

DIFFERENT ANGLES OF ANALYSIS OF A TECHNICAL OBJECT



At the elementary and secondary levels, technological analysis approach can be useful to develop curiosity and powers of observation. It can also inspire new ideas and help to understand the application of scientific principles. It may be useful to maintain and repair an object or to develop a critical sense. In short, it helps develop a better scientific and technological culture.

The analysis of a technical object or a technological system in schools for primary and secondary is limited to questions:

- What is the overall function?
- How does it work?
- How is it built?
- How to represent it?

These issues are usually associated with technological, scientific and technical angles. However, it may be useful to understand the technological analysis of a more global manner and exploit other aspects that may occasionally provide a rich context for learning or integration of concepts from other worlds or other disciplines. For example, the ergonomic angle provides an interesting entry to the living world and the environmental angle frequently opens to the world Earth and space.

# DIFFERENT ANGLES OF TECHNOLOGICAL ANALYSIS\*

### **TECHNOLOGICAL**

This angle refers to the process of design and serial production of TO<sup>1</sup>.

Example: How is the TO built (links, guidings, etc.)? How to represent it in accordance with diagramming? How is mass produced?

#### SCIENTIFIC

This angle refers to the scientific principles that explain and govern the TO.

Example: How does the TO work? What are the scientific principles involved? On what scientific processes or what law is based the operation of the TO?

## TECHNICAL

This angle refers to the techniques used to built the TO.

ERGONOMIC

This angle refers to the adaptation of the TO to the

Example: Who is the user of the OT (age, height,

weight, etc.)? What are the manipulations required

by the user of the TO? Are the commands of the TO

user.

accessible?

Example: What processes are at the basis of its production (drilling, cutting, injection molding, bending, thermoforming, etc.)?

# SOCIAL

This angle refers to the influence of TO on society as well as society on the design of the TO. Example: Did this object modify the lives of individuals and society? Do the beliefs or values of a society affect the design or the use of the TO?

#### **ETHICAL**

This angle refers to the acceptability of the TO on moral grounds.

Example: Does manufacturing involve processes with moral or ethical implications? Does the use of this TO face the moral values of a society? Do the materials used for its manufacturing respect sustainable development?

#### HISTORICAL

This angle refers to the evolution of the TO and to the discoveries that led to our ability to produce it. Example: How whas this TO changed over time? What need was at the basis fof its design? What discovery has influenced the design or manufacturing of the TO?

#### COST

This angle refers to the production costs of the TO and the impact of the production on the economy. Example: Did the manufacturing and marketing of this TO affect the economy? Are the materials used subject to fluctuations in the financial market?

# AESTHETIC

# This angle refers to the harmony of forms, the beauty of the TO.

Example: Is the TO pleasing to the eye, to the touch? Is the choice of colors, texture of materials appropriate?

# **ENVIRONMENTAL**

This angle refers to the impact on the environment caused by the use or production of TO. Example: At the end of its useful life, will the components and materials be recycled, reused or discarded? Does the operation of the TO rely on renewable energy?

\* The list of questions provided as examples for each angle is not exhaustive. Several other issues could be added to illustrate every aspect.

<sup>1</sup> TO : Technical object pr technological system designed to fulfill a need.

# **BOUNDARIES OF THE STUDY**

When undertaking a process of technological analysis of a technical object or a technological system, we draw the boundaries of the study of TO based on the reasons behind the analysis.

It is rare to have to analyze a technical object or a technological system under all possible angles. Context (comparison of different objects, design of a new object, study of scientific principles, etc.) dictates the angles of the analysis. It happens from time to time, we limit the analysis to one angle only, for example, comparison of scientific principles involved in different objects.

#### Example of boundaries for a study



#### Angles that are not considered in this example

