to use these meaningless words which say nothing he is able to think more effectively than animals.

To be useful these words must be blurred, formless and porridge-like.

You can push out such a porridge word ahead of you and then you have something to work towards.

This very important process is described more fully in a later section.

## L-3 Give it a name

'With God all things are possible.'

'By magic.'

'I don't understand it therefore it is magic.'

'Some magical process.'

'Mirrors? Weights and pulleys? Magic!'

'It fell over—reason gravity.'

'Some clockwork or gravity device in the black cylinder created an imbalance after a period of time causing it to topple.'

'The black cylinder fell over because electrical charge knocked it over.'

'Due to an electrical current.'

'Electrical impulse operating from a battery made the black tower topple.'

'Electric magnet.'

'Black thing received a jolt from electric battery.'

'Equilibrium inside changed due to shocks.'

### ***Magic and magnets***

This third level of understanding involves identifying and naming the process involved.

Instead of just using a porridge word like 'device' the actual mechanism is named:

'God', 'magic', 'gravity', 'electricity'.

The details of how the mechanism brings about the observed effect are not given.

Nor are such details necessary, for with God and magic all things are possible.

Those who put down God or magic as explanations were presumably not being serious, but it is a level of understanding that is much used to explain strange happenings.

In one of the examples given above, magic refers to 'stage magic'.

As everyone knows, a stage magician can do the most impossible things using mirrors and pulleys.

To explain the situation there is no need to give functional details.

It is enough to name the mechanism as stage magic or real magic or God. ¶¶¶

**Naming the mechanism is a very big step forward from simply saying 'a device'.**

**In fact it is such a big step forward that it really provides a full explanation.**

**As soon as you can name a mechanism you know what to do about it and knowing what to do about it is the only reason you want to understand something in the first place.**

By identifying the mechanism as magic you know that there is nothing that can be done about it or that you have to find some more powerful counter-magic.

In either case naming the mechanism relieves one of the necessity of looking further for an explanation.

### ***Modern magic***

Magic is a mysterious force which can make things happen, though exactly how it does so remains obscure.

'Gravity' is a modern name which we give to an equally mysterious force.

We know its effects but we do not know how it works. ¶¶

The most modern form of magic is electricity.

It is sufficient explanation to say that something happens 'due to an electrical current'.

Electricity is all-powerful.

Electricity can be made to do anything.

As with magic, you do not have to know the details in order to control it—by flicking a switch or pulling out a plug.

But to control a mechanism you do have to identify it first.

### ***Minor magic***

God, magic, electricity and gravity are major magic and they can accomplish most things.

Many more explanations made use of minor magic.

This minor magic consisted of specific named mechanisms like 'magnets', 'springs', 'heat', etc.

No details were given to show how these mechanisms were involved in the fall of the black cylinder.

It was enough to name the mechanisms since they were obviously capable of bringing about this sort of effect.

- 'Build-up of heat in cylinder.'
- 'Spring inside knocks it over.'
- 'Timing device with spring altered balance.'
- 'Black object - some kind of spring device.'
- 'Timed spring mechanism.'
- 'Magnetic effect.'
- 'Pulled over by a magnet.'

The three most used minor-magic mechanisms were:

springs, magnets, heat. Of those who gave specific explanations for the fall of the cylinder the following percentages used these elements of minor magic:

- springs 128%
- magnets 116%
- heat 114%

It is interesting to note that in children's drawings there is always a great use of springs and magnets to bring about desired effects.

Springs and magnets, like God and magic, can be made to do just about anything.

### ***Names mean a lot***

As soon as you can name the mechanism involved the unfamiliar situation is at once understood.

- You can rush out and hit the stone field-gods over the head if the crops are bad;
- you can switch off the electric current if the machine runs amok;
- you can start by getting a magnet or a spring if you want to make a black cylinder topple over.

As soon as you can name the mechanism as Communism, Fascism, Papism, Racism, Imperialism, Establishment, Government, Radicals, Them, then you know what to do about things—or that you need look no further for an explanation.

### **L-4 The way it works**

'Overbalanced due to a slow shifting of contents.'

'Change of balance due to rising object in the tube.'

'Because of its upright position a weight inside it moved upwards and made it overbalance.'

'Something at the bottom rose up to make it top-heavy ... overbalanced.'

'Cylinder fell due to becoming top-heavy.'

'The centre of gravity of the cylinder was moved so as to be no longer over the base.'

'Centre of gravity moved past critical point of previous equilibrium.'

'Cylinder toppled over due to change in centre of gravity.'

'Centre of gravity shifted.'

'One section of the base was made of a "plastic" material that sagged (crept) until cylinder became unstable.'

'False base which snaps up on one side causing cylinder to tip and fall.'

'Cylinder—edge over which it fell made of slowly compressionable material.'

'Something came out of bottom of black tube at one side and made it overbalance.'

### ***Cause and effect***

The fall of the black cylinder is a definite happening.

One can explain a happening by showing how it follows directly from something that happened just before.

What happened just before is the cause:

'weight inside cylinder moving upwards'; 'change in centre of gravity'; 'slowly compressed edge'; 'something coming out of the bottom of the tube', etc.

What happens next is the effect:

'cylinder falls over'.

Cause and effect is no more than chopping a chain of happenings at some

convenient point and calling what goes before the chop 'cause' and what comes after it 'effect'. ¶¶

This fourth level of understanding shows how the visible happening is really the outcome of another happening which is invisible.

Thus one explains the unfamiliar situation by moving backwards along the chain of happenings until one finds a happening which is familiar.

A shift of contents, a change in the centre of gravity, a pin coming out of the base are all much less strange than a cylinder toppling over.

By looking at the strange fall of the cylinder in terms of these familiar processes one is explaining the way it works. ¶¶

At this level of explanation the actual details of the process are not given.

We are not told how the centre of gravity was changed or what rose up the tube.

There is simply a general description of the way it works.

The emphasis is on what happens not on the bits and pieces that make it happen.

The emphasis is on the process not on how it is carried out.

Thus a painter would be described as 'climbing up to paint the ceiling'.

Whether the painter used a step-ladder or put a chair on a table would not be specified.

This approach is almost exactly opposite to the approach used in the third level of explanation.

At that level the mechanism was specifically named but the actual way it worked was not described.

We are told that magnets or springs are somehow used to make the cylinder fall over.

At this fourth level of explanation the way things work is described but no specific mechanism is named.

We are told that a weight rises up the cylinder but we are not told whether the weight is raised by a magnet or spring or electric motor.

### ***Name or process***

In practice it is often possible to move from an understanding of the way something works to giving a name to the process.

Alternatively if one can give a name to the mechanism one often has some idea of the way it works.

You can diagnose a disease as dysentery and then go on to consider the bacterial infection and the loss of fluid from the body.

Or you may look at the loss of fluid and evidence of infection and then go on to use the name 'dysentery'. ¶¶

The advantage of the naming level of understanding is that it is much easier to identify a mechanism than to show exactly how it works.

It is easier to call something magic than to show how magic works.

This is an advantage because it enables you to go ahead and do something without having to wait until you have figured out the way it works.

But this can be a disadvantage for you may rest content with the name of the

mechanism instead of going on to find out the way it works.

If you do really want to find out the way something works it is much better to start with the process type of understanding and leave names until the end.

### ***Follows on***

In trying to understand the way something works one is trying to find causes for the observed effects.

As suggested above this is equivalent to taking a step backwards in time to show that **the unfamiliar happening follows on directly from a familiar happening.**

This is much the best way of looking at cause and effect since it includes the whole scene.

If one tries to isolate a specific cause one is apt to leave out other necessary factors.

This happened very often in the black cylinder experiment and is discussed in the mistakes section further on.

### **L-5 Full details**

'You kicked the desk.'

'An accomplice hiding behind the desk knocked it over while we were preoccupied.'

'Someone shot it down from the window on the right.'

'Vibrations of overhead projector together with fans and breeze from window acting on a barely stable situation.'

'The tube was unstable but was stuck to the table by adhesive which eventually gave way.'

'Concealed clockwork mouse with suction pad feet climbs up tube which becomes top-heavy and falls over. Clockwork mechanism is silent.'

(Detailed drawings are shown on page 33. Fig 33-1 and 33-2) ¶¶¶

This fifth level of understanding is the most detailed level to which you can go.

It is like providing blue-prints or working models so that someone can follow exactly what has happened to the black cylinder.

At this level most of the explanations were in fact put in the form of a drawing.

Instead of just being told that something works 'by electricity' you are shown a torch battery connected by wires and a switch to a motor which rotates a spiral shaft to raise a weight to the top of the cylinder. ¶¶¶

Some of the drawings were quite complicated, but to be detailed an explanation does not have to be complicated.

For instance the explanation, 'You kicked the desk,' is just as much a detailed explanation as the drawing showing lead shot trickling on to a balloon in the base (page 33).

The mechanism itself may be complicated or simple—the explanation provides details of whatever mechanism is involved.

### ***How full are full details?***

It is obviously never possible to give complete details in an absolute sense.

For instance what are the internal changes in the metal of a spring that give it springiness?

In an explanation one can go on offering more and more detail without ever being able to say that the full details (in an absolute sense) have been given.

In practice one stops at that fullness of detail which makes it unnecessary for anyone to ask why or how.

At this point an unfamiliar situation has become changed into a familiar one.

The paradox is that if you go beyond practical detail to further detail the situation may become unfamiliar again.

Thus the springiness of a spring is familiar enough but to go further and discuss the metallurgy of a spring would make the explanation less understandable.

### ***Combination of third and fourth levels***

The fifth level of understanding is a combination of the third and fourth levels.

As in the fourth level the explanation describes the way things work but it goes further in specifying and naming the bits and pieces that are actually involved.

Further than that it is impossible to go.

### **Summary of levels of understanding**

Explanation has been regarded throughout this section as the communicable form of understanding.

Understanding is personal and subjective.

Explanation makes this understanding visible to others.

L-1 Simple description

L-2 Porridge words

L-3 Give it a name

L-4 The way it works

L-5 Full details

If you were asked to explain how a car worked the five levels of explanation might go roughly as follows:

#### ***Simple description***

'A car goes along the road and people sit in it.'

#### ***Porridge words***

'There is a mechanism which makes the car move by itself.'

#### ***Give it a name***

'The car is driven by petrol.'

#### ***The way it works***

'Energy provided by expanding gases in the engine is transmitted to the wheels to turn them round and so drive the car forward.'

#### ***Full details***

'Petrol carried in a refillable tank is pumped through a feed-pipe to the carburetor where it is mixed with air by being drawn through a fine nozzle.'

The resulting explosive mixture is admitted to the top end of the cylinder at the right point in the engine cycle by the opening of a valve activated by a cam driven off the crankshaft of the engine.

The mixture is then compressed by the rising piston and ignited by a high voltage discharging as a spark across the points of a spark plug ... etc.'

## Levels used everywhere

The five levels of understanding outlined here are not only used in explanations but in all manner of thinking, talking or arguing about a subject.

- Thus one person may describe a riot simply in terms of what he saw
- a second person will talk about 'crowd psychology'
- a third person will name the mechanism as Communist agitation
- a fourth person will talk about the underlying processes and background to the riot
- and a fifth person will try and supply full details.

These same levels of understanding also provide the basis for action and for decision. ¶¶¶

It may seem a long way from the simplicity of the black cylinder experiment to the complexity of a riot but one is dealing not with cylinders or riots but with the basic habits of the mind. ¶¶¶

It is impossible to say nothing at all if one says something.

It is only because man is able to use these meaningless words which say nothing that he is able to think more effectively than animals.

As soon as you can name a mechanism you know what to do about it and knowing what to do about it is the only reason you want to understand something in the first place.

In practice one stops at that fullness of detail which makes it unnecessary for anyone to ask why or how.

The paradox is that if you go beyond practical detail to further detail the situation may become unfamiliar again.

## The Use of Understanding

### How much detail

1,000 people tried to understand the fall of the black cylinder.

325 (32.5 per cent) of them offered a first- (L-1) or second (L-2) level explanation.

Was this because they could not proceed to a deeper level?

Or because they did not have enough time?

Or because they felt that this level of explanation was quite good enough? ¶¶¶

What level of understanding does one choose?

Does one go as deep as one can?

Or does one stop as soon as one reaches a level which allows one to act?

Or does one first go as deep as possible and then come back to a more practical level?

## **Black boxes**

How does a car work?

It works 'by switching on the ignition'.

That is all most people know about cars.

They know that there is an engine somewhere (you don't even have to know whether it is in the front or in the back) and gears and things but you do not have to know how such things work in order to use a car.

You just get in and switch on and you are able to use the car as effectively as someone who knows all about petrol engines and carburetors and fuel injection. ""

To most people the car is a 'black box'.

You know how to use it but you do not know what goes on inside it.

The name 'black box' indicates that you cannot see what is happening inside.

All you need to know about a black box is that if you do certain things (like switching on the ignition) then certain other things will happen (like the car starting).

You do not need to know what happens in between.

To make a telephone call you do not need to know about microphones, induction coils, relay banks, repeaters, etc.

To switch on a TV set and watch a cowboy film you do not need to know about cathode-ray tubes, phosphors, saw-tooth signals, thyristors, etc.

All you need to know about a vacuum-cleaner is that you press a button and it starts to clean.

## **Named-ideas and bundle-ideas**

A bundle-idea is when two or more ideas are put together into a bundle which is used as such.

'A device to tell time' is a bundle-idea.

So is 'the political system in which people elect their government'.

If a bundle of ideas are used together often enough they get a name.

The device to tell time becomes a 'clock' and the political system becomes 'democracy'.

Once it has acquired a name the bundle of ideas becomes permanent.

A named-idea is simply a bundle-idea which has become permanent through being given a name.

Thus 'clock', 'cat', 'mouse', 'love', 'vibration', 'movement', etc., are all named-ideas.

Named-ideas are very useful in thinking.

It might be difficult to explain to someone who did not have the named-idea 'golf' what highly paid business executives were doing walking erratically about a long, grass meadow in pursuit of a small white ball which they seemed to dislike.

If we did not have the named-idea 'government' it might be difficult to think about politics.

After all there are a lot of things we should be thinking about but cannot

because we have not yet developed named-ideas for them.

## **Contents**

The main advantage of a bundle-idea is that it is put together and pulled apart very easily.

A bundle-idea contains only what is put into that bundle at the moment.

But a named-idea is a permanent bundle of ideas.

Over time one may add further ideas to the original collection but it is very difficult to throw out ideas which are there already.

Thus a person who starts out with the idea that capitalists are exploiters may add the idea that they are efficient but is unlikely to start regarding them as social providers.

## **Movement**

Thinking is the process of moving from one idea to another.

The use of named-ideas and bundle-ideas automatically generates movement as the mind moves from one to the other.

Children dressing up for a fancy-dress party pull pieces of old clothing out of the dressing-up box.

One child puts on a certain collection of clothes, whereupon another child says, 'Oh, you look like a gypsy,' (or an Arab sheikh or a pirate).

The bundle of clothes has come together to give a definite name.

Another child may start out with the idea of dressing up as an Arab sheikh and so collect sheets and things which are part of the bundle that makes up the idea of an Arab sheikh.

One child has gone from a bundle-idea to a named-idea, the other has gone from a named-idea to a bundle-idea. ¶¶¶

This automatic movement can be seen if one starts off with the bundle-idea 'something that moves predictably with the passage of time'.

From this one moves to the named-idea of a 'clock'.

From this named-idea one moves to the bundle-idea underlying the name a 'device for measuring time'.

From this bundle-idea one can move again to a new named-idea 'an egg-timer'.

Then on to the underlying bundle-idea 'two containers with sand shifting slowly from one to the other'.

At this point one has arrived at a bundle-idea which could explain the fall of the black cylinder.

If one wanted one could go further and take the named-idea 'sand' and move to the bundle-idea a 'collection of small particles which are quite heavy'.

From this one might move to the named-idea of 'lead-shot' as was suggested in some of the explanations. ¶¶¶

When one moves from the named-idea to the underlying bundle-idea this bundle does not have to contain the whole collection of ideas that go to make up the named-idea but only some of them.

One can move from the named-idea of 'magnets' to 'an effect at a distance' without having to list all the properties of magnets.

## **Requirements**

In trying to understand a strange situation you can list all the things you notice about it and put them together as a bundle-idea.

For instance in the case of the black cylinder the list of 'requirements' might read as follows:

- 'something which acts after a period of time'
- 'silent'
- 'acts suddenly'
- 'small enough to go into cylinder'
- 'something to do with a shift of weight'

The hope is that by building up a bundle-idea in this way you can suddenly snap into a named-idea which fits the bundle that has been collected.

## **Requiron**

The list of requirements are really the bundle-idea underlying the named-idea which has not yet been found.

Instead of saying:

'That which we are looking for', one can use the much more convenient word 'requiron'.

The requiron is a temporary named-word to cover the bundle of requirements. ¶¶

So one could say:

'The requiron must act suddenly, silently and entirely within the cylinder.' ¶¶

In the case of the black cylinder you could use the word 'mechanism' all along but in other situations 'requiron' could be more convenient:

'The requiron arrived here yesterday between the hours of six and eight in the morning—and probably by car' (a detective discussing a case).

## **Modification**

It would be unusual to list all the requirements at the beginning.

Most of the time one starts off with a few, gets to a named-idea, then adds further requirements to modify the named-idea and so gets to another one.

A sequence might go something as follows:

1. 'Cylinder was knocked over by something which moved by itself inside.'
2. 'An animal.'
3. 'An animal small enough to fit into the cylinder.'
4. 'A mouse.'
5. 'A mouse that would work in a predictable way.'
6. 'A clockwork mouse.'
7. 'A clockwork mouse that would be able to get to the top of the cylinder.'
8. 'A clockwork mouse with suction pads on its feet.'
9. 'No noise was heard.'
10. 'A silent clockwork mouse with suction pads on its feet.'

## ***Named-ideas and action***

In understanding one puts together bundle-ideas as a step towards finding named-ideas.

One only acts upon named-ideas.

This is because named-ideas are known situations and so the right response is also known.

Bundle-ideas are temporary collections of ideas to which there is no definite response.

A man walks into a room and is seen to be holding 'something which is shiny, quite long and held horizontally'.

That is a bundle-idea to which there is no immediate reaction.

But if the bundle-idea is changed to the named-idea 'a gun' then you duck for cover at once. ¶¶¶

One searches for named-ideas because they indicate the action to be taken and also because they are real available things.

A bundle-idea might read:

- 'a weight which slowly shifts from one container to another.'

But you cannot go out and buy such a thing.

If, however, you reach the named-idea an 'egg-timer' then you can actually get hold of one.

## ***Trapped***

Named-ideas are fixed and permanent collections of ideas.

As suggested above, the aim is to find named-ideas as quickly as possible.

But there is the risk of being trapped within the fixed rigidity of a named-idea.

If from the bundle-idea a 'weight shifting from one side of the cylinder to another slowly' you move automatically to the named-idea an 'egg-timer' there is a risk that you may be trapped and unable to go on to consider such things as water flowing from one container to another or a weight moved by an electric motor.

In the same way if you look at the behaviour of any government and quickly apply the named-idea 'Fascist' then you are likely to get trapped by this idea just as any employer who labels every strike 'Communist'.

## ***Stock***

It is only possible to use the named-ideas that one has in one's idea store.

If there are few ideas then all manner of situations will be finally interpreted in terms of these few ideas.

At some stage in understanding one has to end up with named-ideas.

So the fewer there are available the more limited will be the understanding of a situation that does not exactly fit any of the available ideas.

In the black cylinder experiment a person who could only think in terms of clocks as time-devices would be unable to use any of the explanations which involved such slow processes as ice melting or water dripping from one container to another.

Similarly a person who could only think in terms of two work attitudes, 'lazy'

and 'dynamic', would be unable to see that someone might appear to be lazy if uninterested in a job but could be dynamic if interested.

To do this one would need the third idea 'unmotivated'. ¶¶

The types of ideas built up into idea stocks could be considered under three headings:

## **Precise principles and vague general ideas**

Precise principles and vague general ideas are at completely opposite ends of the range of understanding.

So it is rather surprising that it may be impossible to distinguish one from the other. ¶¶

A vague general idea belongs to the second level of understanding (porridge words), e. g. 'a mechanism to make the cylinder over-balance'.

A precise principle is put forward when one has worked through several possible explanations at the most detailed fifth level and from them all has extracted a basic principle.

Thus a precise principle might be used by someone who could think of all the following possible explanations:

- a lump of ice under one end of the base of the cylinder
- air escaping from a chamber through a small hole
- an edge made of wax which melted slowly
- an edge pulled up by an electric motor
- a pin which protrudes through the base.

The principle used to cover all these possibilities might be:

'The base of the cylinder changes and so causes the cylinder to fall over.'

It would be because he could think of all these mechanisms that the precise-principle man chose to state his explanation in this way.

Yet from the statement itself one might suppose it was because he could not think of any specific mechanism that he used such general terms as 'change in base'.

### ***Ignorance or knowledge***

Does the person who puts down 'timing-device' do so because he cannot think of a specific named-idea?

Or does he do so because he can think of so many (egg-timer, clock, water moving through fine tube) that he wants to include them all without being trapped by choice of any particular one ?

From the statement itself there is no way of knowing.

So there is the extraordinary position that a vague general idea may be indistinguishable from a precise principle.

This means that a level-two statement may be indistinguishable from what is really a level-five statement.

Thus as far as other people are concerned a precise-principle statement may be no more useful than a vague general idea.

Conversely a vague general idea would seem to be as useful as a precise principle.

The real difference is that the precise-principle man knows his explanation is right and could give details if required whereas the vague-idea man does not have any specific explanation.

But if the vague idea is general enough (e.g. a mechanism to make the cylinder fall over) then it is very likely to include the right explanation. ¶¶¶

It is no wonder that throughout history people have been completely unable to distinguish general statements (born of ignorance) from precise principles (born of knowledge).

Politicians and other leaders might have had a hard time if such distinction were possible.

For instance when a leader urged his people to war they were in no position to tell whether this was a precise strategy reached after careful consideration of many alternatives or a vague general idea arising from an inability to think of any more specific strategy.

Similarly it is difficult to tell whether a political manifesto asking for an incomes policy is based on a thorough understanding of the employment situation or an ignorance of it.

## **Summary**

In scientific analysis there is much data and little action whereas in everyday thinking there is much action but little data.

Scientific inquiry can choose to focus on a tiny field of interest but everyday thinking has to cope with a variety of situations which are not chosen but thrust at it.

As soon as it allows one to do something about a situation then an explanation is detailed enough.

If you have to choose a suitable action it is better to match it to a general explanation which is unlikely to be wrong than a detailed explanation which might well be wrong.

The 'requiron' is a temporary named word to cover the bundle of requirements.

One only acts upon named-ideas.

## **The Basic Thinking Processes**

The whole business of thinking appears to involve terribly complicated processes.

But even the most complicated processes may be based on very simple steps.

For instance computers handle the complicated mathematics that enable man to get to the moon and walk on its surface.

Yet the whole complexity of a computer is based on a switch which is so simple that it is only capable of saying yes or no.

The palace at Versailles was built by putting one stone on top of another.

The immense complexity of the human organism is based on some rather simple chemical reactions.

In the same way the complicated business of thinking can be seen to arise from two simple basic processes:

'carry-on' and 'connect-up'.

These two simple processes arise directly from the behaviour of the brain.

The brain can be looked at as a nerve network impregnated with memory which directs the flickering patterns of activity that flow across the surface.

The behaviour of this type of system is described in *The Mechanism of Mind*.

The system is a surprisingly simple one but like a computer is capable of behaviour which is complicated and sophisticated.

## Carry-on

'Carry-on' simply means keep going.

If you are walking down a street 'carry-on' simply means keep going down that same street.

If you are reciting the alphabet and have got as far as A, B, C, D, E, F then carry-on means keep going with G, H, I, etc.

If you are half-way through the nursery rhyme 'Jack and Jill went up the hill ... 'then carry-on means keep going to the end.

If you are describing someone you might start by talking about his red hair and blue eyes and then carry-on to mention his long nose and cauliflower ears.

Carry-on means that having started on something you go on to the end. ¶¶

But **there has to be a something to carry-on with** .

There has to be a street or an alphabet or a nursery rhyme or a person you know.

In thinking this 'something' is a **memory pattern** .

Once you start on this pattern then you carry-on to the end.

**The memory pattern is really a sequence of ideas which follow one another** .

Thus in the black cylinder experiment someone might carry-on from the idea of an egg-timer to the idea of a clock.

Or from the idea of a mouse to the idea of a mouse running up some steps to reach some food. ¶¶

Carry-on is a very simple process that happens in any memory system and it is certainly not confined to human thinking.

It simply means that one idea follows another.

## Connect-up

Carry-on involves moving from one idea to whatever idea follows next.

'Connect-up' means you start with two separate ideas and try and find a way of connecting them up.

Connect-up could also be called:

'link-up', 'fill-in', 'close the gap', etc.

For instance, a broken goldfish-bowl and paw-marks on the carpet might be connected up by the idea of 'cat'.

You are driving along and the car starts to veer to the right.

You connect up the normal behaviour of the car to this new behaviour by the idea of a 'puncture'. ¶¶

Often the connecting up is so smooth that one is not even aware of there having been any gap to begin with.

Humor provides a very clear illustration of the connect-up process.

It is only when you have connected things up that you see the joke. ¶¶

The Irishman was wearing one red sock and one green sock.

'That is a most unusual pair of socks you are wearing,' said the Englishman.

'Not really—I've got another pair exactly like it at home.' ¶¶

How do you break a Newfie's (a Newfoundlander's) fingers?

Answer: By punching him in the nose.

In the first story it is very easy to make the connection.

Once one has made the connection then the story as a whole connects up with the traditional view of the wit and eccentricity of the Irish.

There is thus a double process of connecting up. ¶¶

In the second story it is much more difficult to see the joke.

This is because one cannot easily see the connection between a punch in the nose and broken fingers.

Nor is one aware of the traditional attitude to Newfoundlanders to be found among some other Canadians.

The idea is that Newfies always have their fingers in their noses.

The joke does not work because the first gap is rather too large and the second gap is not there unless you happen to be Canadian.

### ***Movement***

As suggested before, thinking is simply a matter of moving from one idea to another.

In the carry-on process this movement happens naturally as one follows along from one idea to another.

Movement happens because the ideas have already been set up in a sort of chain by past experience.

You know that the footsteps in the corridor belong to the boss because you have learned this by experience—so you carry-on from the sound of the footsteps to the idea of the boss coming in to see what you are up to.

So in the carry-on process the movement is natural and in a sense one is a slave to one's past experience. ¶¶

In the connect-up process, however, one can deliberately generate movement by setting up two ideas and then trying to connect them up.

Usually it is a matter not of setting up two ideas but of setting up one idea which is to be connected-up to the present state of affairs.

For instance I am already in Cambridge and I set up the idea of 'London', then the connection is:

'How do I get there?—By train.' ¶¶

A very simple way of showing this connect-up process is to take a word at random from a dictionary and then try and connect it up to whatever problem

one is looking at (this procedure is described in detail in my book *Lateral Thinking: a textbook of creativity* \*).

At first sight it may seem unlikely that a random word will connect up with a specific problem.

But in fact it often proves so very easy that when this is done at a lecture the audience believes the word and the problem have been deliberately selected beforehand. ¶¶¶

**Problem:** to solve traffic congestion in cities.

**Random word:** soap.

**Connect-up:**

1. Soap is slippery ... lubricate traffic flow through street remove street parking, bus-stops, traffic-lights ... make it possible to drive very easily in town but not to do much else stopping of any sort only allowed in special stopping areas.
2. Soap is used to remove dirt ... remove 'dirty' traffic areas (that is, traffic-intensive areas) from residential or shopping areas.
3. Soap is gradually worn away the more it is used ... have a system whereby heavily used streets get worn away ... and either get wider and easier to use ... or more bumpy and more difficult to drive on ... devise a self-adjusting system whereby use increases use or slows down more use.

## Problems and questions

The trouble with the carry-on process is that the movement does not get you where you want to go.

You are passively 'carried along' the patterns set up by experience.

But with the connect-up process you can get where you want to go.

If you know where you want to go you set this up as a 'destination' and then connect up your starting point to this destination.

It is like looking at a road map and finding the route from where you are to your destination. ¶¶¶

In problem-solving the statement of the problem is no more than the description of your intended destination.

'No traffic congestion in cities',

'a mechanism to make the black cylinder fall over',

'trousers with ink stain removed',

... are all destinations.

The problems would be stated as:

- 'to solve traffic congestion problems in cities',
- 'to explain how the black cylinder fell over',
- 'to remove an ink stain from a pair of trousers'. ¶¶¶

Obviously all these problems can be stated as questions:

- 'How do I remove this ink stain from the trousers?',
- 'Why does the black cylinder fall over?'

What a question really asks is:

- 'How do I get to this statement?' or
- 'Show me the way I can get to this statement.'

These are but ways of saying:

'Connect up what I already know with what I want to know.'

### ***Jump ahead***

This trick of pushing ahead with a question and then connecting up makes a huge difference to thinking because it gives direction.

By asking questions you can move where you want to instead of just carrying on along patterns set up by experience.

In order to use this process, however, one has to be able to set up the far end of the gap.

Setting up the far end of the gap is asking the question.

It is also deciding the destination one wants to get to.

### ***Known and unknown destinations***

If you know where you want to go it is easy enough to get there.

The fascinating thing is that the destination (the question, the far end of the gap) is actually set up by a process of carry-on.

For instance:

- 'I need a new suit and my suits are made by a tailor in London—how do I get to London from here?' or:
- 'I am asked to explain how the black cylinder fell over—how did the black cylinder fall over?' <sup>111</sup>

The difficulty arises if you do not really know where you are going.

'How do I get to London ?' is very different from 'How do I get to somewhere sunny?'

How can you establish the far end of the gap unless you can specify the far end of the gap?

The answer is the **porridge words** which we have come across before.

### ***Porridge words***

These very useful meaningless words allow one to set up a question in a vague way.

This means that one can still ask questions even if one does not have a definite destination.

In the example given above 'How do I get to *somewhere* sunny?' the porridge word 'somewhere' allows one to ask a question which is much less specific than 'How do I get to *Majorca*?'

In the same way one can ask, 'What is the mechanism that makes the black cylinder fall over?'

Some useful porridge words are listed here:

- mechanism device thing
- arrangement

- apparatus
- something
- object
- somewhere
- requiron (see page 49)

The statement: 'The **requiron** zooms through the air and has five legs,' is the same as saying, 'The *thing we are looking for* zooms through the air and has five legs.' The word requiron can also be used as an explanation: 'He left suddenly because the requiron must have appeared,' which is the same as saying, 'He left suddenly because *the thing for which we are looking* must have appeared.'

The porridge word 'mechanism' can also be used in these different ways:

- 'What is the mechanism that makes the cylinder fall over?' (Question)
- 'The cylinder fell over because of a mechanism within it.' (Explanation, L-2)
- 'You flick the switch which sets off a time-delay mechanism that eventually knocks the cylinder over.' (Black box use)

Porridge words like black boxes are ignorance tools.

Just as black boxes allow us to use a mechanism without really knowing how it works so porridge words allow us to make definite statements or ask definite questions when we do not really know what we are talking about.

These vague, blurred porridge words have an extremely important part to play in thinking.

## **Man is stupider than animals**

Man may be smarter than animals only because he is stupider.

The paradox is that man may be able to go much further in his thinking than animals only because his basic thinking process is less precise.

## **Cross-links**

The vague general classification (lump-things and jump-about-things) are of course the now familiar porridge words.

These vague general classifications have the immensely useful function that by providing cross-links they allow the mind to move from one idea to another.

The sharp brain at once distinguishes cabbages from kings and no connection between the two is ever formed.

A precise response is established for the king situation and a different precise response is established for the cabbage situation.

There is no way of getting from one to the other.

Nor is there anyway of escaping from the precise response that has been established:

bow to a king, cut off the head of a cabbage.

But with the blurry brain there is this cross-link in so far as cabbages and kings were originally (before one knew better) both regarded as lump-things.

So one can get from one idea to another by means of this crosslink. ¶¶¶

The sharp brain establishes a series of parallel channels as each specific situation calls forth a specific reaction.

But the blurry brain has all sorts of cross-connections which are formed by the vague porridge words.

This means that the sharp brain can only react in a fixed manner but the blurry brain can do a lot of 'thinking' as it switches from one idea to another (e. g. since cabbages and kings are both lump-things why not cut off the head of a king?). ¶¶¶

Proper philosophers always praise the marvelous ability of the human brain to make **abstractions**.

This means that the brain is **able to pick out a feature common to a number of different objects**.

This common feature is given a nice name and becomes an abstract idea (e. g. lumpiness, jumpiness).

This abstracting performance makes the brain sound very marvelous.

But sometimes it seems to happen exactly the opposite way round.

**Instead of the brain being sharp enough to make abstractions it is so blurry that it can only start off with porridge ideas.**

Later on these get broken down into specific things.

So instead of abstractions being marvelously abstracted it may be that the **abstractions come first as porridge words which are only later broken down.** ¶¶¶

As soon as a baby learns to say 'Da-da' it is obvious that every moving object is a Da-da.

Later this narrows to every human being.

In the next stage Da-da is restricted to men only.

Finally Da-da indicates the one true Da-da.

This blurry process takes a long time.

Yet animals learn to recognize their parents in an infallible way within an hour of being born.

This recognition is not instinct but learning, as shown by Konrad Lorenze, who got down on hands and knees and quacked a bit and instantly and permanently became the mother for some newly hatched mallard ducklings. ¶¶¶

It is because the human brain is such a blurry thing that babies take so long to grow up and get going.

Baby animals (e. g. deer, horses and especially other herd animals) almost 'hit the deck running'.

They are already equipped with certain inbuilt instinct responses which do not have to be learned. ¶¶¶

They have very sharp senses and sharp brains which enable them to distinguish things clearly and so learn very quickly.

Quick learning depends on good discrimination.

It is only blurring and confusion which slows down learning. ¶¶¶

**Thus one ends up with the curious situation that man is able to think better than animals because his brain is blurry whereas theirs are clear and sharp.**

## ***Tortoises win races***

The advantage of having a sharp brain is that you can react quickly.

Without the unnatural wire-fence the sharp-sighted hen would have got to the grain and gobbled it up before the short-sighted one got going.

Similarly the clear-nosed dog would have eaten up the meat before the dog with a cold could get to it.

**So in a competitive world the sharp-brained animals who can act quickly are more likely to survive than the blurry-brained creatures.**

Similarly the animals which are born ready for action are more likely to survive than those who have to stumble around helpless for years before they can even feed themselves. ¶¶¶

But if—somehow—the blurry-brained animals can survive, then they will eventually end up far ahead.

The sharp-brained animals establish a few quick and efficient reaction patterns and then become trapped by these.

The blurry-brained animals mess around with porridge ideas which allow them to move from idea to idea in what we call thinking.

### **Summary of porridge words**

Porridge words have been mentioned in different places in the preceding chapters.

It is convenient to sum up their usefulness at this point. ¶¶¶

Porridge words are rather meaningless words.

It is precisely because they are meaningless that they are so immensely useful in thinking.

They act as link words to keep thought moving from one idea to another.

If there were no such words then thinking would come to a dead end when there was no direct step to another specific idea.

The various uses are listed below:

1. Porridge words allow one to set up vague questions when one has not enough information to ask a specific question.
2. Porridge words offer usable explanations when one cannot provide any more detail.
3. Porridge words act as cross-links for movement from one idea to another.
4. Porridge words can act as black boxes to enable one to leap-frog over an area of ignorance and carry on.
5. Porridge words prevent too early a commitment to a specific idea and so keep options open as long as possible.

The paradox is that porridge words arise from ignorance and yet they become immensely useful thinking tools in their own right. ¶¶¶

The curious thing is that over the centuries intellectual tradition in the West (but not in the East) has been directed against porridge words and in favour of precise ideas.

The sharp-brained intellectuals have set up ideas which have as much fixity and rigidity as the responses of sharp-brained animals.

It is not often realized that it is the blurry-brained creative people who have established new general ideas and then gone on to make them more specific.

The sharp-brained outlook can never establish new ideas because it does not mess around, never makes mistakes, and is completely trapped by existing ideas.

It is curious that we so encourage the sharp-brained attitude when the advantage of the human brain depends on the blurry quality which makes for creativity.

Sharp brains are indeed essential but only for refining, developing and using the ideas thrown up by blurry-brained thinking.

And computers are of course very sharp-brained creatures which can do this work for us. ¶¶¶

Just as black boxes allow us to use a mechanism without really knowing how it works so porridge words allow us to make definite statements or ask definite questions when we do not really know what we are talking about. ¶¶¶

The sharp-brained animals establish a few quick and efficient reaction patterns and then become trapped by these. ¶¶¶

It is not often realized that it is the blurry-brained creative people who have established new general ideas and then gone on to make them more specific. ¶¶¶

The sharp-brained outlook can never establish new ideas because it does not mess around, never makes mistakes, and is completely trapped by existing ideas.

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“The **greatest danger** in times of turbulence is not turbulence; it is to **act** with

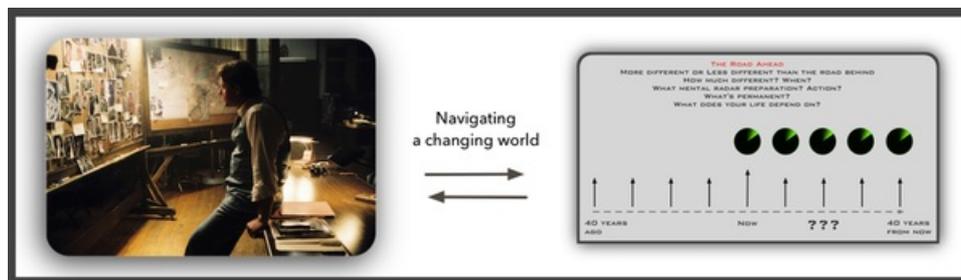
yesterday's logic". — [Peter Drucker](#)

The shift from manual workers who **do as they are being told** — either by the task or by the boss — to **knowledge workers** who **have to manage themselves** ↓ profoundly **challenges** social structure ...

“**Managing Oneself** is a REVOLUTION in human affairs.” ... “It also requires an almost **180-degree change** in the knowledge workers’ **thoughts** and **actions** from what most of us—even of the younger generation—still take for granted as the **way to think** and the **way to act**.” ...

... “Managing Oneself is based on the **very opposite realities**: **Workers are likely to outlive organizations** (and therefore, employers **can't be depended on** for designing your life), and the knowledge worker has **mobility**.” ← [in a context](#)

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— **working something out in time** (1915, 1940, 1970 ... 2040 ... the outer limit of your concern) — **nobody** is going to do it for you.

It may be a step forward to actively reject something (rather than just passively ignoring) and then working out a plan for coping with what you've rejected.

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