GST 43 – Reality and Representation

Formal Description

General Systems Theory distinguishes between reality itself and the representations used to describe, explain and understand it. Reality exists independently of any particular observer, while representations are models, descriptions, diagrams, theories or other forms of knowledge created by observers to interpret aspects of reality. The effectiveness of a representation depends upon how well it corresponds to the aspects of reality it is intended to describe.

Plain English Explanation

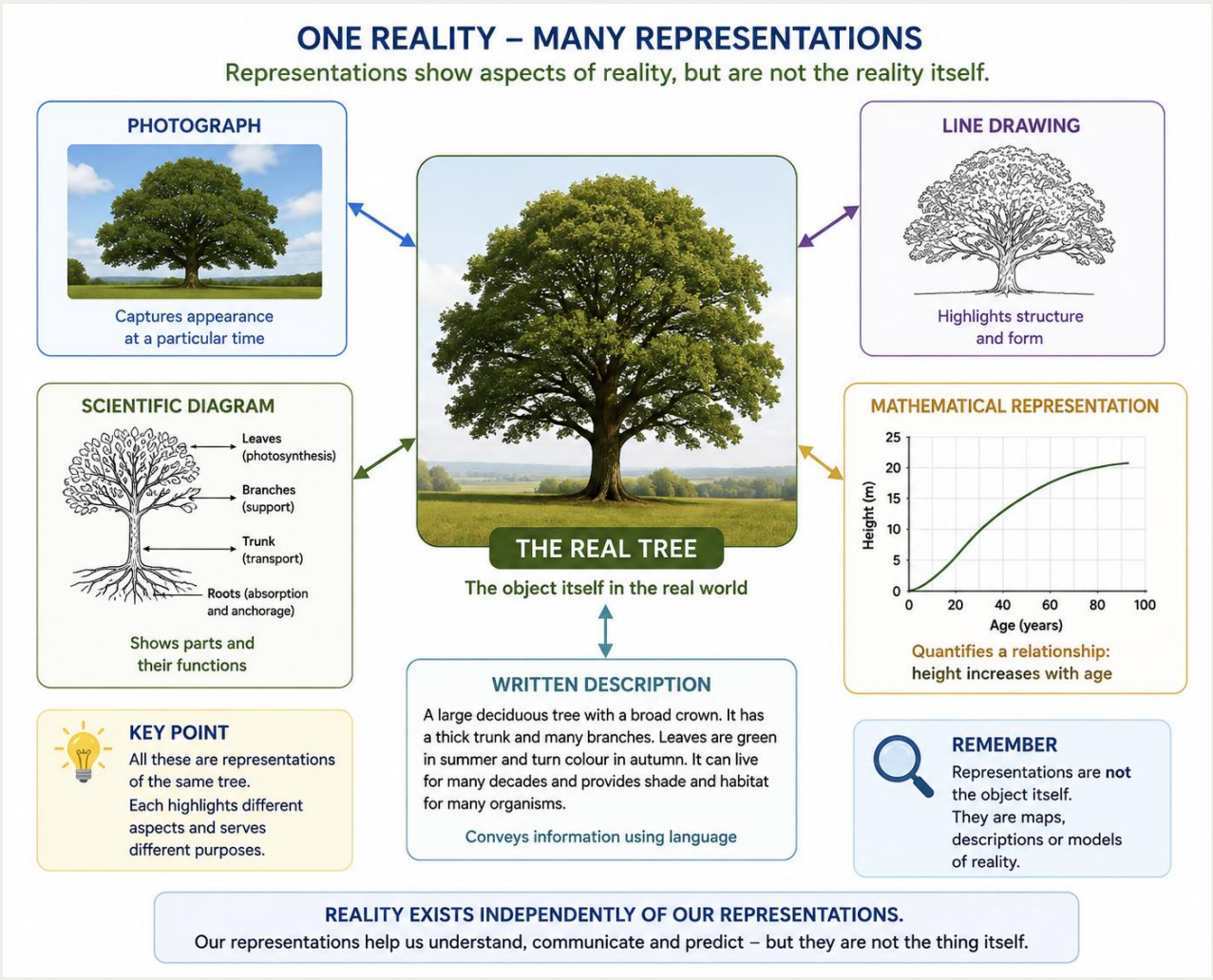
Everything we know about the world comes through representations. We describe objects with words, explain ideas using diagrams, perform calculations with mathematics and develop theories to explain how things work. These representations help us understand reality, but they are not reality itself.

A road map, for example, represents the layout of roads, towns and rivers. It can be extremely useful for planning a journey, but it is not the landscape itself. Similarly, an engineering drawing represents a bridge, a biological diagram represents part of a living organism, and an economic model represents aspects of an economy. Each captures selected features of reality while omitting many others.

General Systems Theory recognises this distinction because different representations often describe the same reality from different perspectives. A biologist, a chemist and a physicist may all study the same tree, yet each produces a different representation because each is interested in different aspects of the same object. None of these representations is necessarily wrong; each reflects a particular purpose.

This distinction is especially important when studying complex systems. Our understanding depends not only upon reality itself but also upon the quality of the representations we construct. Good representations help us explain, predict and communicate. Poor representations can obscure important relationships or lead to misunderstanding.

Throughout this course we shall therefore distinguish carefully between the world that exists independently of us and the representations we use to investigate and communicate our understanding of that world.



Examples

A weather forecast is a representation of atmospheric processes. Although it is based upon observations and scientific models, it is not the weather itself. Its usefulness depends upon how accurately it represents the behaviour of the atmosphere.

Similarly, an architectural drawing represents a proposed building before it is constructed. Builders work from the drawing, but the drawing is not the building. As construction proceeds, the physical building gradually comes to correspond to its representation.

Provenance and Links

The distinction between reality and representation has deep philosophical roots. Plato distinguished between the world and our understanding of it, while Aristotle developed more empirical approaches to describing reality. In the twentieth century, Alfred Korzybski expressed the idea succinctly in the phrase *"the map is not the territory."* Scientific realism and Critical Realism, particularly through the work of Roy Bhaskar, argue that reality exists independently of our descriptions, while recognising that our knowledge of it is always mediated through observation and representation.

Within systems science, models, diagrams and mathematical descriptions are all regarded as representations that support understanding without being identical to the systems they describe.

Practical Exercise

Choose a familiar object or system, such as a bicycle, a school, a river, a business or a local park. Describe three different ways in which the same object or system could be represented. For each representation, explain what information it conveys particularly well and what information it leaves out. Finally, explain why no single representation provides a complete description of the object or system.