

## – 2 – Mapping The Situation

In my opinion, the best approach to organising the information into a meaningful pattern is to use a visual mapping technique. This visual approach is *holistic* in that it considers the bigger picture and *systemic* in that it shows the pieces and their connections/interactions. Visually representing the situation can help to:

- identify the important factors in the situation;
- show connections/interactions that might not have been obvious;
- reveal areas of ignorance – where there are elements or interactions that are missing;
- reveal the boundaries or limits to a situation (which may be larger than you initially imagined); and
- help to discuss your thinking with others.

### NOTE

I'm recommending visual-mapping not because I like drawing pictures but because research by cognitive psychologists tells us that:

- 80% of people have a visual preference in thinking;
- when someone says that they *know* something, they actually have an interconnected network of ideas and information in their minds.

Visual mapping plays to the strengths of both these cognitive qualities. In addition, the diagrammatic approach facilitates collaborative discussion more than a list or page of text would.

To make sense of what is happening I suggest:

- Mapping the situation as it is (as factually and objectively as possible);
- Checking if the map is complete and correct;
- Appraising how the organisation is functioning.

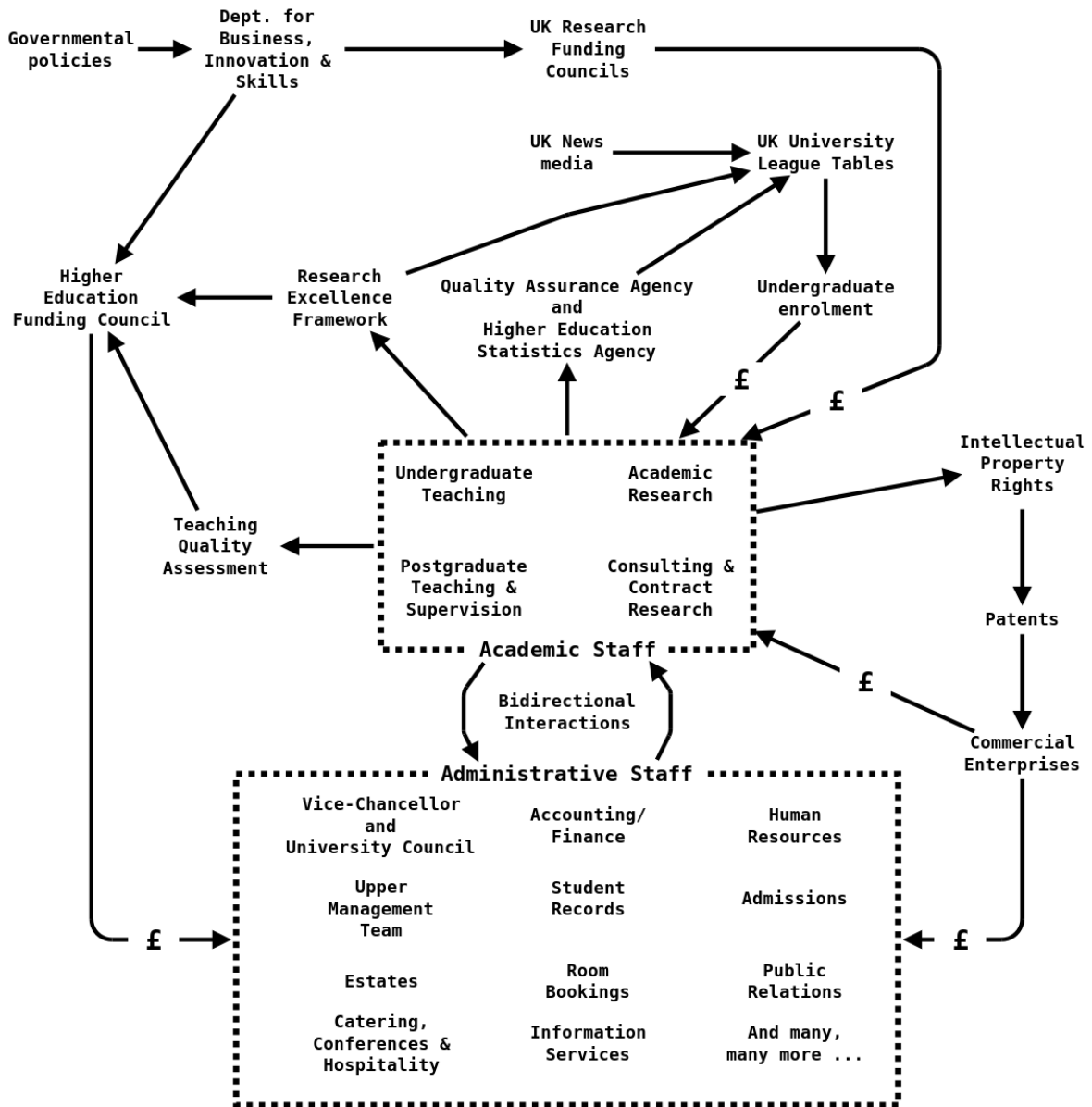
## Mapping The Situation

The approach I use has appeared in various forms and been called by various names: *concept-mapping*, *cognitive-mapping* and *causal-mapping*. This is a diagrammatic representation of various entities (ideas, people, organisations, things) and their relationships. The advantages of a C-Map are:

- It can show how a system currently operates.
- It can be extended into the past to make sense of how a situation arose.
- It can be extended into the future to anticipate what might be logically expected to come next. It is predictive in the sense that if {...} is changed, then you can follow its subsequent effects along the chains of cause and effect in order to anticipate consequences.

Guidelines for constructing and appraising C-Maps can be found in *Appendix 1*.

To illustrate this approach, let's imagine that we have been recently employed at a UK university and we want to gain a better sense of the university's situation. We begin by drawing a C-Map and the first draft might look something like the following. It shows the various entities or groups involved and how they interact.



In the map above:

- The university staff have been represented as either *academics* or *administrative staff* and their various functions have been indicated within the dashed boxes.
- Each source of revenue for the university is indicated by an arrow with a £ sign on it.
- The names of the various entities are correct as of 2014. After the next UK election in 2015, the names will probably change again.

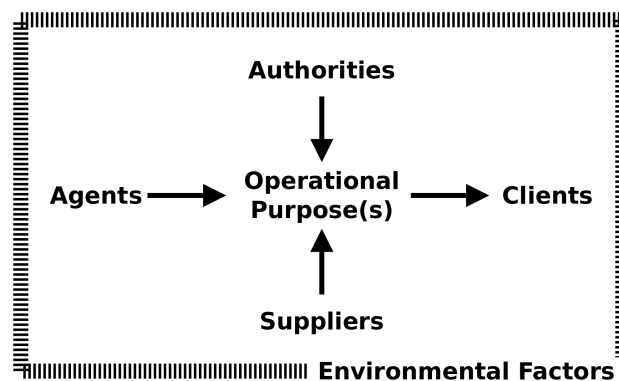
## NOTE

When we construct a map similar to this as an exercise in a workshop, it can take up to an hour to develop something representative and useful. And each time, the participants discover something unexpected about the operation of their department or organisation.

I was facilitating a strategic thinking session for a UK research institution and I had the group draw the map for their institution. When the map was finished, their most startling discovery was that institutional operations were unexpectedly and critically dependent upon the cleaning services. Because of UK Health & Safety regulations, if the cleaning services were not correctly performed, then the institution could be closed in less than a week! And the cleaning services comprised one cleaning-services-manager (with no "second-in-command") and the cleaning staff. What would happen if the cleaning-services-manager became disgruntled or run over by a bus!

## Is The Map Complete And Correct?

To check if a map is sufficiently complete, I suggest using the following template:



**Operational Purpose(s):** What objective(s) does the organisation exist to accomplish?

**Clients:** Who is served and/or affected by the operational purpose(s)?

**Agents:** Who is involved in performing the activities required by the operational purpose(s)? These would normally be staff who are employed in-house.

**Suppliers:** Who provides goods or services that are required to support the operational purpose(s)?

- Some goods/services will be *standard* items and commonly available, such as stationery, office furniture, accounting services ...
- Some goods will be *specialist* in nature and therefore expensive or difficult to obtain.

**Authorities:** Who has the authority to start, change or stop the operational purpose(s) and the various activities this entails?

**Environmental Factors:**

- What is the larger context within which the organisation operates?
- What circumstances or events outside the organisation could affect any of the operational purpose(s)?

**NOTE**

The Clients, Agents, Suppliers and Authorities are the active stakeholders of the system. I use the acronym *CASA* as an aide-mémoire.

Using the *CASA* acronym, the template becomes easy to remember:

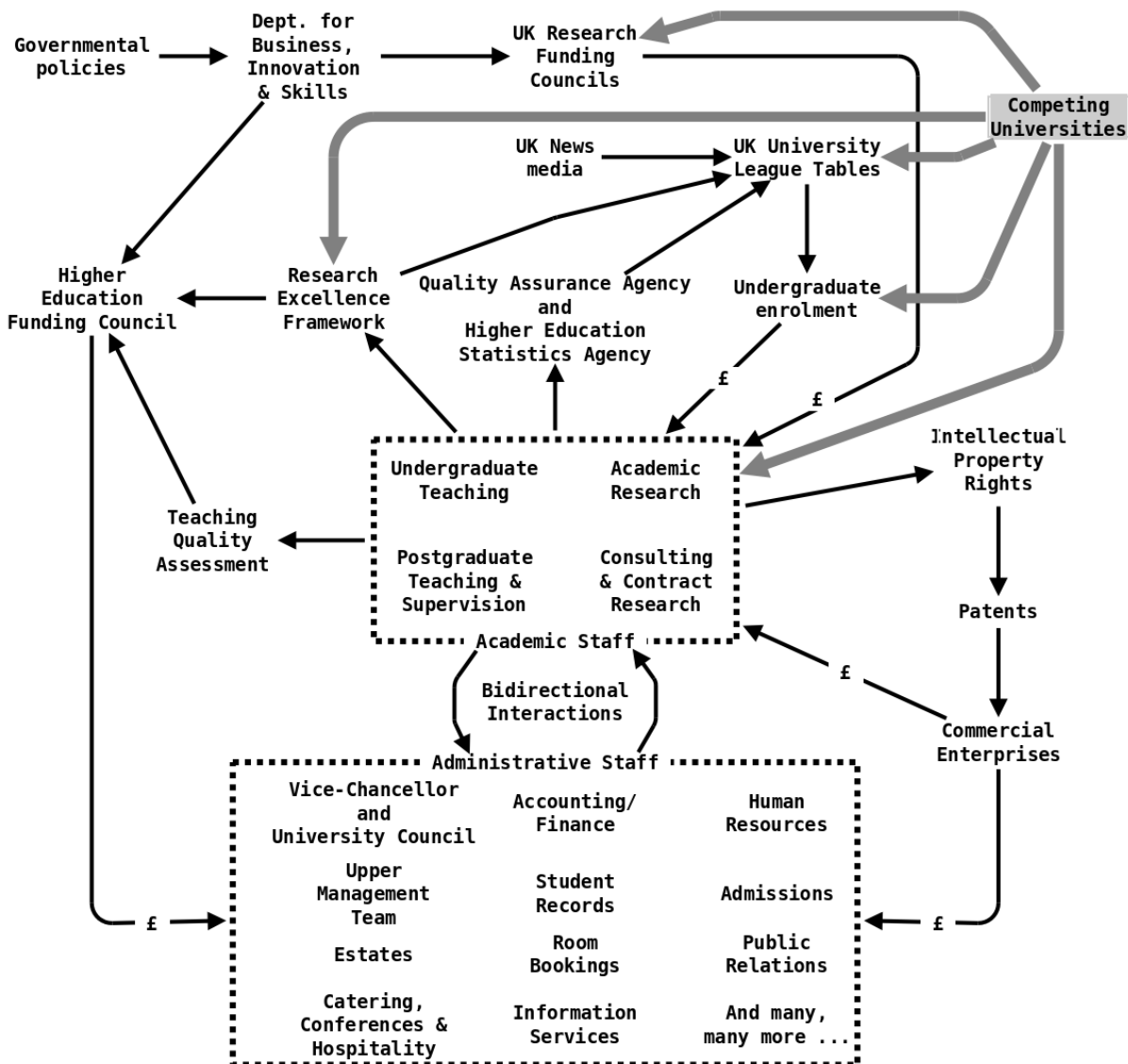
- Operational purpose(s)
- *CASA*
- Environmental factors

Let's revisit our example of the UK university using the above headings to check if we have included all the important elements or groups that are involved in the situation.

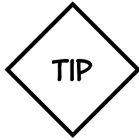
- Operational Purpose(s):**
  - Educate undergraduate students to first degree
  - Educate postgraduate students to higher degrees
  - Conduct research to discover and develop knowledge
  - Provide consultancy services for external organisations
- Clients:**
  - Undergraduate and postgraduate students
  - Commercial enterprises who pay for consulting or research services from particular academic staff.
  - Research Councils (refereeing/reviewing of grant applications)
  - Publishers of research journals (refereeing/reviewing of research papers prior to publication)
  - Various Non-Governmental Organisations (NGOs)
- Agents:**
  - Academic staff
  - Administrative staff
- Suppliers:**
  - These would provide products and services to support the university's research, teaching and consulting activities.
- Authorities:**
  - UK government operating through the *Department For Business, Innovation and Skills*
  - Council of the university who directs the operation of the university

- Environmental Factors:**
- Competing universities (UK, EU and worldwide)
  - UK government, regulations, economy and demographics
  - EU governments, regulations, economies and demographics
  - Global economy and demographics

After considering the various headings above, any elements or factors that have been overlooked could be added, if necessary, to the map for completeness. For example, if we wanted to amend the map to include competition from other universities, we might end up with the revised map below.



Once the map is sufficiently complete, then it should be checked for correctness/accuracy. A particularly useful way to check that a map is accurate and makes sense is to discuss the map with a variety of colleagues. Depending upon their comments, the map might be revised until the various consulted parties were satisfied that it was accurate and sensible.



As you check your map for completeness and correctness, you might find the map becoming too full and complicated. In this case, I recommend drawing an overall "big picture" map to represent the major elements, much like we have with the university example. Then you can progressively drill-down to lower levels of increasing detail as required and draw sub-maps to represent portions of the overall map.

For our university example, we could draw sub-maps for individual academic or administrative sub-units/departments. The academic section might be expanded into more detailed sub-maps for teaching, research and consulting functions or expanded according to subject-area, such as chemistry or history.

## Appraising How The Organisation Is Functioning

We have a map that is a reasonable representation of the organisation, its functioning and its environment. A thorough appraisal will address the following questions:

1. How *effectively* is the organisation accomplishing its purpose?
2. How *efficiently* is the organisation accomplishing its purpose?
3. Which *environmental factors* need to be considered?
4. Is the current situation *satisfactory and sustainable*?
5. Is the organisational unit behaving *ethically*?

## How Effective Is The System?

This is the most important assessment because if the organisation isn't accomplishing its objective, then everything else is pretty pointless! To ensure a thorough consideration of the effectiveness, I recommend reviewing the situation using questions like the following. They don't have to be considered in this order, but I do suggest that they all be considered. Be alert for any answers containing phrases like "This is how we've always done it" or "Isn't it obvious?", because these could be indicating either actions that aren't necessarily valid any longer or assumptions that don't apply in the present situation.

### **Productivity**

- What kinds or types of results are being produced?
- Are these results consistent with the operational purpose(s)?
- Are these results satisfactory/sufficient? If not, then what would be considered to be satisfactory/sufficient?
- Are the results being measured in a way that is *representative* of the relevant operational purpose? Beware of *indirect* measurements which can be influenced by other factors. For example, sales revenue is an indirect measurement of productivity because other factors such as bulk-discounts, sale prices, discounted prices to retail outlets also play a role. Whenever possible, prefer direct measurements.

### **Operational Purpose**

- Is each operational purpose still logical/reasonable *in the present circumstances*?
- Is each operational purpose still necessary or valuable *in the present circumstances*?

### **Methods**

- Are the methods being used to accomplish the operational purpose still logical and appropriate *for the current circumstances*?
- Are there any new methods or techniques that could prove useful?

### **Constraints**

- Is there anything that limits/restricts the options or ability to act effectively?  
For example:
  - Is there limited capacity or resources in some area?
  - Are there any stakeholders who are actively or passively resisting the operation?
  - Is there internal friction (e.g. paperwork or bureaucratic procedures) or inertia (e.g. organisational habits of thinking, choosing or acting)?
  - Are there any environmental factors that limit what can be accomplished?
- Are there any critical dependencies that could affect productivity, and thereby limit options?

Let's return to our university example and see how we might appraise the **effectiveness** of undergraduate teaching which takes entry-level students and educates them to their first degree (Bachelors).

### **Productivity**

- Results:
  - Number of graduating students per year and per subject;
  - Distribution of grades;
  - Proportion of students failing to gain a degree;
  - Proportion of graduates finding employment in their subject.

Note: the above are direct measurements. The amount of income from teaching would be indirect because it could be affected by additional factors such as scholarships, discounts, special-entry schemes and so on.

- Students graduating with a first degree is consistent with the operational purpose.
- Are the current results satisfactory/sufficient? If not, then what would be considered to be satisfactory/sufficient?
  - Educating more students (*doing more*);
  - Improving the distribution of grades (*doing better*);
  - Changing teaching methods (*doing different*);
  - Adding and/or removing some subjects/disciplines (*doing different*)?

- Measurements:
  - Assessment of student learning is by some marked assignments and primarily on the basis of written examinations.  
(Is a written examination a representative way of assessing someone's knowledge and competence in a subject/discipline?)
  - Course questionnaires  
(Typically these are more of a measure of how much the students liked the instructor(s), the approach, the material, ... rather than a representation of how much and/or how well students have learned the material.)
  - Various assessments by Teaching Quality Assessment, Quality Assurance Agency and Higher Education Statistics Agency for each subject and each department
  - Teaching awards received by staff or departments (measure of teaching quality)
  - UK University League Tables which are prepared and published by each of the major newspapers.
    - What factors are included and how are the rankings calculated?
    - How up-to-date is the information? (One UK university's Chemistry Department was highly rated for teaching quality, *three years* after it had been closed!)

### **Operational Purpose**

- Educating students to a first degree is still logical *in the present circumstances*.
- Whether educating students to a first degree is necessary or valuable *in the present circumstances* could be a subject of some heated discussion!
  - The entry-level students are assuming that a university degree will help them find more interesting and better paying employment. If this proved to be untrue, then students would have little reason to attend university!  
(To ensure that a degree is useful to students and potential employers, the university could consult with various businesses to discover what knowledge and capabilities would be useful. Then the university could modify the teaching to meet these requirements.)

### **Methods**

- Are the methods used logical and appropriate *in the current circumstances*?
  - Teaching methods involve a combination of lectures, seminars, practical sessions and assignments. These methods have been used for over 100 years! Given what we know now about how people learn, these are not optimal methods for teaching.

### **Constraints**

- Is there anything that limits/restricts the options or ability to act effectively?
  - Are there physical limitations in terms of number of buildings, available office space, number and sizes of lecture halls, places in halls-of-residence and so on.



- The academic staff are a limited resource and they are responsible for doing all of the teaching and teaching-related duties.
  - Are they overstretched because they must juggle too many disparate activities, namely teaching, research, consulting and generic administrative activities?
  - What quantity of generic administrative duties are they required to do, particularly administrative duties that do not require their specialist knowledge? (If this is substantial, then why can't this be done by someone less highly trained?)
- There are no obvious stakeholders who actively oppose teaching.
- Is there internal friction (e.g. paperwork or bureaucratic procedures) or inertia (e.g. organisational habits of thinking, choosing or acting)? (Undoubtedly yes!)
- Are there any environmental factors that limit what can be accomplished? One example would be the erosion of teaching quality in the secondary schools preceding university entry. This means more remedial teaching must be done and yet the Bachelors degree must still fit within three years (in the UK).
- Are there any critical dependencies that could affect productivity, and thereby limit options?
  - If the academics are working at or near full-capacity, then any loss of academic staff will adversely affect the undergraduate teaching, since students don't suddenly require less work just because staff have disappeared!
    - How large is the pool of suitable applicants for academic roles?
    - How long does it take to train a new academic and for them to reach full productivity? This will affect the speed and difficulty in replacing them.

We could then repeat this appraisal for the postgraduate teaching, the research and the consulting objectives. However, in the interests of brevity I won't do that here!

## How Efficient Is The System?

When we speak about *efficiency* we are asking how much time and resources have been consumed in producing the results required by the operational purpose(s). If more time and/or more resources are consumed than necessary to produce these results, then the operation is *wasteful* or *inefficient* to some extent. Ask yourself questions such as:

- How much time and resources are consumed to produce these results?
- What, if anything, is consuming time and resources *without* contributing to the results required by the operational purpose(s)?
- Are the supporting units actually supporting income-generation or have they taken charge and become the centre of the organisational universe, insisting that everything revolve around their procedures and schedules?

- Are the supporting units performing at the level required to support the income-generating units?

It is important to note that efficiency is often confused with *utilisation*. Utilisation is the ratio of *how much was produced* compared to *how much could have been produced if the staff were working at full capacity and 100% efficiency*. If the utilisation is 80%, then the *slack* (underutilised time and resources) will be 20%. The *concept* of utilisation is simple enough to grasp, however it is difficult to measure with any accuracy since it relies upon the theoretical notion of *what could have been produced at full capacity with perfect efficiency*.

Many organisations mistakenly strive for 100% utilisation thinking this makes their operation more efficient, which it doesn't. Let's look at this more closely. If the utilisation is 100%, then everyone is working flat-out and:

- If a crisis or something unexpected happens, there is no spare capacity to cope with it. Spare capacity is the operational safety-margin protecting operations against unexpected circumstances and events.
- When everyone is working flat-out:
  - They will become fatigued and start making mistakes.
    - Mistakes decrease the efficiency because time and resources are spent to produce unsatisfactory results.
    - Then more time and more resources must be spent in correcting or replacing the unsatisfactory results.
  - Morale will suffer and staff will begin feeling exploited.
  - Staff-turnover will increase so more time and more resources will be spent on hiring and training the replacement staff. And the replacement staff will take some period of time to reach full productivity.
- There is no spare time for:
  - Essential maintenance activities, so these are delayed or abandoned.
  - Being creative/innovative or investigating opportunities.

My suggestion would be to strive for a utilisation in the range of 80 – 85%. This 15 – 20% "underutilised" capacity is both *insurance* against the unexpected and an *investment* in innovation, since excessively busy people don't have time to think creatively.

Let's return to our university example and assess the efficiency of undergraduate teaching.

- How much does it cost in terms of resources to graduate this many students per year? (The time-scale is fixed at 3 years in the UK.)
- What proportion of staff are involved in the income-generating activity of undergraduate teaching? How are these distributed among the various departments?
- What proportion of staff are involved in the supporting administrative activities and thus contribute to operating expenditure? How are these distributed among the various administrative services of the university?

(In a typical UK university the ratio of administrative to academic staff is approximately 3:1.)

- Are there any activities that are consuming time and resources without contributing to students graduating?
- Do the administrative units support the undergraduate teaching activities sufficiently? How might this be meaningfully assessed?  
(I know of one case where the central administration scheduled an examination for 300 first year students two days before all the final course marks were due! This meant that two academics had to double-mark 300 exams, calculate the overall course-marks for the 300 students and then double-check the marks all in two days!)

**NOTE**

From my observations, most university academics are working at more than 100% utilisation because they need to use evenings and weekends to keep up with the workload.

Since they are operating at or beyond 100%, the university would either need to reduce the load of non-academic activities, such as administrative paperwork or increase the number of academic staff.

## Which Environmental Factors Need To Be Considered?

Environmental factors can be considered using questions such as:

- How well known is the organisation, its purpose and its results?
- What is the competition? These might be:
  - Other organisations providing a similar product/service as your organisation. In this case, what is distinctive about your offering?
  - Other organisations providing methods or technologies that are different from what your organisation does, which could attract your customers away from your product/service.
- What legislation, regulations or certifications are relevant to the organisation? Have these changed or are these likely to change?
- Are important resources dwindling or becoming scarce?
- Are there any economic or political trends that could affect the organisation, its operation or its staff?
- What are the demographic trends and how might these affect the organisation's customers and/or staff?
- Are there any climatic trends that might have a bearing on the organisation's operation?

Returning to our undergraduate teaching example we might explore questions such as:

- How is the undergraduate teaching programme perceived locally, nationally and internationally?
  - What is being done to raise awareness among eligible students?

- Why would an eligible student choose this university over another? (This would suggest this university's competitive advantage in terms of teaching.)
- In what way(s) does the competition from other universities affect the ability to attract undergraduate students from within the UK, within the EU or worldwide?
- Is there any proposed legislation that could affect undergraduate teaching within the UK?
- Will longer-term demographic trends have any effect on undergraduate enrolment in the UK?

## Is The Current Situation Satisfactory And Sustainable?

The questions in this section involve money, because financial viability is required for continued operation, but money isn't the point of continuing. (The day your clients realise that you don't care about them and only care about the money is the day they begin looking elsewhere.)

This set of questions must *consider the organisation as a whole* and not by individual departments or divisions. This is because it is the organisation as a whole that will succeed or fail. For example, if the organisation goes bankrupt then Human Resources won't continue operating on their own.

- What are the income, operating expenses, assets, liabilities and cash reserves for the organisation?
  - How does total income compare to the total operating expenses?
  - How are income-generation and operating expenses distributed among the various sub-units of the organisation? Which sub-units are net producers or consumers of revenue?
  - What proportion of income is recurrent/predictable?
  - What proportion of income is variable/unpredictable?
  - Is the organisation compliant with any relevant legislation and regulations?
- How sustainable is the current operation?

Returning to our undergraduate teaching example for the last time:

- What proportion of revenue is contributed from teaching compared to research and consulting activities?
  - How is this distributed among the academic departments?
  - What proportion of teaching income is recurrent/predictable?
  - What proportion of teaching income is variable/unpredictable?
- What proportion of operating expenditure is consumed by:
  - academic teaching?
  - academic research and consulting?
  - administrative functions?
- How sustainable is the university's current operation?

## Is The Organisation Behaving Ethically?

This final question is an important one in my opinion because we read about politicians, banking CEOs, union leaders and government intelligence agencies who allow their organisations to behave corruptly or even criminally. To my mind "It's not personal, it's just business!" or "We haven't broken any laws!" are poor excuses for improving your position at the expense of others.

- Is there anything that the organisation is doing that would be embarrassing if it became public knowledge?
- Is there any group that is being exploited or disadvantaged in any way?
- Is the organisation behaving in a fair and even-handed manner?

### NOTE

This approach of:

- mapping the situation;
- checking for completeness and correctness; and then
- appraising the situation;

could equally be applied to sub-units within an organisation or even personally.

There is a similar approach in *Soft-Systems Methodology* involving *rich pictures*, the acronym *CATWOE* and the three Es. Some references to *Soft-Systems Methodology* are given at the end of *Chapter 3*.

Once you have considered the above headings, you will have formed an appraisal of the situation or be well on the way. Eventually you will decide that:

- The current situation is **OK for now** and ...
  - You will continue business-as-usual and anticipate how this situation might develop (*Chapter 6*).
    - You might be facing a problem in the future. How could you avoid it or minimise it?
    - You might have an opportunity in the future. How could you prepare in order to be ready to take advantage of it?
- The current situation is **NOT OK** and ...
  - You need to understand how this happened (*Chapter 3*).
  - What can you do to improve matters? (*Chapter 4*)

A few books on *Cognitive-, Concept- and Causal-Mapping* that I recommend are:

Donella H. Meadows, *Thinking In Systems*, Earthscan, London, 2009

Dennis Sherwood, *Seeing The Forest For The Trees*,  
Nicholas Brealey Publishing, London, 2002

John M. Bryson, Fran Ackermann, Colin Eden & Charles B. Finn, *Visible Thinking*,  
John Wiley & Sons, Chichester, 2004