

CHAPTER 5

MORPHOLOGICAL ANALYSIS AND RELATED TECHNIQUES

- Checklists
- Attribute listing
- Morphological analysis
- Force fitting triggers
- Heuristic ideation technique
- Component detailing
- Sequence-attribute modification matrix

CHECKLISTS (1)

- The use of questions as spurs to ideation. The simplest set of questions comes from the six basic questions.
 - **Why is it necessary?**
 - **Where should it be done?**
 - **When should it be done?**
 - **Who should do it?**
 - **What should be done?**
 - **How should it be done?**

EXAMPLE: 'HOW TO CREATE A FRIENDLY ATMOSPHERE AT WORK'

- Why?: to make it easier to communicate with colleagues and get work done.
- Where? : especially in meeting where staff of all grades are present.
- When?: prior to the meetings taking place.
- Who? : the departmental manager.
- What?: tell all staff how a meeting should be conducted and what is expected of them.
- How?: a booklet or leaflet circulated to all staff for guidance purposes.

CHECKLISTS (2)

- The following questions might also be usefully applied:
 - **Adapt?**
 - **Modify?**
 - **Substitute?**
 - **Magnify/Maximise?**
 - **Minimise/Eliminate?**
 - **Rearrange?**
 - **Reverse?**
 - **Combine?**

EXAMPLE: 'A DESK'

- Adapt?: make it convenient for different sizes of people.
- Modify?: make it portable.
- Substitute?: make it of metal instead of wood.
- Magnify/Maximise?: make the drawer space larger.
- Minimise / Eliminate? : get rid of protruding handles.
- Rearrange?: rearrange the location of the drawers and integrated trays.
- Reverse?: have a detachable/reversible glass/plastic top to the desk.
- Combine?: combine with chair into an integrated unit.

CHECKLISTS (3)

- The following might also be applied:
 - **Add or subtract something**
 - **Change colour**
 - **Vary materials**
 - **Rearrange parts**
 - **Vary shape**
 - **Change size**
 - **Modify design or style**

EXAMPLE: 'A WRIST-WATCH'

- Add / subtract something - add a compass
- Change colour - have multicoloured cases
- Vary materials - make cases out of fibre-glass
- Rearrange the parts - have the hours running from 12 to 1 instead of 1 to twelve and make the watch hands move backwards
- Vary the shape - triangular, hexagon, octagon, square, round, etc
- Change the size - have many different sizes
- Modify design or style - have frequent updates on style and have designer type labels linked to well known fashion houses

ATTRIBUTE LISTING

1. Identify problem
2. Break problem into component parts
3. List the attributes for each part
4. Use in conjunction with other idea- generating techniques to examine all aspects of the problem

ATTRIBUTE LISTING - 'IMPROVING A TORCH'

<i>FEATURE</i>	<i>ATTRIBUTE</i>	<i>IDEAS</i>
Casing	Plastic	Metal
Switch	On/Off	On/Off low beam
Battery	Consumable	Rechargeable
Bulb	Glass	Plastic
Weight	Heavy	Light

MORPHOLOGICAL ANALYSIS

- List the dimensions of the product or problem
- Generate a list of attributes under each of the dimensions
- Take combinations of attributes as stimuli for new ideas

MORPHOLOGICAL ANALYSIS

‘Educational Toy for Toddlers’

MATERIAL

felt

rubber

plastic

wood

transparent perspex

wool

metal

inflatable plastic

luminescent

WHERE USED

cot

pram

play pen

beach

car

bath

garden

holidays

PURPOSE

alphabet

numbers

shapes

sounds

colours

textures

co-ordination

smell

construction

MORPHOLOGICAL ANALYSIS – RELATED TECHNIQUES

- Force Fitting Triggers
- Heuristic Ideation Technique
- Component Detailing
- Sequence-Attribute Modification Matrix