
What is the research?

Re - search

A search for knowledge !

Systematic investigation to establish facts

Gathering of data, information and facts for the advancement of knowledge.

Performing a methodical study in order to prove a hypothesis or answer a specific question.

Art

George, William H.

Scientific research is not itself a science: it is still an art or craft.

The Scientist in Action

Four Qualities of Scientific Research (p. 29)

The 5 W

Bunge, Mario

The chief theoretical (that is, nonpragmatic) aim of scientific research is to answer, in an intelligible, exact, and testable way, five kinds of questions, namely those beginning with

what (or how), where, when, whence, and why . . .

[T]he Five W's of Science.

(Only radical empiricists deny that science has an explanatory function, and restrict the task of scientific research to the description and prediction of observable phenomena.)

Also, most scientists would agree that all five W's are gradually (and painfully) being answered through the establishment of scientific laws, that is, general hypotheses about the patterns of being and becoming.

Causality: The Place of the Causal Principle in Modern Science
Chapter 10 (p. 248)

Basic research

Bush, Vannevar

Basic research leads to new knowledge.

It provides scientific capital.

It creates the fund from which the practical applications of knowledge must be drawn.

New products and new processes do not appear full-grown.

They are founded on new principles and new conceptions, which in turn are painstakingly developed by research in the purest realms of science.

Endless Horizons (pp. 52–3)

Applied vs. pure

Thomson, J.J.

. . . research in applied science leads to reforms, research in pure science leads to revolutions . . .

The Life of Sir J.J. Thomson (p. 199)

Publications

Wells, H.G.

The whole difference of modern scientific research from that of the Middle Ages, the secret of its immense success, lies in its collective character, in the fact that every fruitful experiment is published, every new discovery of relationships explained.

New Worlds for Old

Chapter II (p. 22)

Edge of mind

Gornick, Vivian

Whatever a scientist is doing—reading, cooking, talking, playing— science thoughts are always there at the edge of the mind.

They are the way the world is taken in; all that is seen is filtered through an everpresent scientific musing.

Women in Science

Part One (p. 39)

Aims

Wilson, Edward O.

- Scientists do not discover in order to know, they know in order to discover.

Biophilia

The Poetic Species (p. 58)

Creative

Romanoff, Alexis

Scientific research provides the shortest route to useful practice.

Scientific research is based chiefly on creative thinking

Encyclopedia of Thoughts,

Aphorisms 112

The fun...

Brown, J. Howard

A man may do research for the fun of doing it
but he cannot expect to be supported for the
fun of doing it.

Journal of Bacteriology The Biological
Approach to Bacteriology (p. 9)

Volume XXIII, Number 1, January 1932

Astonishment and risks

Green, Celia

- The way to do research is to attack the facts at the point of greatest astonishment.
- Research is a way of taking calculated risks to bring about incalculable consequences.

The Decline and Fall of Science

Aphorisms (p. 1)

Ignorance

Kettering, Charles F.

We find that in research a certain amount of intelligent ignorance is essential to progress; for if you know too much, you won't try the thing.

Professional Amateur, The Biography of Charles Franklin Kettering (p. 106)

For the youngs

Richet, Charles

The gift for investigation appears at an early age: *the demon of research* speaks to men whilst they are still young.

The Natural History of a Savant

Chapter VI (pp. 38–9)

Joy

Smith, Theobald

The joy of research must be found in doing,
since every other harvest is uncertain.

Journal of Bacteriology

Letter from Dr. Theobald Smith (p. 20)

Volume XXVII, Number 1, January 1934

Curiosity

Whitney, W.R.

The valuable attributes of research men are conscious ignorance and active curiosity.

Science - The Stimulation of Research in Pure Science which has Resulted from the Needs of Engineers and of Industry (p. 289)

Volume LXV, Number 1862, March 25, 1927

Curiosity

Cousteau, Jacques-Yves

What is a scientist after all? It is a curious man looking through a keyhole, the keyhole of nature, trying to know what's going on.

Christian Science Monitor

July 21, 1971

Schooled

Willstaetter, Richard

In research, the great achievements rarely come from unschooled youthful geniuses.

There is little prospect that a beginner with an original mind or even one with the gift of genius will be able to scale the heights unless a mature leader sets him a daily example of steadiness and perseverance, devotion and unselfishness as self-evident characteristics of a scientist.

From My Life Chapter 11 (p. 344)

Traveler

Pasteur, Louis

When moving forward toward the discovery of the unknown, the scientist is like a traveler who reaches higher and higher summits from which he sees in the distance new countries to explore.

Quoted by Ren´e J. Dubos

Louis Pasteur, Free Lance of Science

Chapter III (p. 87)

Why vs. how

de Madariaga, Salvador

- There are two kinds of scientists: they were once described . . . as the “why” and the “how”.
- The how-scientist is mainly interested in the way things happen;
- the why-scientist seeks to find out the cause of things.
- The first is more of a technician;
- the second, more of a philosopher.
- The first is more of a man of talent;
- the second, more of a man of genius.

Essays with a Purpose. Science and Freedom (p. 43)

Inventor vs. craftsman

Goldenweiser, Alexander

The scientist, when in his laboratory, is craftsman and inventor in one.

He also faces nature as a learner.

Like the craftsman, he is prepared to commit errors and, having learned from them, to revise his procedure.

Like the inventor, he is after something new, he plans his experiments deliberately, watches carefully, ever on the alert for a promising lead—a discovery.

Robots or Gods (p. 44)

Scientist vs. philosopher

Ziman, John

A philosopher is a person who knows less and less about more and more, until he knows nothing about everything.

A scientist is a person who knows more and more about less and less, until he knows everything about nothing.

Knowing Everything About Nothing (p. v)

Types of scientists

Medawar, Sir Peter

Scientists are people of very dissimilar temperaments doing different things in very different ways.

Among scientists are collectors, classifiers, and compulsive tidiers-up;

many are detectives by temperament and many are explorers;

some are artists and others artisans.

There are poet-scientists and philosopher-scientists and even a few mystics.

The Art of the Soluble

Hypothesis and Imagination (p. 132)

Personality

Rushton, J.P.

Research has suggested that scientists differ from non-scientists by exhibiting a high level of curiosity, especially at an early age, and in demonstrating a relatively low level of sociability.

Scientists also tend to be shy, lonely, slow in social development, and indifferent to close personal relationships, group activities and politics.

Other attributes include skepticism, preoccupation, reliability, and a facility for precise, critical thinking.

Generally they are cognitively complex, independent, non-conformist, assertive, and unlikely to suppress thoughts and impulses;

and, like successful entrepreneurs, eminent scientists are also calculated risk-takers.

Journal of Social and Biological Structure

Volume 11, 1980 (p. 140)
