



# **Propagation of Scientific Ideas : Extrinsic and Intrinsic Factors**

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# What is Science?

- Egalitarian
- Universal
- Imperialism and enlightenment project



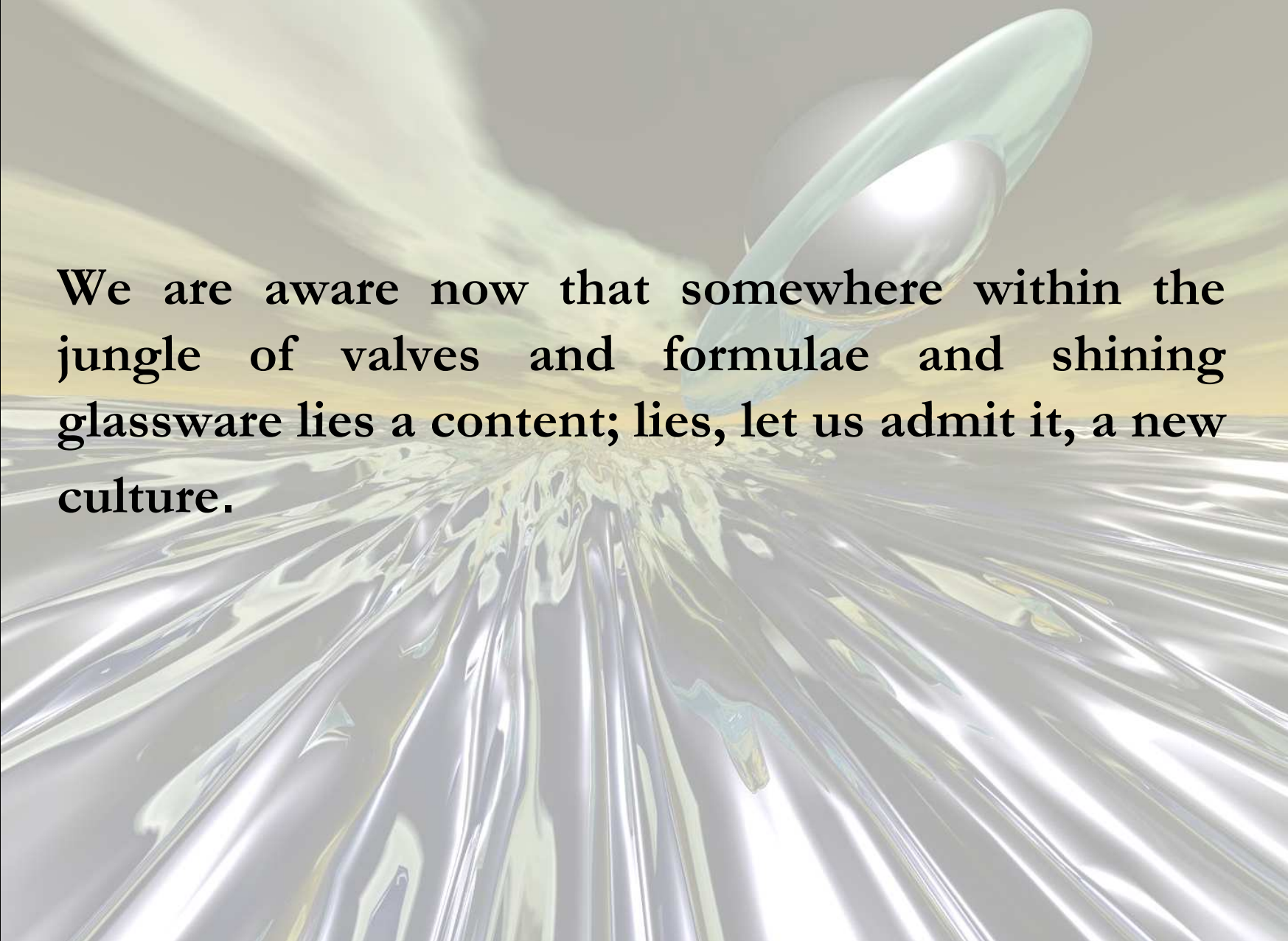
## A Simple and Elegant Definition of Science

We are coming to understand that science is not a haphazard collection of manufacturing techniques carried out by a race of laboratory dwellers with acid-yellow fingers and rimmed spectacles and no home life.





**Science, we are growing aware, is a method and a force of its own, which has its own meaning and style and its own sense of excitement.**

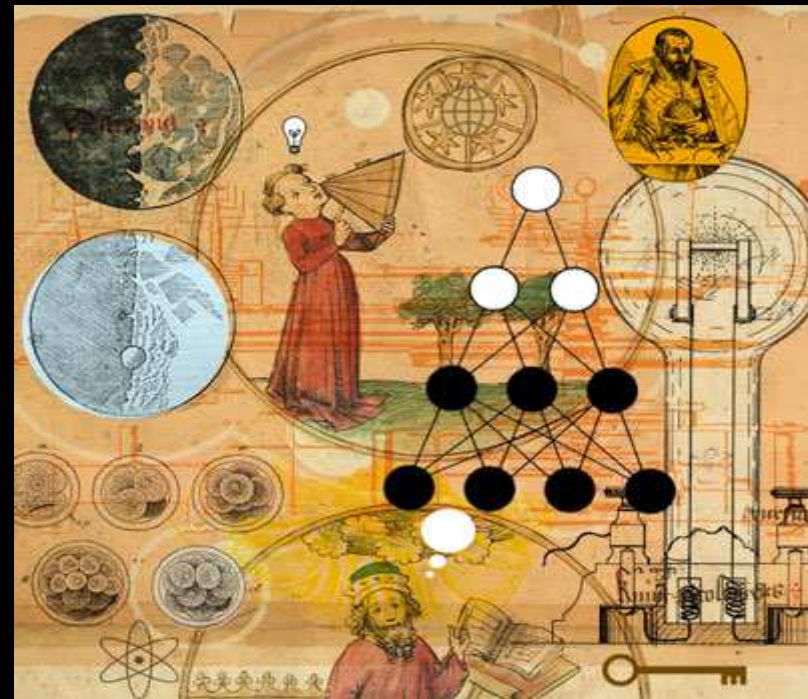
The background is a complex, abstract digital composition. It features a central perspective of a tunnel or path that recedes into the distance. The walls of this tunnel are composed of numerous vertical, slightly curved, metallic-looking surfaces that reflect light, creating a shimmering, multi-colored effect with shades of green, yellow, and white. In the upper right quadrant, a large, smooth, reflective metallic object, possibly a lens or a component of a machine, is positioned. It has a bright, circular highlight on its surface, suggesting a light source. The overall atmosphere is one of high-tech, futuristic, and somewhat ethereal. The text is overlaid on the left side of this scene.

**We are aware now that somewhere within the  
jungle of valves and formulae and shining  
glassware lies a content; lies, let us admit it, a new  
culture.**



How are we to reach that culture, across its jargons,  
and translate it into a language which we know?  
(Bronowski J, 1953)

History of communication shows that the development of communication both oral and written has left deep imprint on the social, cultural, economic and political development of human society



- **Sign language, spoken language**
- **Script and written word**
- **Printing (Books and News papers)**
- **Telegraphy**
- **Telephony**
- **Radio**
- **Television**
- **Internet**



At each turning point the pace and spatial reach of propagation of idea increased



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**WIRELESS TELEGRAPH**

The "Telimco" Complete Outfit, comprising 1 inch Spark Coil, Strap Key, Sender, Sensitive Relay, Coherer, with Automatic Decoherer and Sounder, 4 Ex. Strong Dry Cells, all necessary wiring, including send and catch wires, with full instructions and diagrams, \$8.50. Guaranteed to work up to one mile. Send for Illust. Pamphlet & 64-page catalogue.

**ELECTRO IMPORTING CO., 32 Park Place, New York**

However dissemination of an idea does not necessarily mean that it would become part of the thought structure of the target audience

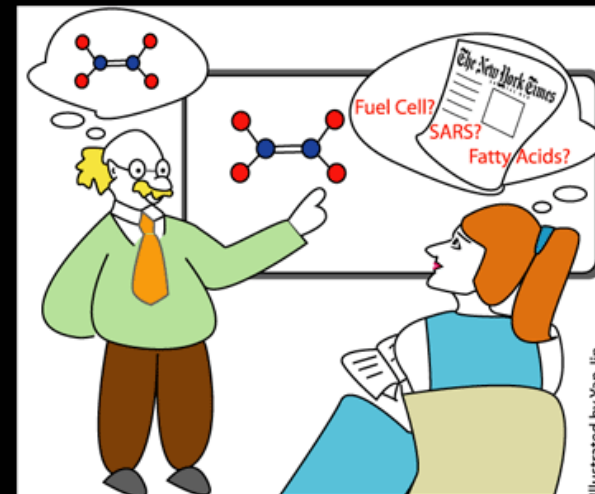


# Public Understanding of Science Research

## two major problems

Some scientific ideas, notions and information propagate faster than the other

All Survey carried out in the west show that the scientific literacy is not increasing



# History of Development of Mass Media

## News Papers and Advertising

## Statistics

(work of A Quetelet, Sir Galtons, K Pearson, W S Gosset, W E Deming and J Neyman led to its application to collective and individual behaviour of plants, animals and human beings)

## Television and survey studies



## **Two Major Turning Points in the Recent History of Science**

### **Second World War & Manhattan Project**

**Loss of privileged position of science**

**Emergence of big science**

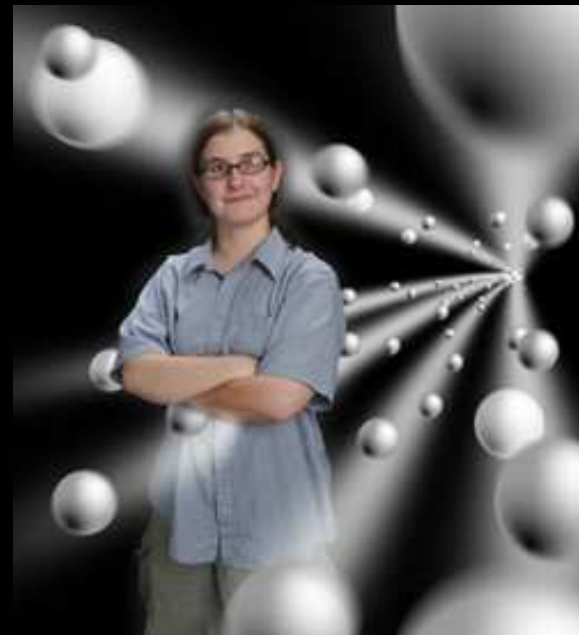
**Emergence of science and peace movement**

### **Launch of Sputnik by Soviets**

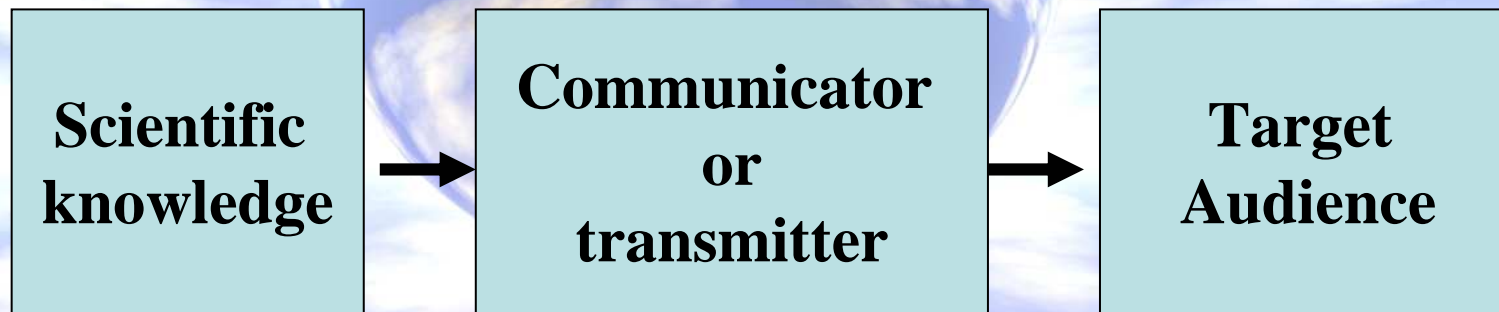
**Panic in capitalist world**

**Revamping of education system, building  
science parks, museums, funds for surveys**

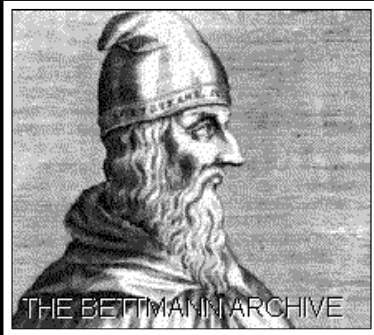
# Scientific Literacy Verses Public Understanding of Science



# Mechanical or Deficit Model



# Aristotle's Model of Communication



**Speake**



**Argume**

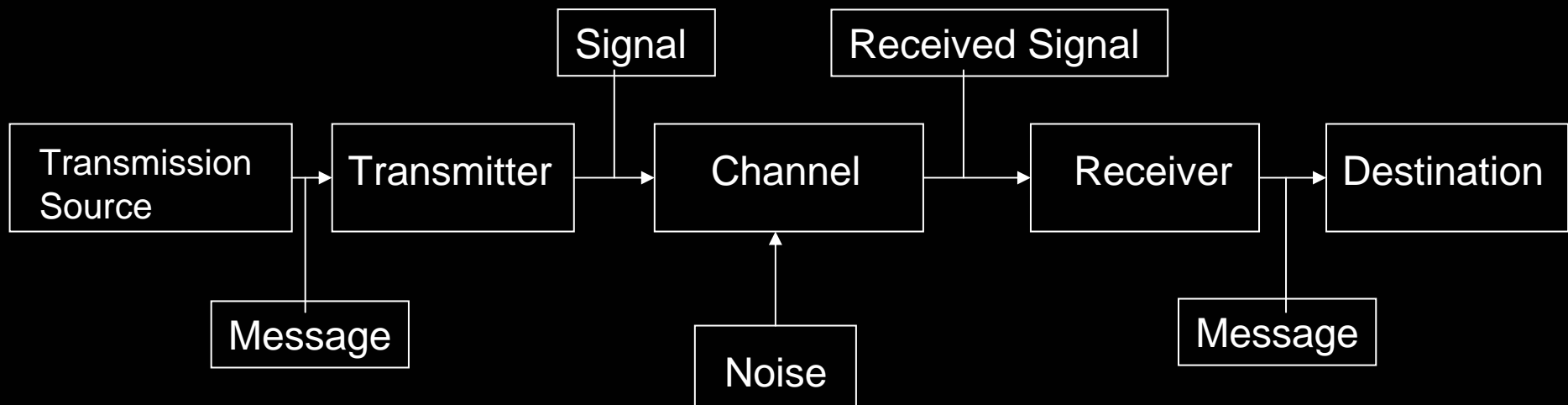
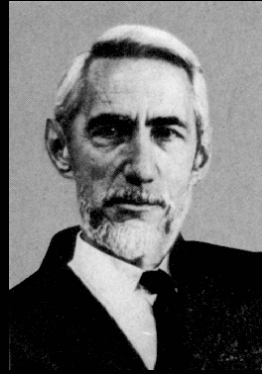


**Speec**

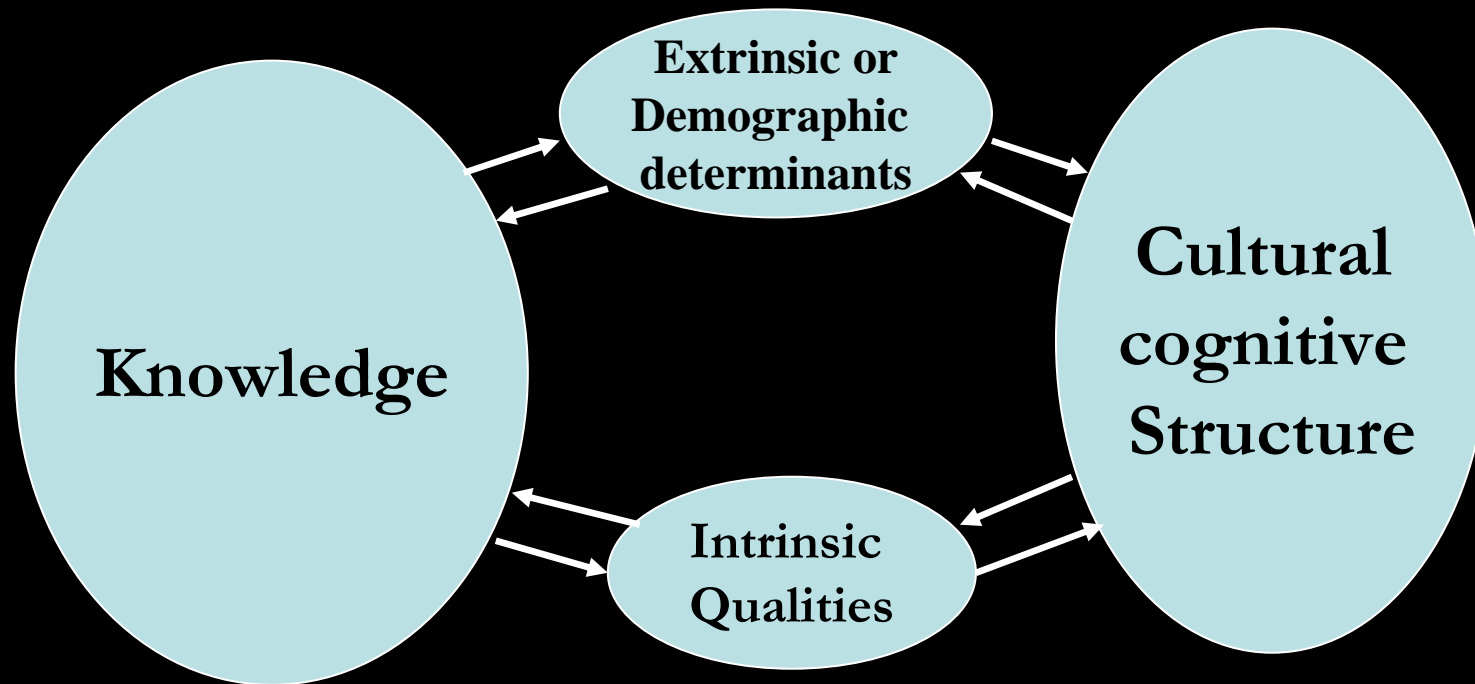


**Listener**

# Claude Shannon's Model of Communication

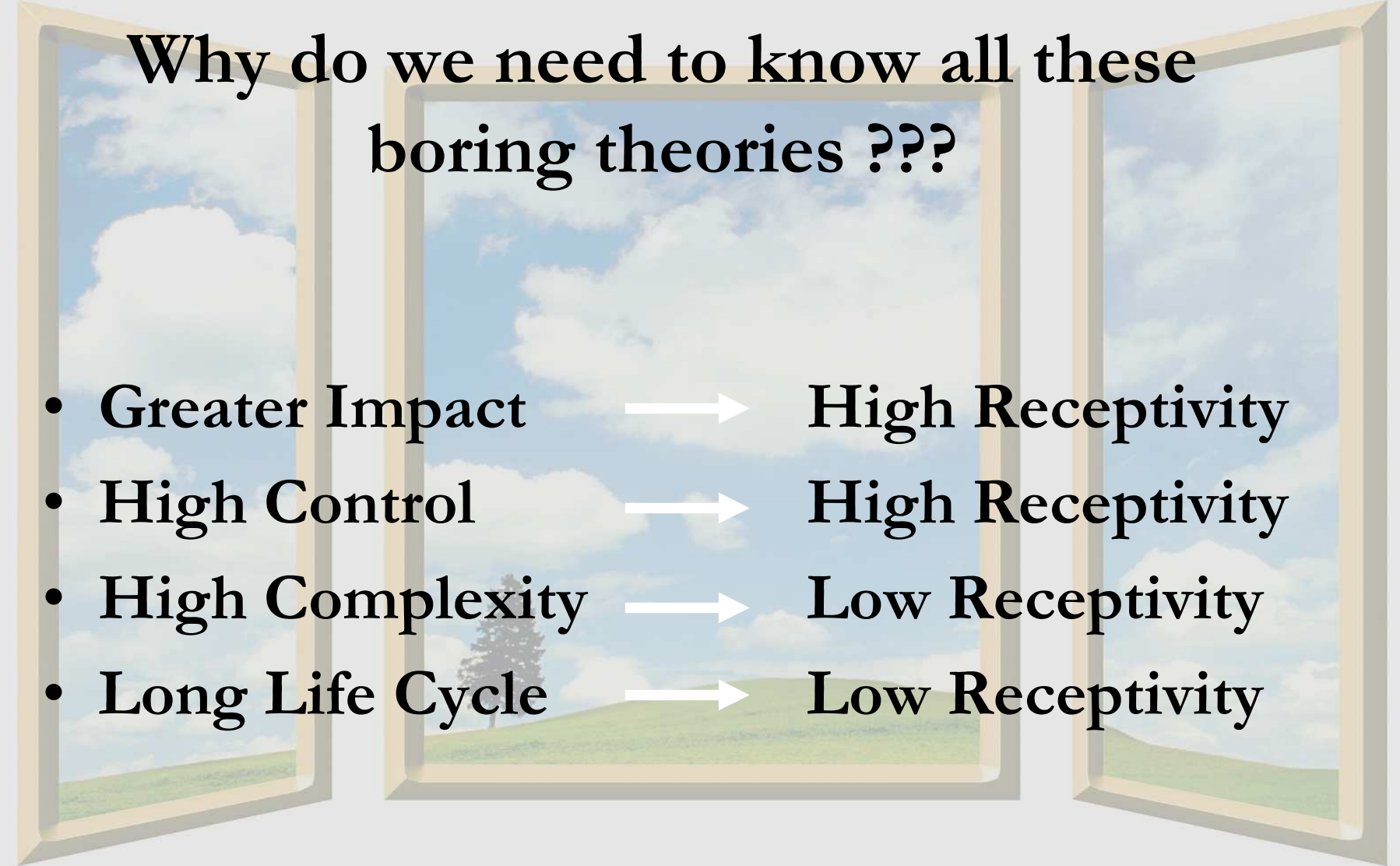


# Cultural Model



# Intrinsic Determinants

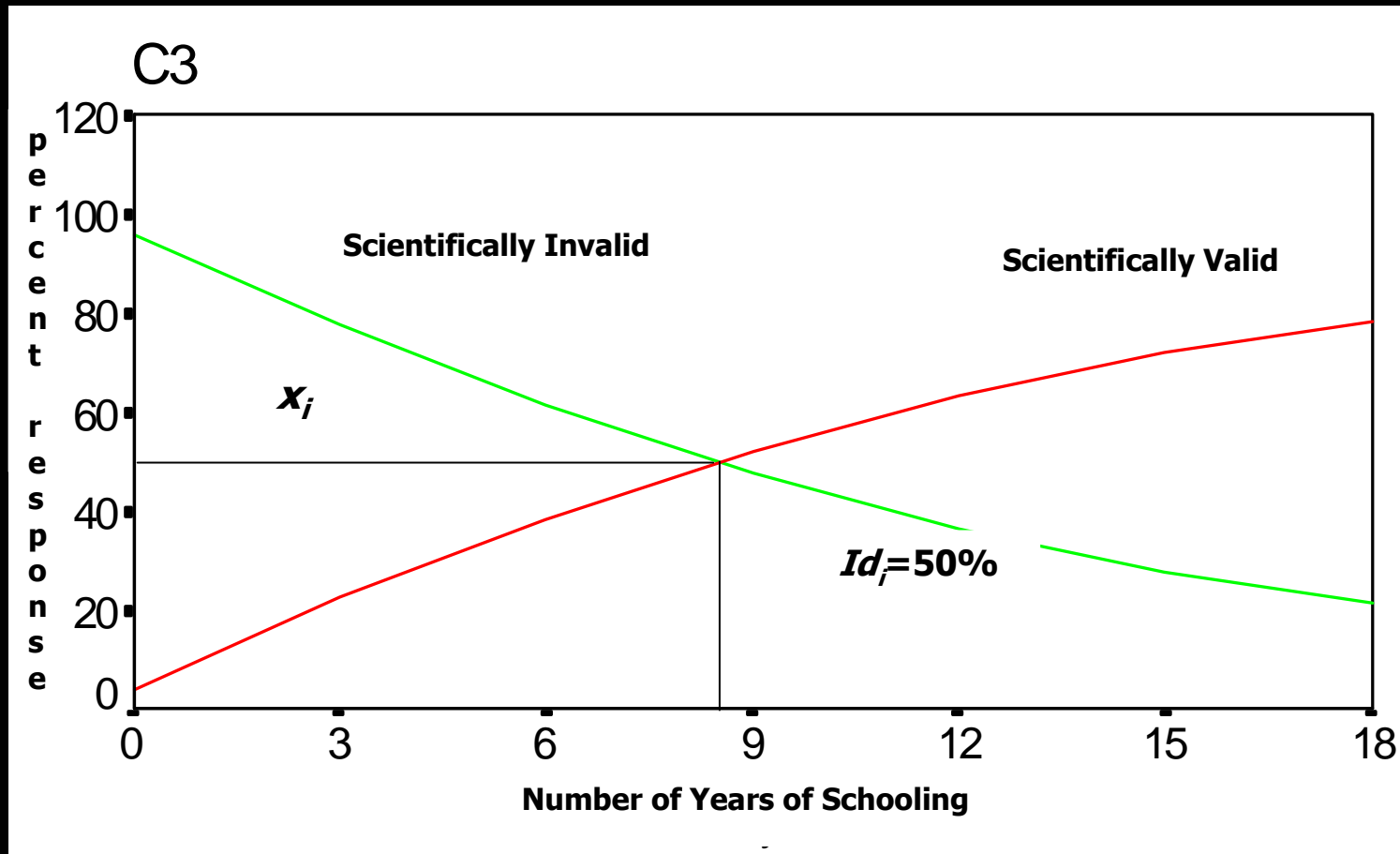
- **Impact**
- **Control**
- **Complexity**
- **Life Cycle**



**Why do we need to know all these boring theories ???**

- **Greater Impact** → **High Receptivity**
- **High Control** → **High Receptivity**
- **High Complexity** → **Low Receptivity**
- **Long Life Cycle** → **Low Receptivity**

# A Method for determining the cultural distance





**Deficit Model is simple and attractive, almost addictive  
therefore easy to follow**

**But it has a purpose and a politics, i.e. to declare a whole  
host of people as scientifically illiterate**

**Culturally rich and diverse countries need a model that  
could help them enhance Public Understanding of Science  
among varied groups**



thanks