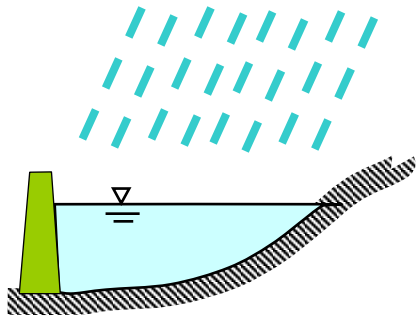
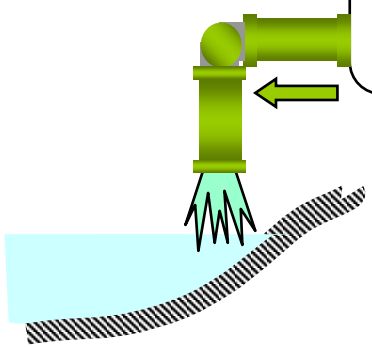
This is toilet!



Reservoir

Water Supply
&
Distribution

Sewerage Pipes
&
Treatment



Capacity of Natural Purification

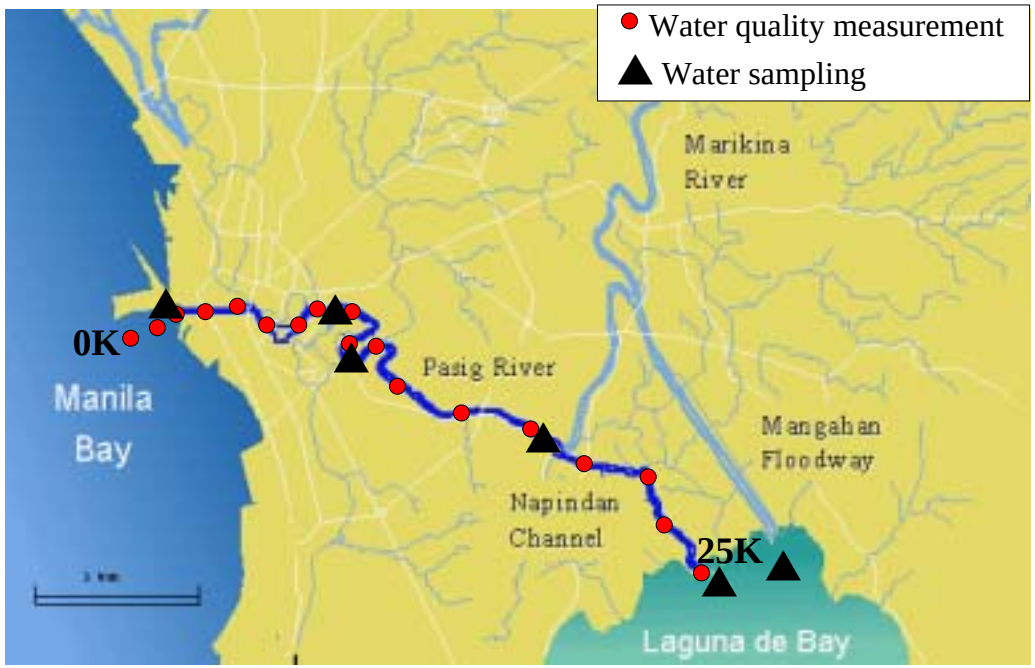
- Environmental condition
- Economic condition

Field Measurements in PASIG River (March & May, 1999)

Water Quality Measurement

Sediment Sampling

Water Sampling

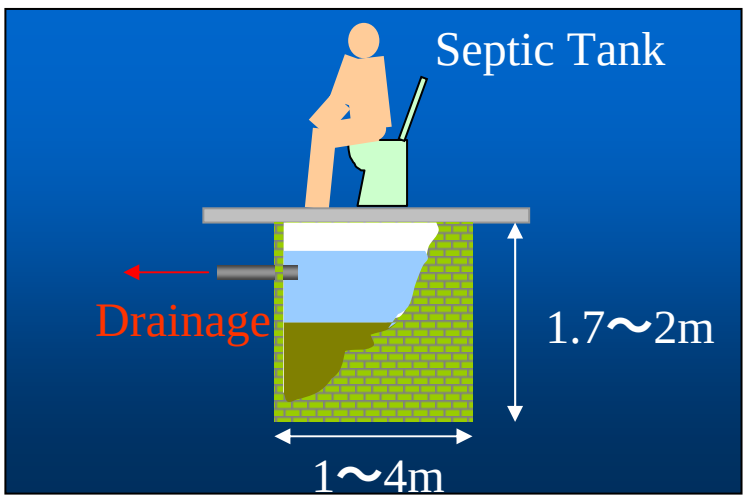


Testing DO Consumption Rate

Toilet

Manual Flush + Septic Tank

- Septic Tank is just a tank ⟶ Discharge of pollutants



Toilet

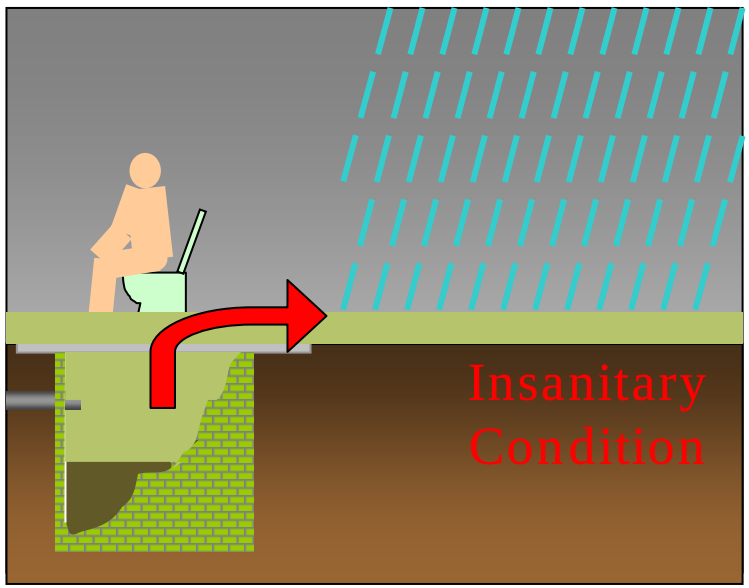
Manual Flush + Septic Tank

- Septic Tank is just a tank → Discharge of pollutants
- Connection to Drainage Pipes → Deposition and Choke → Inundation

Toilet

Manual Flush + Septic Tank

- Septic Tank is just a tank → Discharge of pollutants
- Connection to Drainage Pipes → Deposition and Choke → Inundation
- Overflow from Septic Tanks → Pollution & Insanitary Condition



Toilet

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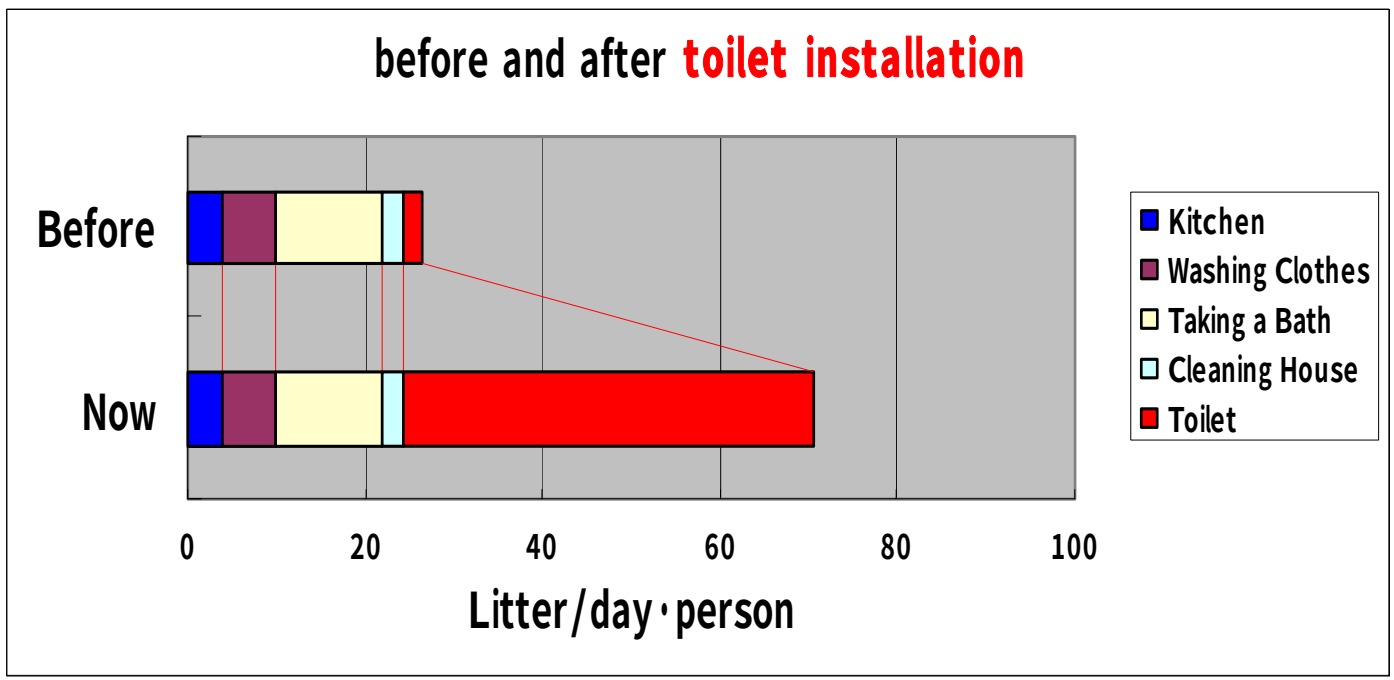
- Water Resources Problem



Toilet

Manual Flush + Septic Tank

- Septic Tank is just a tank → Discharge of pollutants
- Connection to Drainage Pipes → Deposition and Choke

Deposition and Choke → Inundation

Inundation → Overflow from Septic Tanks → Pollution & Insanitary Condition

- Water Resources Problem

Toilet

Manual Flush + Septic Tank

- Septic Tank is just a tank → Discharge of pollutants
- Connection to Drainage Pipes → Deposition and Choke

Deposition and Choke → Inundation

- Overflow from Septic Tanks → Pollution & Insanitary Condition
- Water Resources Problem

公共スペースの公衆トイレ（上海豫園） 1元

中国の現状

コミュニティの共同トイレ、有料の公共トイレが主体
基本的には汲み取り式⇒農地で肥料として利用

観光地の無料**トイレ（吉林：松花河湖）**







砖式单厕


杆式单厕


砖式单厕

トイレの現状調査　低所得層の住宅

排水路網が不備　　水路沿いに住む

水路から離れた家はSeptic tank+浸透

Toilet problem made me to consider
"the large gap between science and the reality".

The gap comes from the numerical thinking in science,
not only in the problem of toilet
but also in many aspects of environmental problems.

Drill of Calculation

We have been drilled in calculation from early childhood

「3 – 1 = 2」

“Here are three apples.”

“You eat one apple.”
“How many are remained?”

“Three sparrows are in a yard.”

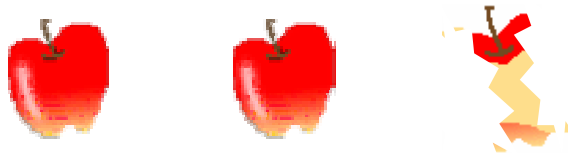
“One flies away.”
“How many stay in the yard?”

「3 – 1 = 2」

“Three sparrows are in a yard. One flies away.
“How many stay in the yard?”

“・・・・・・・・・・・・ One of sparrow flies away, then where?
It must not be very far. It may come back soon. So,
the answer may be still three. ・・・・・・・・”

「3－1＝2？」



“Here are three apples. You eat one apple. How many are remained?”

“Who eats the whole apple to the core? If the core is remained, it may not correct to count it as zero, though it is not correct to count it as one either.”

After the drills, many of us lost the sensibility for the reality.

Scientists also lost “Sensibility for the reality”

The law of mass conservation:

[weight of original glass] = [weight of piece A]
[weight of piece B]
[weight of piece C] + ‥‥

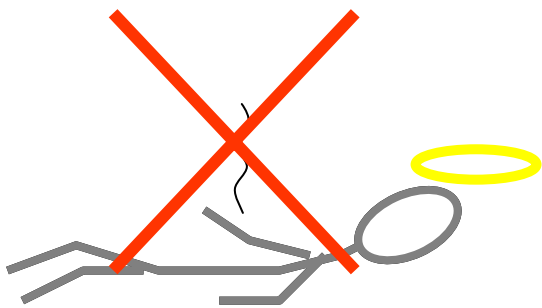
We can use a mathematical equation by using “=”.

The advantage of mathematics: Once correct, correct forever!
(‥‥‥very different from the real world)

Then, science started to use mathematics a lot.

Loss of “Sensibility for the reality”

Before the law of mass conservation, people thought “weight of a thing changes when its condition changes.”



After the conservation law, we lost sensibility for the reality:
“The soul is the essence of human.”

A journalist:

“Do you think that mathematics can describe all the universe?”

Albert Einstein:

“Mathematics is the clearest tool to describe the universe, but instead, it loses the sensibility for the reality. Sense for the reality does not go together with clearness. When you take one, you will lose the other. We are now learning it in a tragic way in physics”.

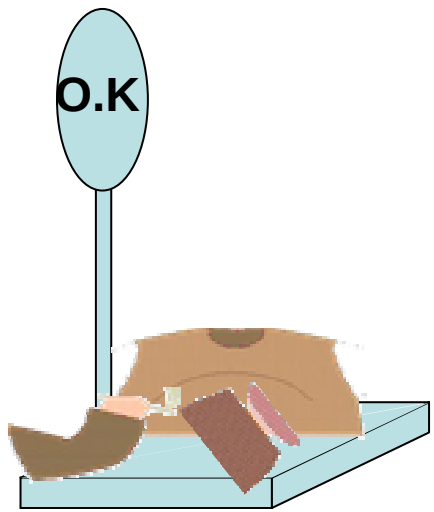
A mistake of a scientist

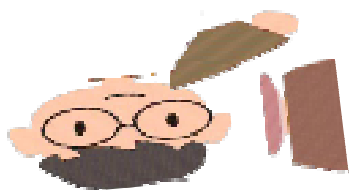
A scientist of lack of exercise decided to go on a diet.

His weight was out of scale because he was too fat.

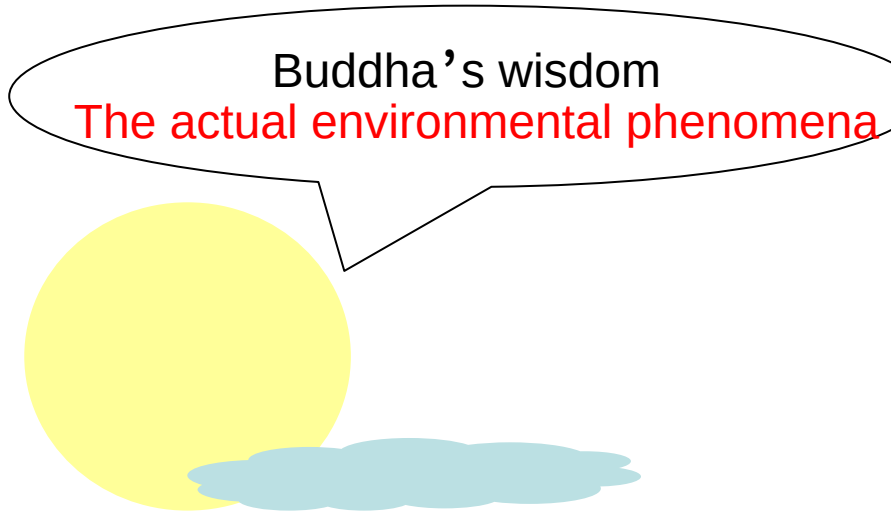
Then, He remembered the law of mass conservation.
The sum of the weight of parts = The total weight

He got the data, ••••••••••••••••••••

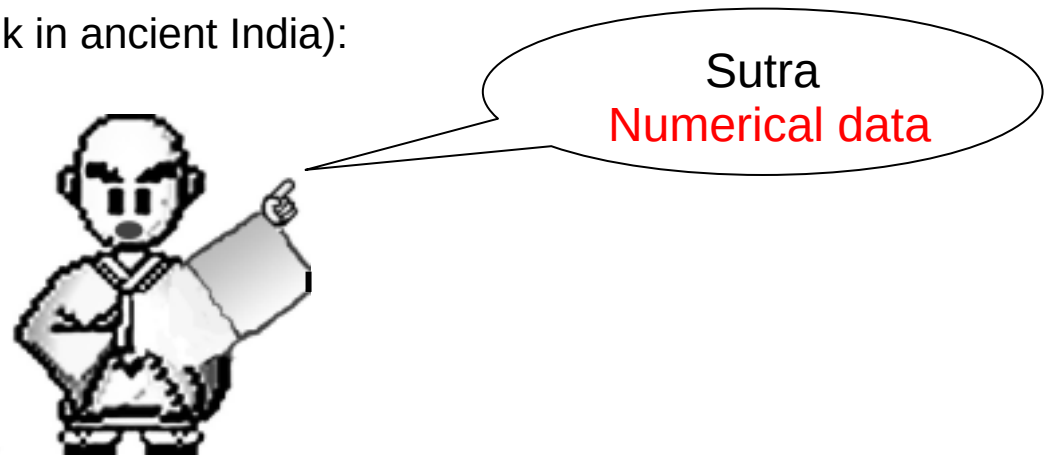




He respected numerical data too much,
and forgot the important reality ••••••••.



Longshu
(A famous Buddhist monk in ancient India):



"When I ask them to look at the moon by pointing it with forefinger, they do not look at the moon but look at my finger".

International Adhoc Group

China

Changchun North East Normal Univ.
Xi'an Xi'an Univ. of Arch. & Tech.
Nanjing Nanjing Univ.

Indonesia

Bandung Indonesian Institute of Science (LIPI)

Japan

Tokyo Institute of Tech.