

# Science and Pseudo-Science

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-Demarcation of science from  
pseudo science (case study  
astrology)

■ Literature: Ziman, Kitcher, Thagard

# Definitions (OED)

- *Science* – systematic study through observation, experimentation, interpretation to the derivation of universal laws and theories
- *Natural Sciences* – the study of the nature of the material and physical universe (physics, chemistry, biology, geology, astronomy, etc.)
- *Social Sciences* – the study of society and the relationship of individual members within society (economics, history, political science, psychology, anthropology, sociology, etc.)
- *Technology* – the application of practical or mechanical sciences, usually to industry of commerce; the methods, theory and practice governing such applications

(*Vitenskap* – science or branch of knowledge)

# Why should we be concerned about pseudo-science? (Ziman)

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- Lack of public concern with the advancement of science
- Public's "misunderstanding" of science
- Public's preoccupation with the occult, paranormal, astrology
- Use of pseudo-science in marketing: "Detox"



Does the cock's crow  
cause the sun to rise?

# Case study: Science and Astrology

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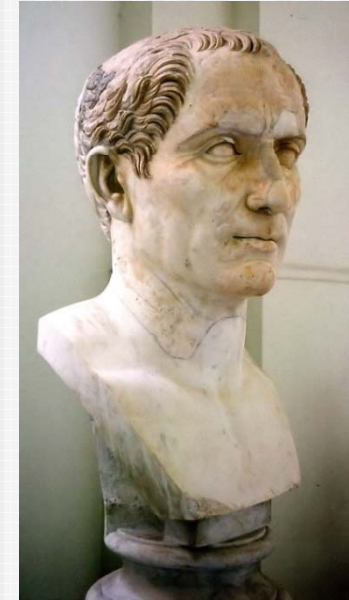
- History of astrology
- Are philosophical theories of science apply to distinguish astrology from other branches of science?
- Do they need to?





# Astrology

- Zodiac established in 700 BC in Egypt, Chaldea
- Ptolemy (2 AD) *Tetrabiblos* and *Almagest*
- European Renaissance (14<sup>th</sup>-16<sup>th</sup> Century) – widespread rise in developments in arts
- Age of Enlightenment (17<sup>th</sup> – 18<sup>th</sup> century) – lost popularity
- Start of own renaissance in 1930's



Kepler

# 1975 statement by 192 scientists and 19 Nobel prize winners

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Called for the rejection of astrology, arguing it was a pseudo-science because:

- Astrology originated as part of a magical world view
- The planets are too distant for there to be any physical foundation for astrology
- Astrology is incapable of making precise predictions
- People believe it merely out of longing for comfort

# Counterarguments

- Origins are irrelevant to scientific status (e.g., chemistry and alchemy; medicine and witchcraft)
- Many "scientific" theories are based on a multitude of influences resting on tendencies rather than laws
- Astrology is still vaguely testable or verifiable (see Michael Gauquelin)





# Other criticisms of astrology

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- Resists falsification
- Non-progressive
- Non-critical
- Not "public knowledge"
- Not objective
- Can be replaced by a better theory (psychology, genetics, sociology)



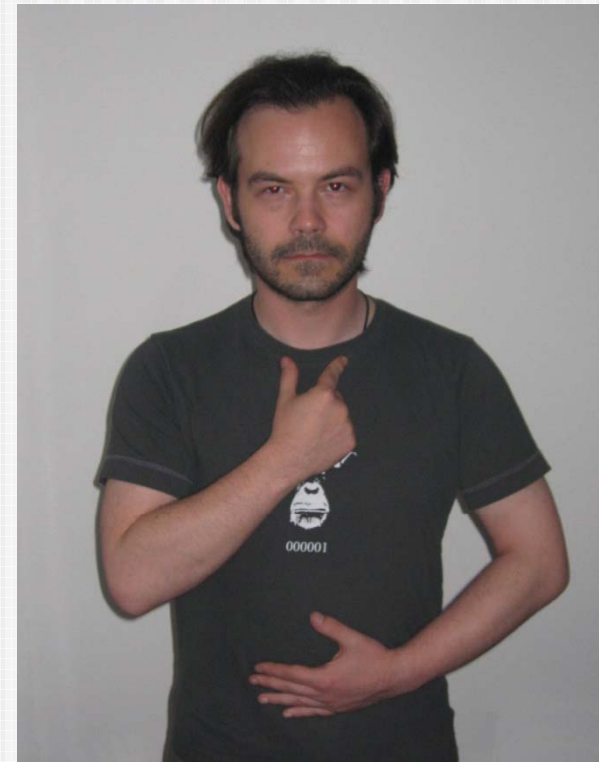


# "Technobabble": Brain Gym"

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- Educational Kinesiology
- Used in UK schools and approved by DHE
- Based on "massaging brain buttons"

[Newsnight](#)



Hugh Charles Sparker

# Other Accusations of Pseudo-Science

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- Homeopathy?
- Acupuncture?
- Detox?
- Telepathy?
- Extraterrestrials?
- Climate Change?
- Intelligent design?



Samuel Hahnemann



Jorlaf Gjerstad.  
Photo Frode Hansen



Astarte  
EDUCATION

"Use angels and your own power to create miracles in your life"



# Additional Literature

- "Bad Science" Ben Goldacre, 2006

