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WAS THE ROCKET “INVENTED” OR “DISCOVERED”? SOME NEW OBSERVATIONS ON ITS  
ORIGINS**Abstract**

The rocket is widely perceived as one of Mankind’s most complex “inventions,” enabling us to escape Earth’s gravitational bonds to explore space. However, closer examination of the earliest history of the basic gunpowder rocket suggests its origins lie in an accidental “discovery” rather than a deliberately planned “invention.” This paper will present new observations on the origins of the rocket in support of this thesis.

Most scholars attribute the inventions of both the rocket and gunpowder to the Chinese of the Sung Dynasty (A.D. 960-1279): as the earliest rocket propellant, the development of gunpowder was necessary before the appearance of the rocket. However, this paper will show that the discovery of gunpowder was the outcome of a long pseudo-scientific quest by Chinese Taoist alchemists for magical “elixirs,” during which experiments with randomly mixed substances eventually resulted in the explosive mixture we know as gunpowder. The earliest rockets may have been similarly accidental discoveries.

The lack of knowledge, in both East and West, of the true nature of combustion likewise supports the conclusion that gunpowder and the rocket were mere discoveries and not deliberate inventions. The Chinese labored under the explanation of combustion in the pseudo-scientific Taoist theory of the “yin” and “yang” (female and male), while the long heritage of Western alchemy that predated true chemistry gave rise to the “phlogiston theory” popularly accepted from the 16th-18th centuries, before Priestly’s discovery of oxygen. Yet more proof in favor of discovery rather than invention is offered in an examination of the long history of predominantly mistaken theories of rocket motion in the West, even centuries after the appearance of Newton’s classic Third Law of Motion expressed in his Principia of 1687.

This paper concludes with a brief survey of other discoveries or inventions that were fundamental requirements for later advances made in astronautics and rocketry by pioneers of the late 19th and early 20th centuries. Examples include: the discovery of hydrogen by Henry Cavendish (1776); Giovanni Battista Venturi’s Venturi effect and Venturi tube (1797); the de Laval nozzle by Gustav de Laval (1890); the invention of the Dewar flask for holding liquefied gases and the liquification of oxygen by James Dewar (1891-1892); and the large-scale liquefaction of gas by Karl Linde (1890s).