Science: How Theories Became Knowledge

To find out, check out that comes ahead of a theory to explain it? So generally speaking, which works better experiment, or an experimental phenomenon in advancing science—a theory ahead of an

ERAN PACKER

EMPIRICAL TESTS

• For a theory to be adopted as true, it must have experimental evidence
• Examples of live bending
• Examples of gravitational redshift
• Examples of time dilation

SOCIAL-Psychological FACTORS

EARLY RECEPTION OF RELATIVITY

• Concludes that after encouragement
• Argues that before presenting the theory of

FRANK SULLOWAY (historian-psychologist)

• Determined that social attitude and age worked
• Found that age was a strong predictor when

AESTHETIC-MATHEMATICAL FACTORS

• Conduction of research on relativity.
• V.A. FROCK (physicist)

DO SCIENTISTS GIVE EXTRA CREDIT FOR NOvELTY?

IN THE END, WHY WAS RELATIVITY ACCEPTED?

• This piece of the theory accumulated
• The theory successfully

CASE STUDY:

• Studied the reception of relativity at

LEWIS PYENSON (historian)

EMPIRICAL , SOCIAL, and AESTHETIC

RELATIVITY WAS

THE MOST IMPORTANT ADVOCATE OF

• Planck was the editor of
• Planck was a professor at Berlin, a major city center of physics

ANDREW WARWICK

SOCIAL-PSYCHOLOGICAL FACTORS

• Conduction of research on relativity:

EARLY RECEPTION OF RELATIVITY

• Argues that this bias predisposed scientists

• Effect on electron

• Mass increase with

• Existence of positron

• Time dilation

• Complete mass-energy

• Nuclear forces;

• Gravitational radiation

• Gravitational redshift of

• Total mass-energy

• Partial mass-energy

• Time transformation in

• Discussion of prediction of

• Einstein's theory was accepted on the basis of its

• I argued that physics and mathematicians

• Aesthetic or mathematical

• Initial reception of relativity was complex

• Psychological factors

• Empirical tests

• Social or psychological factors

• Physics and mathematicians

• Planck decided to encourage relativity

• Planck formulated his hypothesis, owing to

• Complete mass-energy equation

• Partial mass-energy hypothesis, owing to

• Gravitational redshift of

• Time dilation

• Gravitational radiation

• Total mass-energy

# MAKING THE 20TH CENTURY SCIENCE

WHY ARE SCIENTIFIC THEORIES ACCEPTED?

The theory successfully

The theory successfully

So generally speaking, which works better in advancing science—a theory before an experimental phenomenon that comes ahead of a theory to explain it? Or an experimental phenomenon that comes ahead of a theory to explain it? In the end, why was relativity accepted? How do scientists accept an initial theory that is not perfect? Why do theories come ahead of evidence to explain it? So generally speaking, which works better in advancing science—a theory before an experimental phenomenon that comes ahead of an experiment to explain it? Or an experimental phenomenon that comes ahead of a theory to explain it? In the end, why was relativity accepted? How do scientists accept an initial theory that is not perfect? Why do theories come ahead of evidence to explain it?