

Philosophy

A Science Matter

L u i L a m

San Jose State University

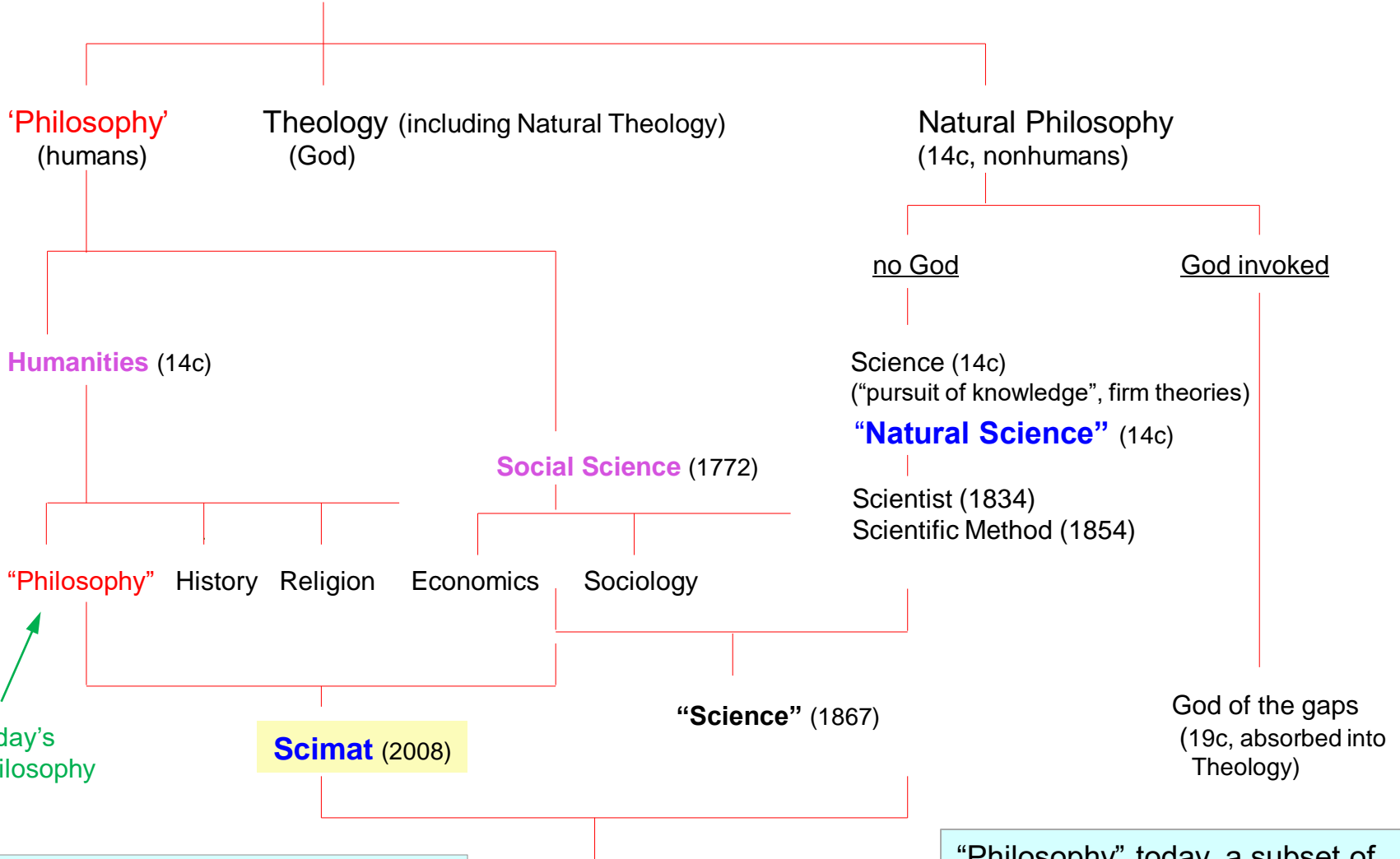
Institute of Physics, CAS

Institute of Science Popularization, CAST



Nomenclature

Philosophy (600 BC, “love of wisdom”; Pythagoras; 13c, English)



Today's
Philosophy

Confucius: To get things straight, the first step is to get the names straight.
名不正，則言不順；言不順，則事不成。

Science (2008)

“Philosophy” today, a subset of ‘Philosophy’ and the original Philosophy, is left with the most difficult, unsolved problems

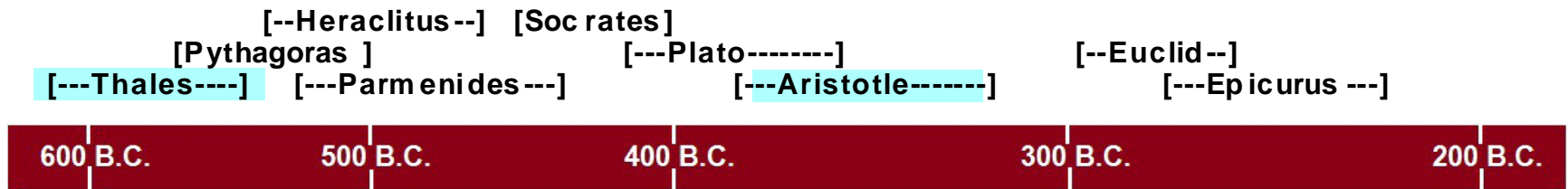
Relevance of "Philosophy" Today

West	China
<p>Mostly about intractable, very difficult questions ("truth", "reality"...)</p> <p>But also some pressing, relevant questions such as "justice"—related to "maintaining social stability"</p>	<p>Confucianism</p> <p>because there is a vacuum in ethics/morality to fill;</p> <p>in West, filled by Christianity</p>
<p>US invented <i>Pragmatism</i></p>	<p>China invented <i>Huyouism</i></p> <p><i>Huyou</i> (忽悠) is a neutral (nonjudgmental) word</p>
<p>Ordinary people in the West don't care much about philosophy</p> <p>except in France where high school students still have to pass a philosophy exam before graduation, laid down by Napoleon</p>	<p>Care</p>

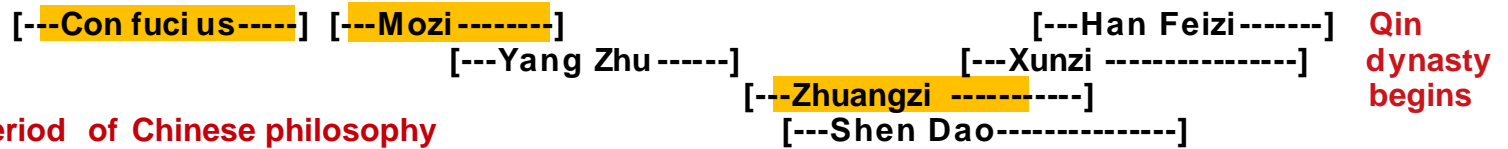
- **West = Europe + USA + Canada** (each country is like a province in China, same cultural system)
- **World cultures:** West, China, India, Middle East, **Japan**...

Timeline of Ancient Philosophers

Classical period of Greek philosophy



Classical period of Chinese philosophy



Approach in Ancient Philosophy

Europe

About anything

Freedom of speech
Supported by slavery

Analytical

Debate
Socratic method

China

Mostly about social harmony/stability

Lack of freedom of speech
“Feudal” kingdoms

Fuzzy/circular arguments (*huyou*, mislead intentionally)
Philosophers never wrote clearly or argued convincingly

No (or not much) debate

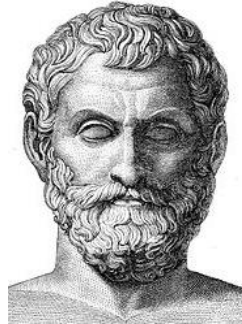
Ancient Philosophers

Ancient Greek Philosophers



Milesian school: Thales, Anaximander, Anaximenes

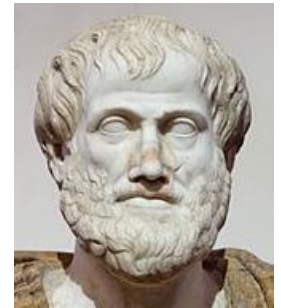
Greeks: Socrates, Plato, Aristotle, Democritus



Thales (c 624-c 546 BC)

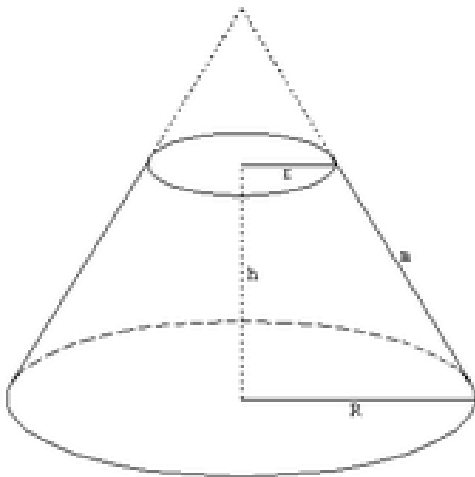


Democritus (c 460-c 370 BC)



Aristotle (383-322 BC)

Democritus' cone



If a cone is divided by a plane parallel to its base, are the surfaces of the segments equal or unequal? If they are equal, then the cone becomes a cylinder; if they are unequal, then the surface of the cone must be stepped.

→ All matters were composed of small indivisible particles called **atoms**.

Summary: Ancient Greek Philosophies

- Ancient Greek philosophers didn't need a regular job and live in a democracy, and so were free in picking topics in pursuing knowledge.
- Ancient Greek philosophers care about everything in daily life (and the Universe) and want to understand (analytically) and solve problems.
- In ancient Greece, philosophy was the only discipline of learning which actually is very successful (all disciplines today branched out from it).

Ancient Chinese Philosophers

Spring and Autumn period + Warring States period



Confucius 551-479 BC

A **political scientist** (at the empirical level), concentrating on ethics/morality, aiming at “maintaining social order”



- "What you do not wish for yourself, do not do to others."
- Officials obey the emperor (absolutely); sons obey fathers (absolutely).
- **Tian** (天) in Tian Min (from Shang dynasty) is a **supernatural** since it somehow knows how the emperor rules and punishes him (the country, in fact) by administering flood/famine
- With supernatural and rituals, **Confucianism is a religion**

Laozi 6th century BC

Open questions: A person? Really exists? Before or after Confucius?



"Try to change it and you will ruin it.
Try to hold it and you will lose it."

"Those who know do not say. Those
who say do not know."

"The Way that can be told of is not an unvarying way;
The names that can be named are not unvarying names.
It was from the Nameless that Heaven and Earth sprang;
The named is but the mother that rears the ten thousand creatures, each
after its kind."

-- Laozi, *Daodejing*

Mozi

c. 470 – c. 391 BC

- Peasant and carpenter (skilled in creating devices)
 - Mechanical birds to wheeled,
 - Mobile "cloud ladders" used to besiege city walls
- Pioneer of optics
 - Still good today; see *Mo Jin*
- Develop principles of logic
- Universal love (兼愛)
 - "We begin with what is near".
- Keep asking "how" and "why"
- Not a rebel. Like Confucius, he aimed to improve and preserve the kingdom.
 - Proposed that every level of officials collect people's thinking and pass it up one level, eventually to the King so he can make the wise decision (the way in practice today)
- Mohism was a strong contender/competitor against Confucianism
 - Suppressed in Qin; died out in Han



- While **politically conservative**, Mozi is incisive and creative—a successful **innovator** in science and technology.
- His approach to the world is rational-empirical—very modern.
- Mozi is most relevant to China today !

Zhuangzi c. 369 – c. 286 BC



- Skepticism
Life is limited and knowledge to be gained is unlimited
- Relativism (in systems of value)
- Anarchism
“Good order results spontaneously when things are let alone“
The mechanism behind this is self-organization.
- Interdependence of things
Foreshadowing modern ecological thinking

- Playfulness
Butterfly in dream
Drumming after wife died

← Hearsay

The authority for ethical judgments comes from dao (道) and not from tiān (天).

Summary: Ancient Chinese Philosophies

- In ancient China, unlike in Greece, philosophy was not conducted analytically. They are more like Buddhist verses or “chicken soups” (called “Chinese wisdom” by others).
- The philosophers, unlike the Greeks, never wrote clearly or argued convincingly.
- When pressed, they will appeal to the will of Tian (“heaven”) or the good old ways of the (barely existent) ancient dynasties.
- All, except Zhuangzi, concentrated in ethics/morality issues because that was the way to find a (government) job, unlike the ancient Greeks who didn’t need a job.
- **Mozi** (not Confucius) is most relevant to China today.
- Ancient Chinese philosophy is *huyouism* (忽悠主义), aiming to maintain social harmony/stability instead of finding out the “truth” or advancing knowledge.
- But it is “useful” to a certain extent (the longest dynasty—Tang from AD 618–907, lasts 289 years).

Heaven-Man Oneness

- *Zhouyi* (闡易.干卦): “夫大人者, 与天地合其德 ...”
- Zhongzi: "Heaven, earth and I are born of one, and I am at one with all that exists". (天地與我並生, 萬物與我唯一)
- Dong Zhongshu (West Han Confucian) elevated “Heaven-Man Oneness” (天人合一) to philosophy.
- **Oneness:** Heaven and man share the same principles and can influence each other —two of the one thing.



The Needham Question

Joseph Needham 1900-1995

- Cambridge University biochemist turned sinologist
Prompted by Lu Gwei-Djen (鲁桂珍), graduate student in 1937
- Author/editor of *Science and Civilisation in China*
27 volumes, starting 1954
- **Needham Question**: Why modern science didn't arise from China despite its past success in science/technology?



My answer:

- Analytic thinking and debate (essential to scientific enquiry) not encouraged in China (since Confucius)
- Despite “Heaven-Man Oneness” (implying universal principles shared by human and nonhuman systems), ancient Chinese picked the human system—a complex system—to study (while modern science’s breakthrough was through simple systems)

The Scimat Perspective

Empirical Level

Philosophy is built upon or be consistent with the available scientific knowledge.

Immanuel Kant 1724-1804

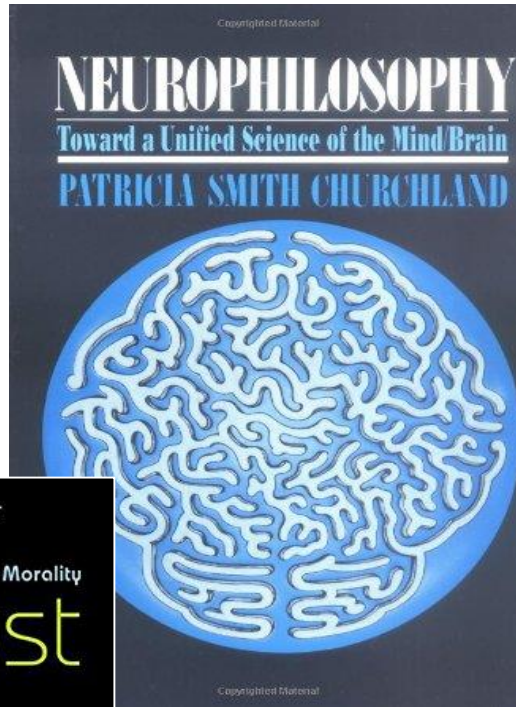
In Kant's days, **the** science is Newton's deterministic mechanics. Thus

1. He first assumed, **incorrectly**, that science belongs to the **deterministic domain**;
2. He also realized, **correctly**, that morality is nondeterministic and belongs to the **"freedom" domain** (i.e., humans have freedom of choice in morality matters).
3. Then he asked: If everyone is free to choose what he or she wants or does, how can we guarantee that world is rational and meaningful?
4. To solve this problem, he claimed: We need **"religion"** (or a higher principle), which will govern morality matters and bring meaning to our lives.

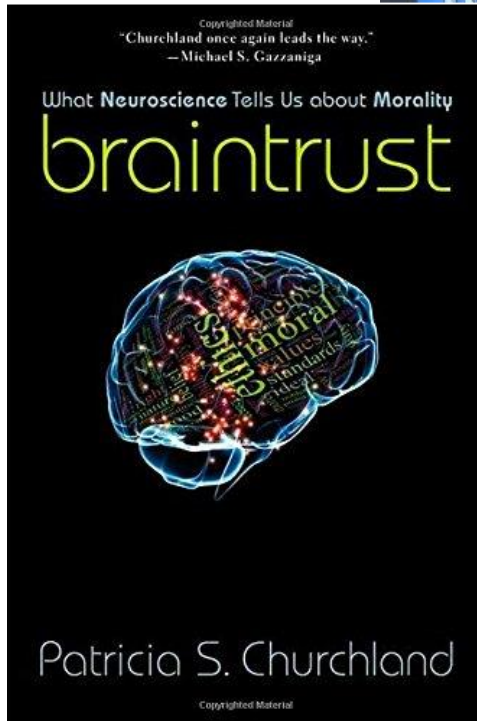
This series of arguments is full of hidden presumptions. It is no longer valid, judging from what we know about science today. Kant's philosophy, at least this part, is **outdated**.

- **Robin Collingwood** (1889-1943): "So long as he confines himself to drawing the distinction between philosophical method and mathematical, his touch is that of a master; every point is firm, every line conclusive. But when he turns to give a positive account of what philosophy is, his own distinction between a critical propaedeutic and a substantive metaphysics, hardened into a separation between two bodies of thought, becomes a rock on which his arguments splits".
- **Bertrand Russell** (1872-1970): "Immanuel Kant is generally considered the greatest of modern philosophers. I cannot agree with this estimate, but it would be foolish not to recognize his great importance".

Bottom-Up Level



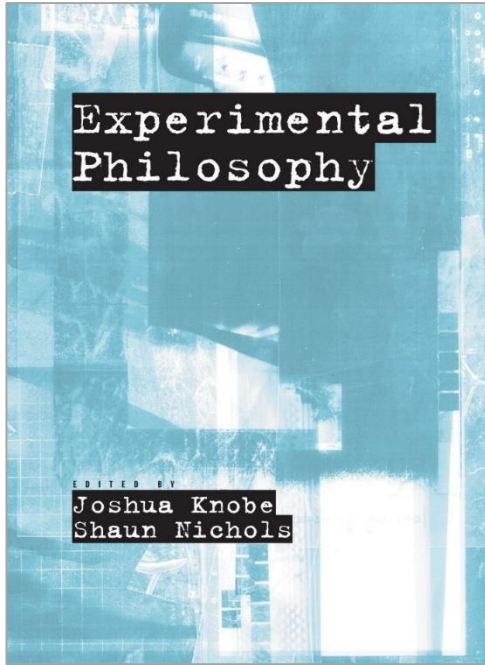
1989



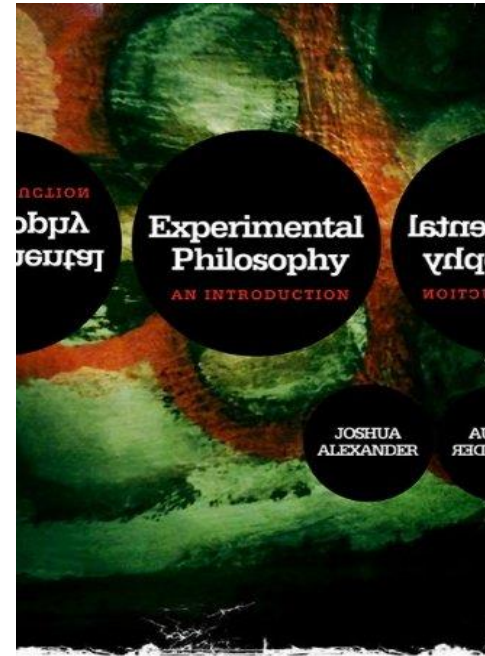
2012

- **1st part:** history of the **science of nervous systems**; general introduction to neurophysiology, neuroanatomy, and neuropsychology.
- **2nd part:** Place the **mind-body problem** within the wider context of the **philosophy of science**; inter-theoretic reduction explained; reductionist strategy developed; traditional objections from dualists and other anti reductionists answered.
- **3rd part:** discussion of most promising theoretical developments in **functional neurobiology** and in the connectionist models within **artificial intelligence** research.

Experimental Philosophy



2008



2012

- A **new movement** seeking to return the discipline of philosophy to a focus on questions about **how people actually think and feel**.
- **Conduct systematic experiments** to understand people's intuitions about **philosophically significant questions**.
- It succeeds in **challenging a number of cherished assumptions** in both philosophy and cognitive science.

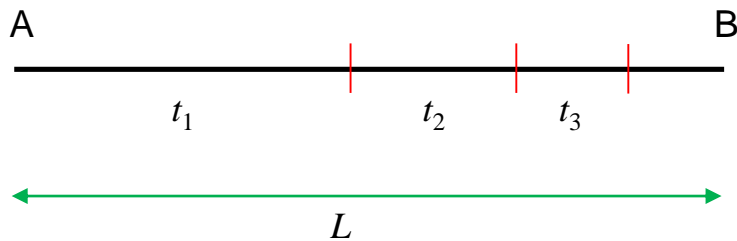
More

Zeno's Paradox

Zhuangzi (c. 369-286 BC): A one-foot long stick, take half each day, and you will never exhaust it

Zeno (c. 490-430 BC): A man could not move from point A to point B because, starting from point A, he had to move to the half point first, then the half point of the rest distance, ad infinitum; and because there is an infinite number of steps, he could never reach point B

Both did not know that a stick is made up of discrete atoms and viewed it as a continuous body.



$$t = t_1 + t_2 + t_3 + \dots \quad (v = \text{velocity})$$

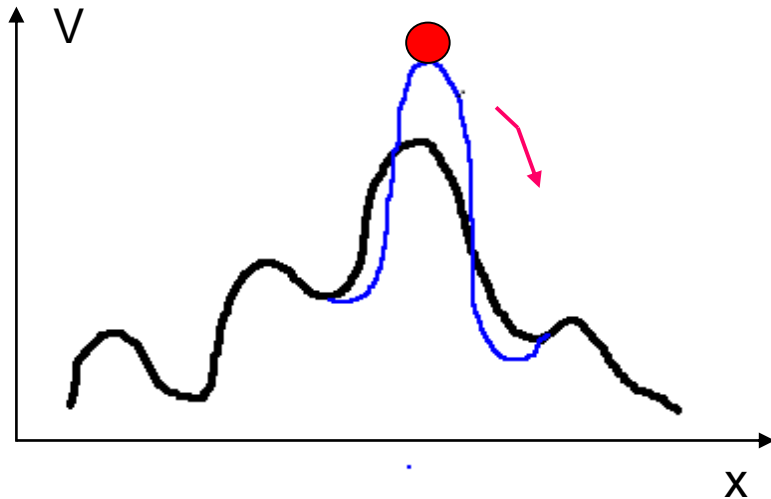
$$t_1 = \frac{1}{2} L/v, t_2 = \frac{1}{4} L/v, \text{ etc.}$$

$$t = L/v (1/2 + 1/4 + 1/8 + 1/16 + \dots) = L/v$$

- The total time of travel is a finite number, even though there is an infinite number of terms in the equation. Zeno's mistake is that he thought that the sum of an infinite number of terms must be infinite ($t = \infty$)
- Zeno was already wrong at the mathematical level. Zeno's procedure can't be carried out in practice because real objects are made of atoms of finite size

The Science of *Huyou*

Active walk modeling



Invented by Lui Lam (1992)

- Landscape can be modified by walker's action **or** external force.
- Western approach tends to rely on walker's action.
- Chinese *huyou* approach is to minimize immediate action and wait for the landscape to change favorably later (giving the impression of inaction or burying the contradictions).

Huyouism (as a philosophy and management style of more than 2000 years) should be taken seriously and studied **scientifically**, especially by the Chinese !

Possible questions: How, when and why it works? How long to wait before seeing it works? When it will fail?

Philosophers on "Philosophy"

- We concur with Bertrand Russell when he writes in *The History of Western Philosophy* (1912):

Most philosophers...profess to be able to prove, by a priori metaphysical reasoning, such things as the fundamental dogmas of religion, the essential rationality of the universe, the illusoriness of matter, the unreality of all evil, and so on....This hope, I believe, **is vain**.

- But we disagree when he claims that

Philosophy is to be studied, not for the sake of any definite answers to its questions, since no definite answers can, as a rule, be known to be true, but rather for the sake of the questions themselves.

This was definitely **not** the attitude of the ancient Greek philosophers, the pioneers, nor the late comers like Kant, even though it could be the attitude shared by many contemporary "philosophers" when they are left to deal with the most difficult problems not yet hijacked by "natural science".

Conclusion

- “Philosophy” today is a small subset of Ancient Greek’s Philosophy; this distinction must be made
- Ancient Western and Chinese philosophies differ in their choice of topics and research methods
- Philosophical concepts/constructions are or should be built upon the “best” scientific knowledge available at that time
- Thus, contemporary philosophers have to be aware of the current scientific results
- Students in philosophy should have some scientific training
- Philosophers are strongly urged to collaborate with others in natural science or medical science.