

Cultures: Science, engineering, interdisciplinarity and the fallacy of Ockham's razor

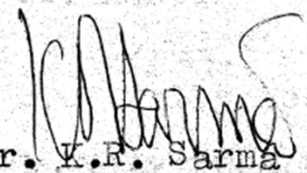
Sandip Tiwari

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C E R T I F I C A T E

1976

Certified that this work "Spectrally Resolved Photon Counting System" by Mr. Sandip Tiwari and Mr. Vikas S. Sonwalkar has been carried out under my supervision and that this has not been submitted elsewhere for a degree.



Dr. K.R. Sarma
Professor
Department of Electrical Engineering
I.I.T. Kanpur

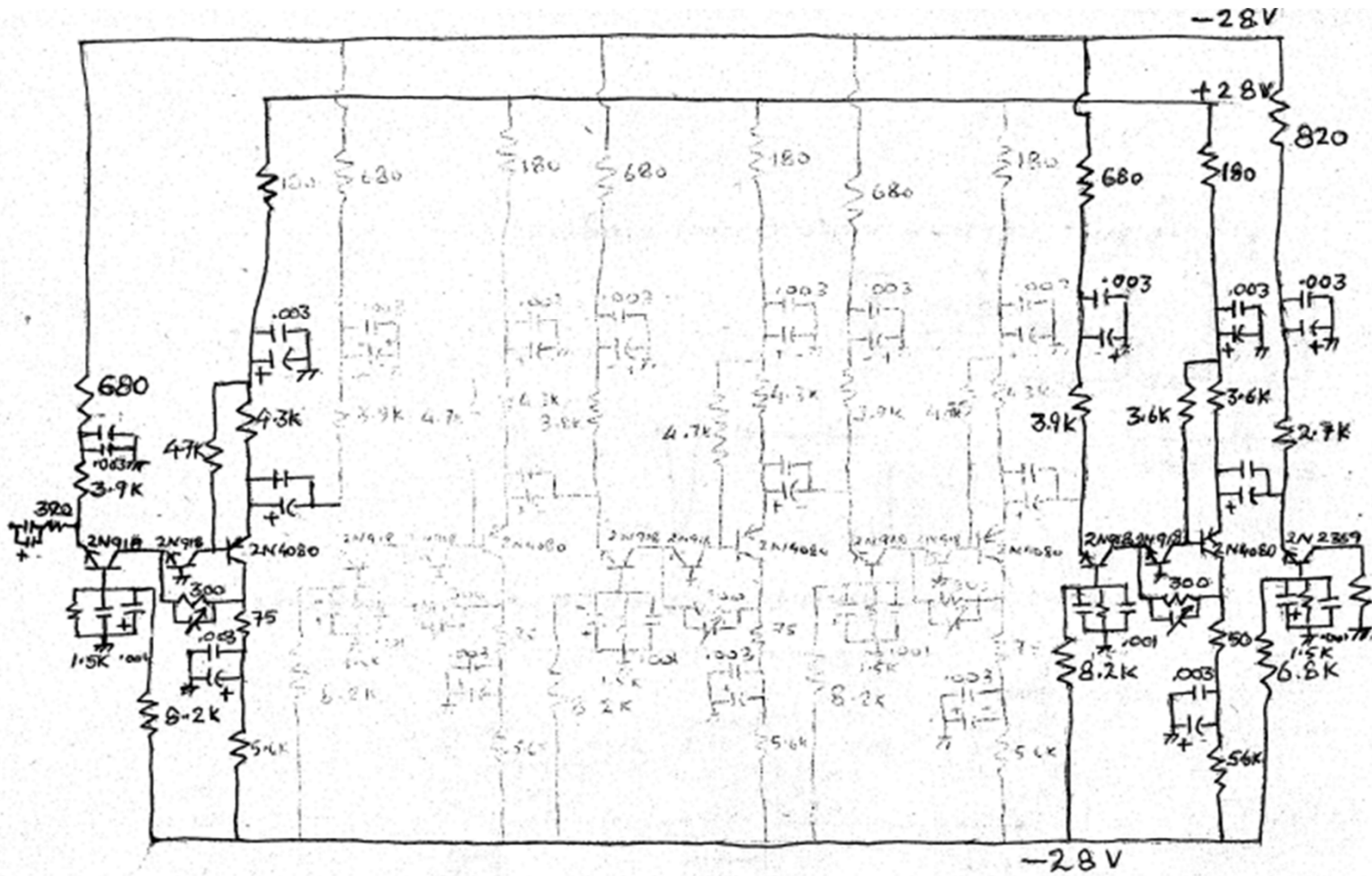


Figure 3.2: Amplifier (Design I) Circuit Diagram



scot iitk

International Winter School for Graduate Students
Organic Electronics and Optoelectronics
December 8-18, 2008
Indian Institute of Technology, Kanpur



The Pfizer covid vaccine “innovation”



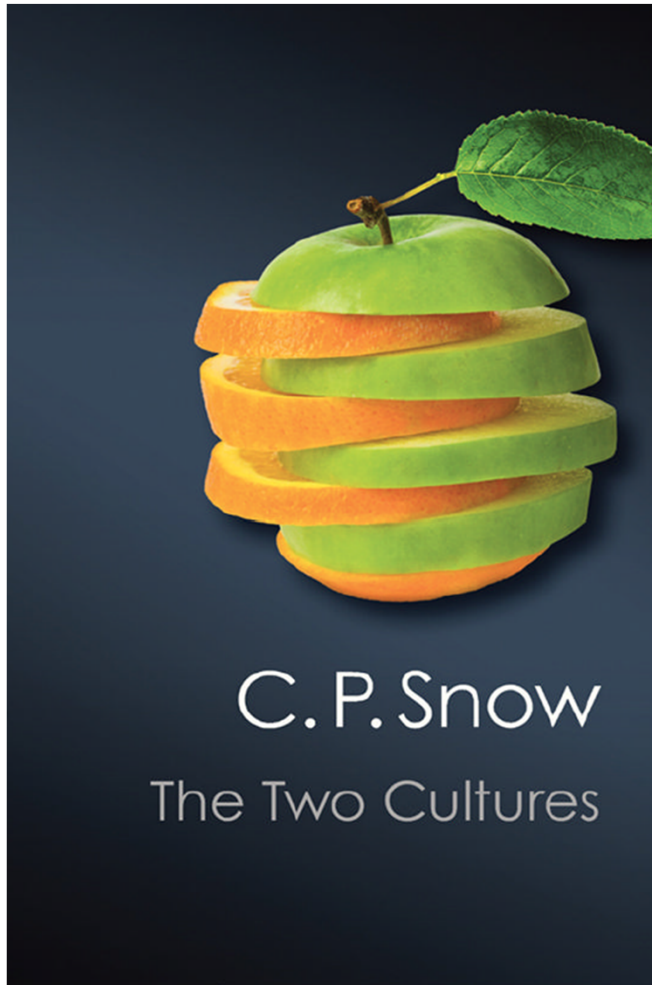
Even if, through his stammering, he should utter a cry to pierce the soul, neither the magistrate nor the public will hear it.

Simone Weil
(Human personality)

wikimedia



Absolution versus retribution



1959

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THE ART OF SCIENTIFIC INVESTIGATION

By

W. I. B. BEVERIDGE

Professor of Animal Pathology, University of Cambridge

"Scientific research is not itself a science;
it is still an art or craft."—W. H. GEORGE

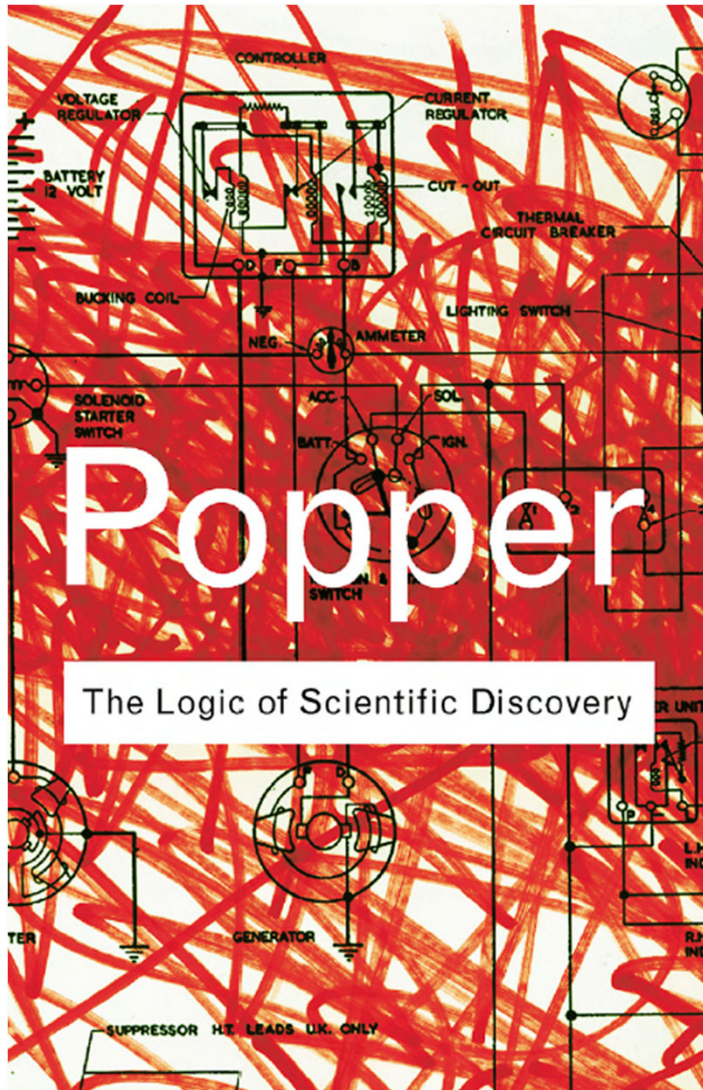
1957



W · W · NORTON & COMPANY · INC · New York

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1934

Thomas S. Kuhn

The Structure of Scientific Revolutions

Third Edition

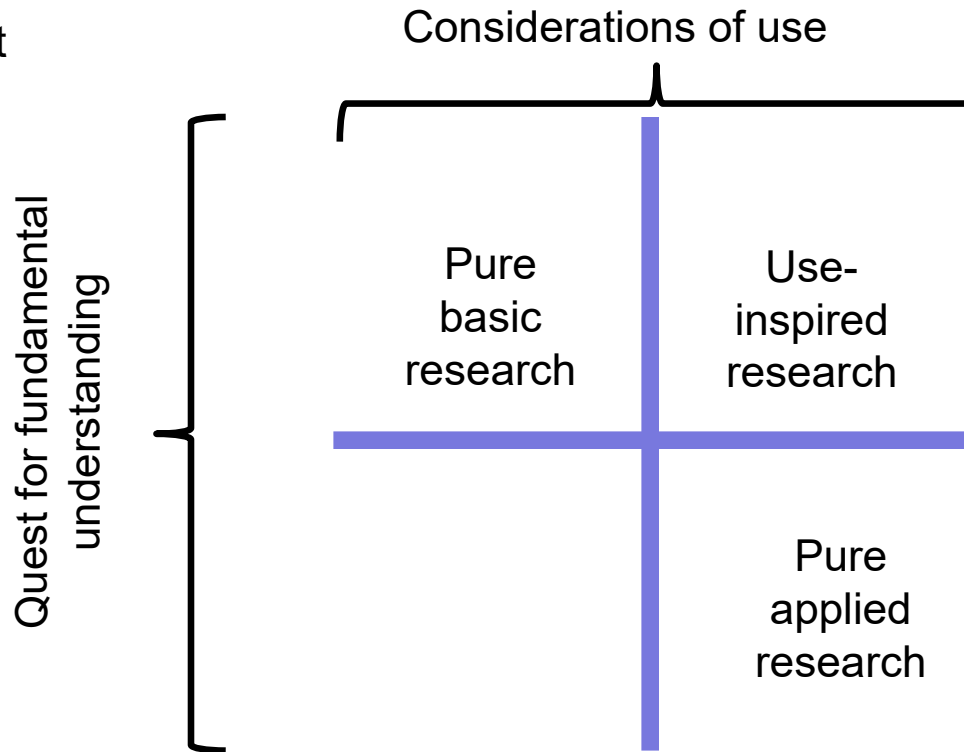
1962

The University of Chicago Press
Chicago and London

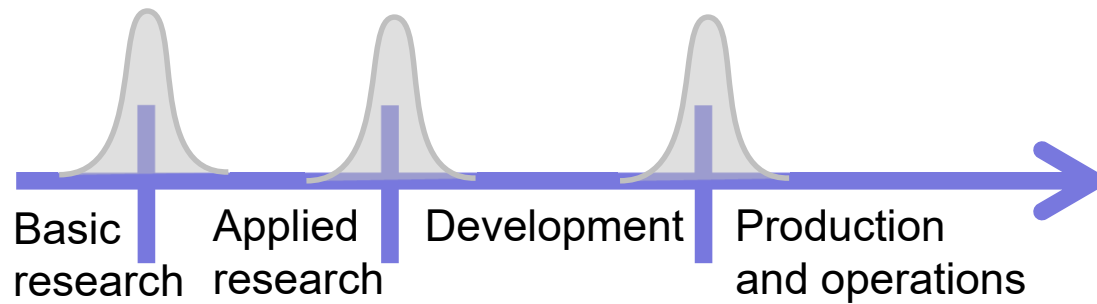
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Pasteur's quadrant



Vannevar Bush



Arthur Koestler, The act of creation

1964



Bisociation:

Blending of elements drawn from two previously unrelated matrices of thought into a new matrix of meaning through comparison, abstraction and categorisation, analogies and metaphors.

A joke is a bait-and-switch.

A parody is an imitation springing a surprise inconsistency.

In science, matrices fuse to new synthesis.

Eureka is disconnected matrices turning to new experience.

Arts and ritual juxtapose the two matrices.

Observing art is experiencing this juxtaposition of the sustained matrices

Needs intense conscious effort directed at the creative goal or problem.

Breakthrough is in a period of relaxation when rational thought is abandoned, like during dreams and trances.

All creatures have the capacity for creative activity, frequently suppressed by the automatic routines of thought and behaviour that dominate their lives.



Ballet (ou l'Étoile)
E. Degas

On voit comme on veut voir; c'est faux; et
cette fausseté constitue l'art

Edgar Degas

People see what they want to see; it is
false; and this falseness constitutes art.

Musée d'Orsay

Vincent van Gogh (1888)



1st (van Gogh museum)

2nd (Chicago)

Musée d'Orsay,

Johannes Vermeer, 1600s



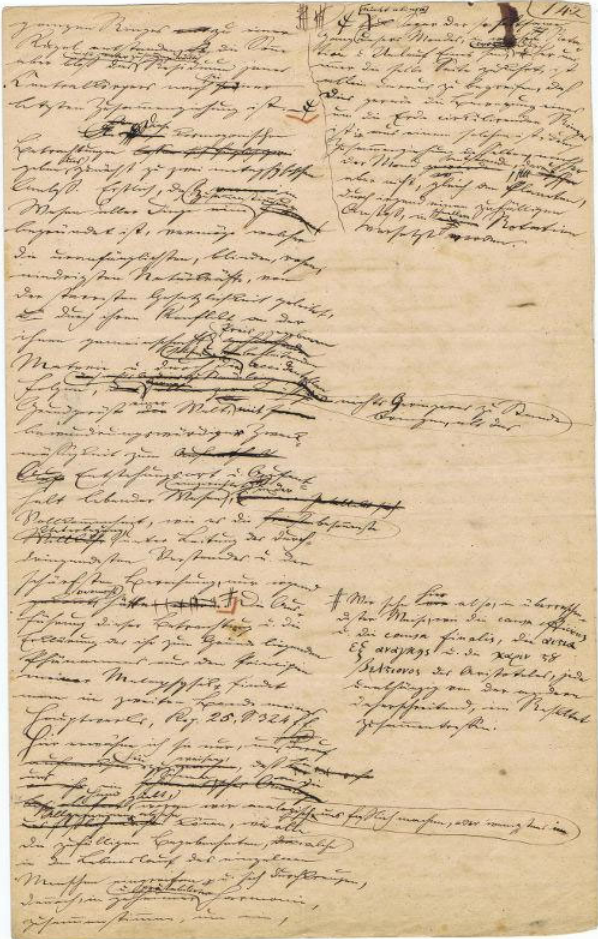
1658, Rijksmuseum in Amsterdam



1665, Mauritshuis in Den Haag

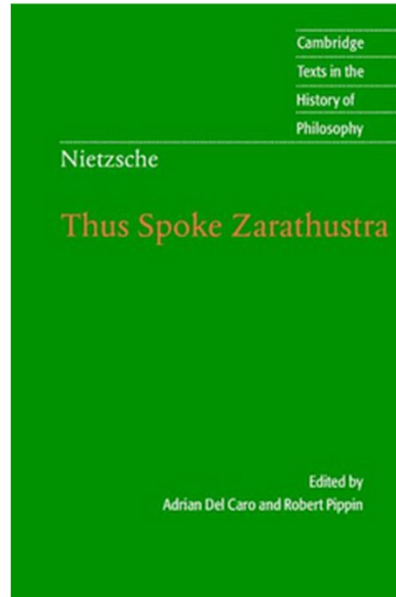
Arthur Schopenhauer

The World as Will and Representation



Schopenhauer, A., 1851, *Parerga and Paralipomena: Short Philosophical Essays*

Nietzsche, F., 1885, *Thus Spoke Zarathustra*



Life is a dance, a play of symmetries of various kinds, and a mocking of these symmetries

Richard Wagner

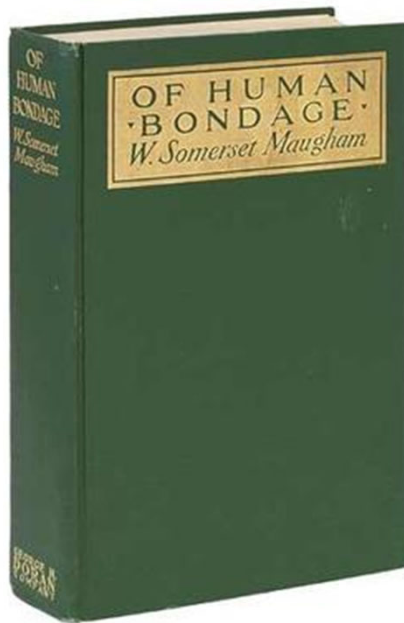


... a magic ring that grants the power to rule the world, ... Hagen is drowned as he attempts to recover the ring. In the process, the gods and Valhalla are destroyed.

An essentially socialist critique of industrial society and its abuses. - G. B. Shaw (The perfect Wagnerite)

The development of unconscious archetypes in the mind, leading towards individuation. - R. Donington (Wagner's ring)

Somerset Maugham



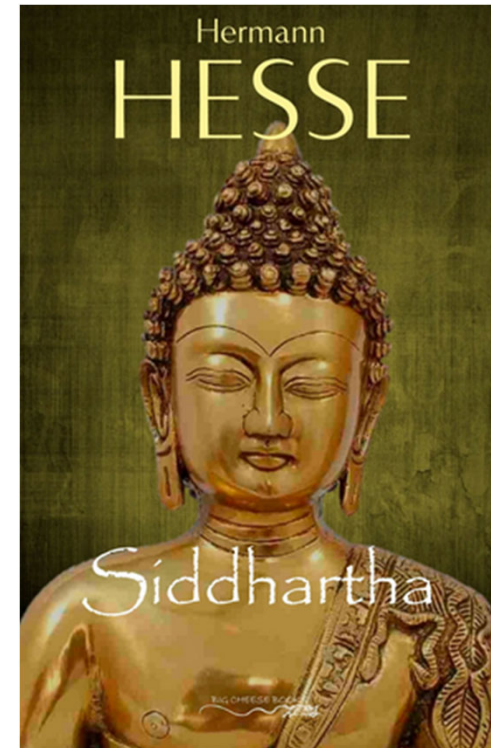
HIKING WITH NIETZSCHE

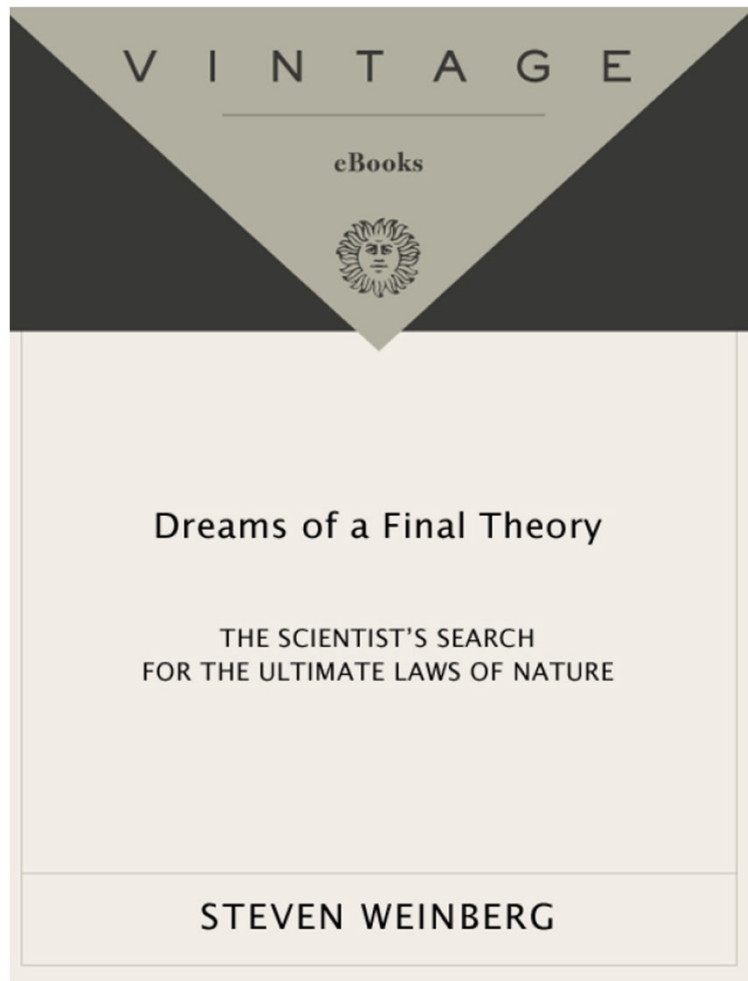
ON BECOMING WHO YOU ARE

JOHN KAAG



Herman Hesse





As an undergraduate studying philosophy I felt some pain at hearing Hellenic philosophers like Thales or Democritus called physicists; but, when we came to the great Hellenistics, to Archimedes in Syracuse discovering the laws of buoyancy or Eratosthenes in Alexandria measuring the circumference of the earth, I felt at home among my fellow scientists. Nothing like Hellenistic science was seen anywhere in the world until the rise of modern science in Europe in the seventeenth century.

- S. Weinberg

The Usefulness of Useless Knowledge



ABRAHAM FLEXNER

With a companion essay by
ROBERT DIJKRAAF

Power of curiosity and imagination.

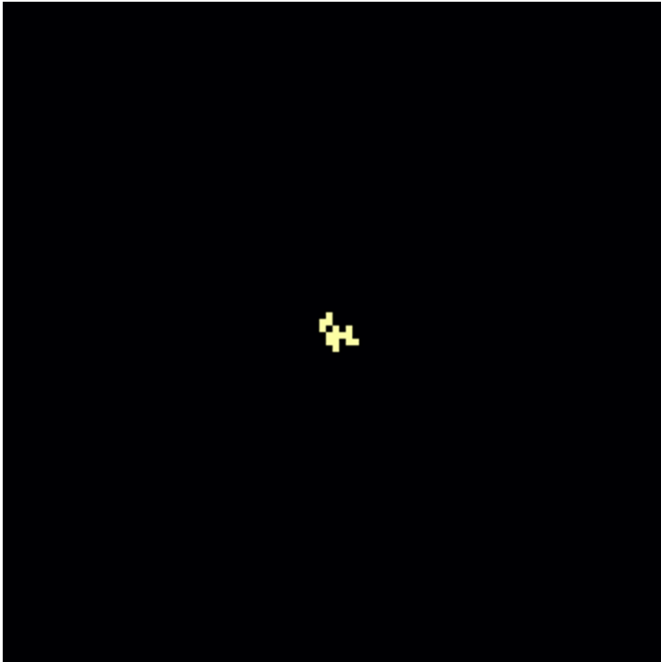
No other American of his time has contributed more to the welfare of this country and of humanity in general.

– New York Times

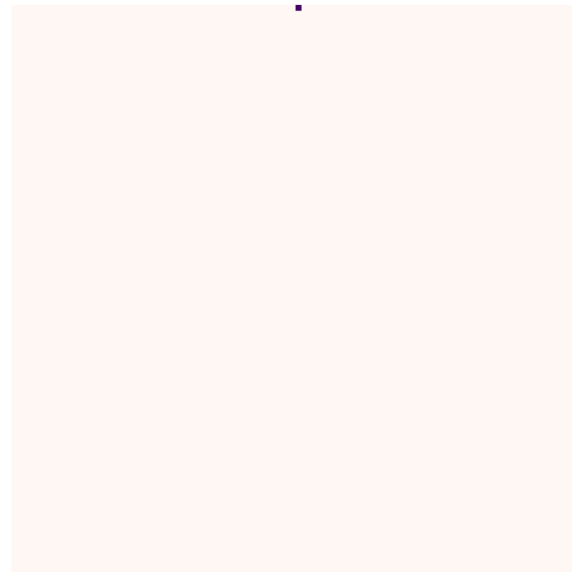
1921 memo to the General Education Board of Rockefeller Foundation.
Harper's Magazine (1939)

Information is the foundation

Conway (GoL)



Wolfram (Rule 30)



Causality and autoanthropomorphization

Science and engineering in society

Checkov's last chapter

Ockham's razor:
plurality should not be posited without necessity.

Of two competing theories, the simpler explanation of an entity is to be preferred.

ST

USA detonated two nuclear bombs over Japan because



the US government made the decision to use atomic bombs as a military strategy during World War II in order to force Japan to surrender and bring an end to the war. The first atomic bomb was dropped on Hiroshima on August 6, 1945, and the second on Nagasaki on August 9, 1945. The decision to use atomic bombs was made after careful consideration of various factors, including the estimated casualties that would result from a conventional invasion of Japan, the potential for a long and costly war, and the desire to demonstrate the power of the atomic bomb to the world, particularly the Soviet Union. The decision remains controversial and debated among historians and scholars to this day.

Mencken's principle:

For every complex problem, there is an answer that is clear, simple and wrong.

ST

Did the participation in opium trade by Tatas and Sassoons cause the indentured labor migration from Bihar?



The participation of the Tatas and Sassoons in the opium trade did not directly cause the indentured labor migration from Bihar. However, the opium trade and other economic changes during the 19th century did contribute to the conditions that led to the migration.

In the 19th century, British colonial policies in India led to changes in the agricultural economy, which affected many rural communities. The introduction of new cash crops like opium and the commercialization of agriculture resulted in the displacement of many traditional farmers and artisans.

Many people in Bihar, a state in eastern India, were affected by these changes, and poverty and unemployment became widespread. This created conditions that made people vulnerable to recruiters who offered them jobs in other countries.

In this context, the British colonial government in India began to recruit Indian laborers to work on plantations in other British colonies, such as Mauritius, Trinidad, and Fiji. These laborers were often recruited through deceptive means and were subjected to harsh conditions.

While the Tatas and Sassoons were not directly involved in the recruitment of indentured laborers, they were part of the broader economic changes and colonial policies that contributed to the conditions that led to the migration.

ST

Why did the British indulge in Opium trade in 1800s through early 1900s?



The British indulged in the opium trade in the 1800s through the early 1900s primarily for economic and political reasons.

At the time, opium was in high demand in China, and British merchants saw an opportunity to profit from the trade. The British East India Company, which had a monopoly on trade with India, began to cultivate and produce opium in India to be sold in China. The profits from the opium trade were significant and helped to finance the British colonial government's operations in India.

However, the Chinese government tried to limit the import of opium, which led to the First Opium War between Britain and China from 1839 to 1842. The British emerged victorious and imposed the Treaty of Nanking, which forced China to open its ports to foreign trade, including the opium trade.

The opium trade also had political implications. The British saw the trade as a means to maintain their dominance in China and prevent other European powers from gaining a foothold in the region. The profits from the trade allowed Britain to finance its expansionist policies and maintain its global power status.

In summary, the British indulged in the opium trade in the 1800s through the early 1900s for economic and political reasons, primarily to profit from the trade and maintain their dominance in China.

Corrollary:

For every complex problem, there is an answer that is obfuscating, complex, and also wrong.

In a time of great peril and promise is to experience both tragedy and comedy, with “the imminence of a revelation” in understanding ourselves and the world.

- Jorge Luis Borges