

# Different Cultures, Same Science

- *Can you tell me a convenient date for us to get together ?*

- *Sure. Here are my constraints this week:*

*July 9 ○*

*July 10 △*

*July 11 ×*

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*Department of Physics, The University of Tokyo*

**Lecture for UTRIP students**

**16:30-17:30 July 9, 2014**

# My CV

- 1958: born in Kochi, Japan
- 1986: ph.D in Physics  
from the University of Tokyo
- 1986-1988: Miller fellow (post-doc),  
University of California at Berkeley
- 1988- : Ibaraki University, Hiroshima University,  
Kyoto University
- Currently: professor in Department of Physics, the  
University of Tokyo
- Global Scholar, Princeton University (2009-2013)
- Research area:
  - Cosmology, dark energy, extrasolar planet



**Neither culture  
is better nor worse,  
just different**

# 1) Should we hold rice bowls in our hands ?

- Japan: Yes. We are supposed to do so.
- Korea: No. Absolutely you shouldn't.

# How to hold rice bowls: two different interpretations

- Japan: Humans should use their hands, so as to emphasize that they are not animals ! (Animals cannot use hands)
- Korea: To hold rice bowls in front of others looks like begging, which you should avoid.



**Neither is better nor worse;  
we should respect the difference**



## 2) How to mark right answers and wrong answers ?

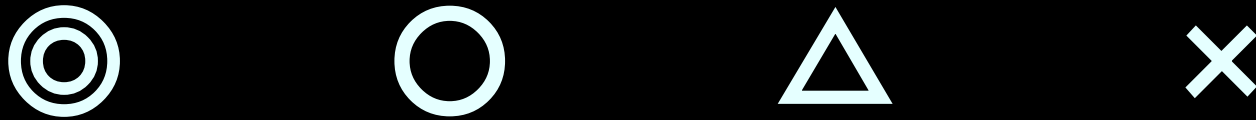
- Japan:  $1+2 = 3$        $1+3 = 5$
- US:  $1+2 = 3$        $1+3 = 5$

# Don't take anything granted

	right	wrong
<b>Japan</b>	○	✓、×
<b>Korea</b>	○	×
<b>US、France、Italy、 China、India、</b>	✓	○、×
<b>Germany</b>	✓、(r)	f、(underline)、 vertical bars
<b>Russia</b>	(nothing)	×、(underline)



### 3) Very important Japanese symbols:



“Let me know if you can join us for a drink tonight. Are you ◎、○、△、 or × ?”

“Sounds nice ! Surely I am ◎.”

	◎	○	△	×	group scheduling in Japan		
2013/8/26(月)	1	2	0	0	◎	○	○
2013/8/27(火)	0	1	2	0	△	△	○
2013/8/28(水)	1	2	0	0	○	◎	○
2013/8/29(木)	2	1	0	0	○	◎	◎
2013/8/30(金)	0	0	0	3	×	×	×

# Definite meanings in Japan:



**Most Japanese believe that the following meanings are universal all over the world**

◎	<b>wonderful, great</b>
○	<b>good, correct, right</b>
△	<b>uncertain, not so good</b>
×	<b>bad, wrong</b>
✓	<b>wrong (sometimes)</b>

# Very misleading if you do not know

When do you have time for our monthly meeting?

**Doodle**

October 2013

Tue 22

Wed 23

2 participants

12:00 PM -  
2:00 PM

9:15 AM -  
11:15 AM

2:45 PM -  
4:45 PM

Ms. Busy



YASUSHI SUTO



0

2 \*

1



**All  
Nippon  
Airways**

- Does ✓ mean good or bad ?
- Which is recommended, ○ or × ?

# 4) How to count on your fingers ?

■ 一 二 三 四 五 六 七 八 九 十

■ I II III IV V VI VII VIII IX X

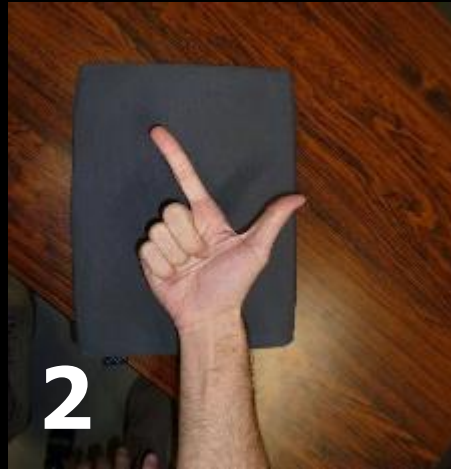
■ 1 2 3 4 5 6 7 8 9 10

■ One, two and three should imply merely vertical/horizontal bars. Why not in Arabic numerals ?

■ Does the difference among the characters originate from different ways of counting on one's fingers ?



# How to count in Japan

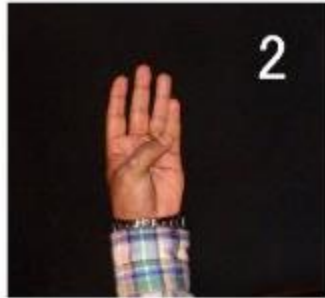


**How to count  
in France**

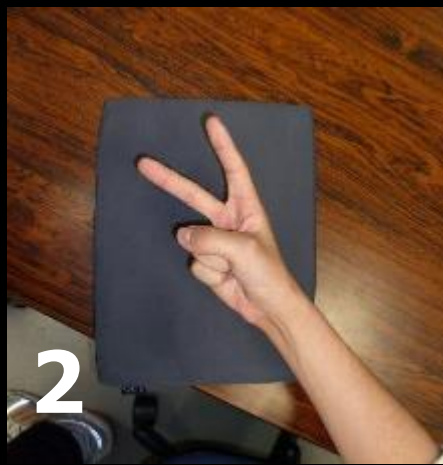


**How to count  
in India (1)**

# How to count in India (2)



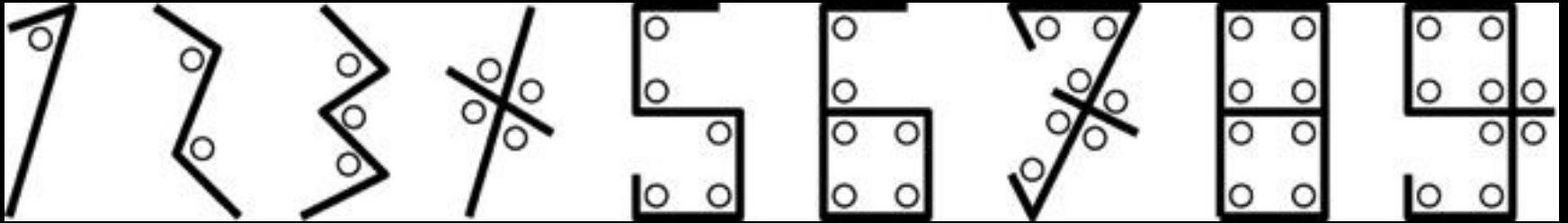




**How to count  
in China**

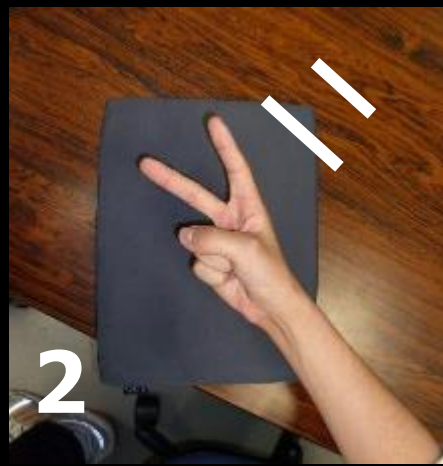
# Origin of Arabic numerals ?

- Conventional interpretation: number of angles



- My new hypothesis: fingers





**My theory works nicely for Chinese counting ! (Suto 2008; unpublished)**

## 5) How to reply to the everyday question: “how are you ?”

- US: Fine, Great, Wonderful, Terrific
- Japan: as usual (あいかわらずでんな)  
Not so good, not so bad  
(まあまあですなあ)  
Miserable indeed (ぜんぜんでんがな)

# “How are you ?”

- In the US, it seems that everyone is supposed to reply like “Fine or Great ! ”
  - Do Americans really feel “great” every day ?
- The Japanese rarely ask such a question
  - Simply, good morning, nice to see you, etc.
  - Japanese do not expect any reply because we know it is entirely meaningless
  - I have never referred to my situation as “Great” (at least in Japanese)

# Japanese is indeed distorted !

- To express politeness in Japanese, we have to praise you and/or degrade ourselves (= principle of relativity)
  - **unacceptable**: "This is **my wonderful** wife/husband" (*sounds very ill-educated*)
  - **good**: "You **have** a very nice wife/husband" (*sounds reasonably well-educated*)
  - **terrific**: "This is **my stupid** wife/husband/son", "This is a **miserable gift** from us. I doubt you like it" (*sounds impressive, implying that we are indeed amazingly well-educated !*)
- Sharp boundary between inside and outside

## 6) How to get off of a train ?

- Japan: just wait until the doors open automatically when the train stops at a station
- UK: open window first !!!

# Seeing is believing !



**Paddington, London, UK  
in 2007 (not in 1907 !)**

**To open door**

**Door unlocked**

1. Wait for 'Door unlocked' sign above door
2. Lower window
3. Open door using outside handle

**Danger**

Do not lean on the door or attempt to open the door when the train is moving

If the door is not properly closed and the train is moving, do not attempt to close it - use the emergency alarm located in saloon

**Caution**

The train may be longer than the platform

Before alighting ensure this door is alongside the platform



# Indeed UK is weird in many ways !



Cambridge in 2005

# 7) Are the Japanese shy and quiet ?

## ■ Of course, yes!

- We are the most polite and best-educated people in the world.
- My students always call me Prof. Suto, never by my first name (=Yasushi).



# But.... they may become very wild with beer and/or at Karaoke



- You are encouraged to get drunk, and then you can do whatever you like !
- Why not speak ill of professors together !

My stupid students





Hey, Yasushi !  
How are you ?



GhhhGreat ! I am ◎.  
Thank you...



# Implicit rules/understandings

- The Japanese depend on many common implicit assumptions, rules, and understandings    
- Instead of clear written agreements
- This is very convenient and comfortable if you know how to behave, but can be embarrassing if you do not
- This strongly inhibits introduction of intellectual diversity and new opportunities, especially in science

*From*  
*After Dark*  
*to*  
*Beyond Dark*

*I once read a story about three brothers who washed up on an island in Hawaii.*

- Three brothers went out fishing and got caught in a storm. They drifted on the ocean for a long time until they washed up on the shore of an uninhabited island. It was a beautiful island with coconuts growing there and tons of fruit on the trees, and a big, high mountain in the middle.

*(Haruki Murakami "After Dark",  
English translation by Jay Rubin)*

*The night they got there, a god appeared in their dreams and said*

- A little farther down the shore, you will find three big, round boulders. I want each of you to push his boulder as far as he likes. The place you stop pushing your boulder is where you will live. The higher you go, the more of the world you will be able to see from your home. It's entirely up to you how far you want to push your boulder.

*The youngest brother quit first. He said*

- Brothers, this place is good enough for me. It's close to the shore, and I can catch fish. It has everything I need to go on living. I don't mind if I can't see that much of the world from here.

*His two elder brothers pressed on, but when they were midway up the mountain, the second brother quit. He said*

- Brother, this place is good enough for me. There is plenty of fruit here. It has everything I need to go on living. I don't mind if I can't see that much of the world from here.



*The eldest brother continued walking up the mountain. There he stopped and surveyed the world. Now he could see more of the world than anyone*

- This was the place he would live — where no grass grew, where no birds flew. For water, he could only lick the ice and frost. For food, he could only gnaw on moss. But he had no regrets, because now he could look out over the whole world.

***Mari asks, "Is it supposed to have some kind of moral?"***

- Takahashi says, "Two, probably. The first one is that **people are all different.** Even siblings. And the other one is that **if you really want to know something, you have to be willing to pay the price."**

*Mari offers her opinion:*

*"To me, the lives chosen by the two younger brothers make the most sense."*

- "True," he concedes. "Nobody wants to go all the way to Hawaii to stay alive licking frost and eating moss. That's for sure. But the eldest brother was curious to see as much of the world as possible, and he couldn't suppress that curiosity, no matter how big the price was he had to pay"
- ***"Intellectual curiosity."***
- "Exactly." *English translation by Jay Rubin*

# *Intellectual curiosity*

- “True,” he concedes. “***Nobody wants to go all the way to Hawaii to stay alive licking frost and eating moss.***”

That’s for sure. But the eldest brother was curious to see as much of the world as possible, and he couldn’t suppress that curiosity, no matter how big the price was he had to pay”

***Nobody wants to go all  
the way to Hawaii to  
stay alive licking frost  
and eating moss.***

***Nobody***

Indeed, we are *the Nobody*!



Subaru telescope

Three big “Boulders”  
@summit of Mauna Kea  
Hawaii



# Youngest brother @sea shore, Hilo, Hawaii

one of  
my  
former  
*stupid*  
students





# Second Brother @2800m above sea level



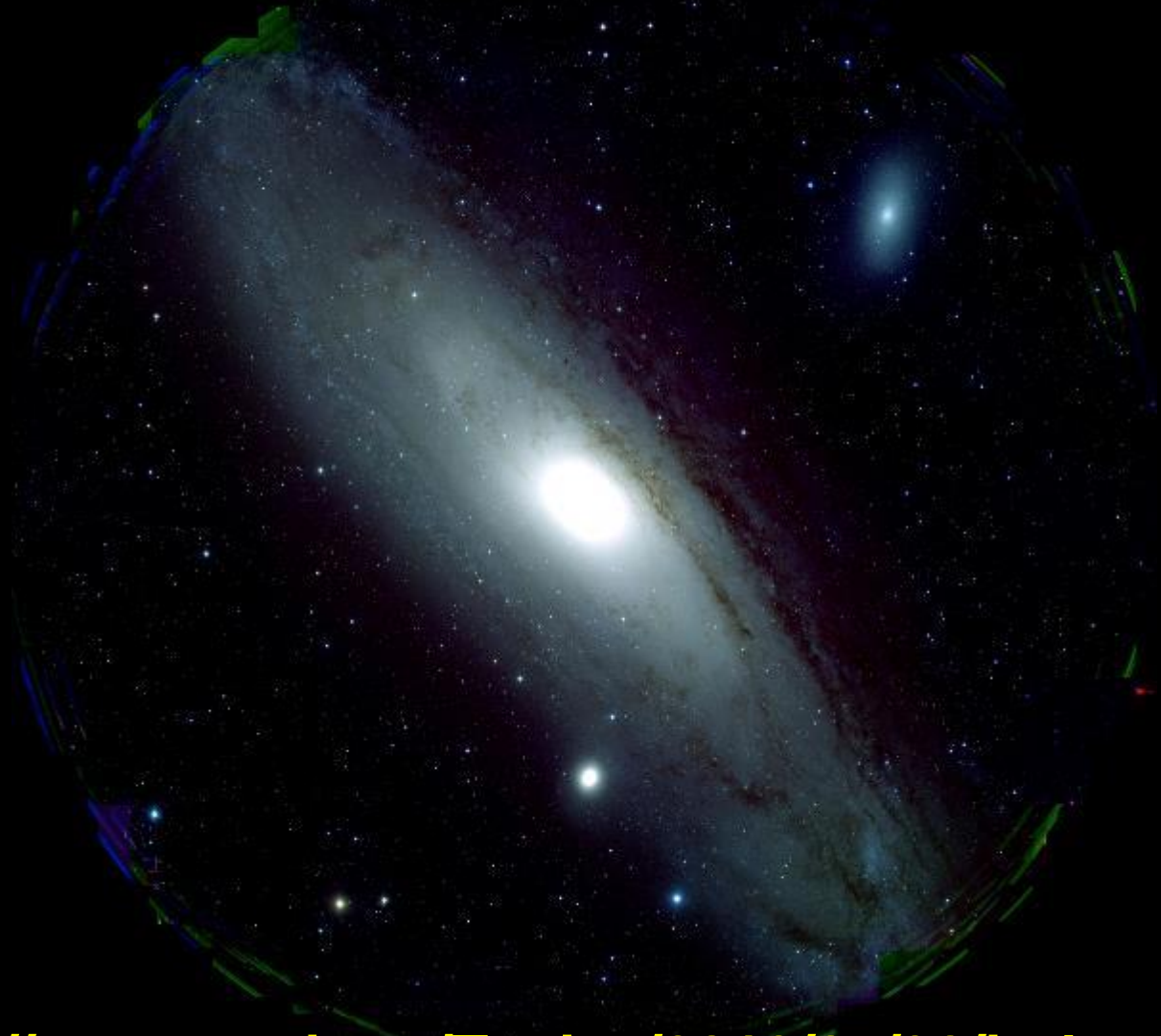
# Eldest brother @4200m above sea level



***He saw more of the world***



**We are planning to see even more  
of the world from Mauna Kea**



<http://www.naoj.org/Topics/2013/07/30/index.html>

**Science is the same  
all over the “world”**

**Blue sky at Bologna on June 23, 2007**

**Without dark nights,  
one could have never  
imagined ...**



**what really dominates  
our world**





# Nightfall: We didn't know anything

Very famous short  
novel  
by Isaac Asimov

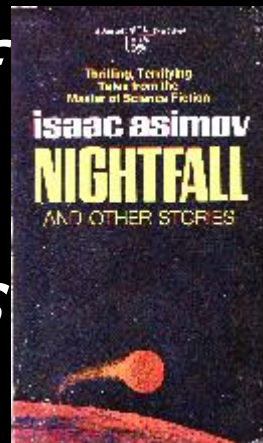


(Alisa Haba)

- No "night" except the total eclipse due to another planet every 2049 years on the planet "Lagash"
- People realized the true world for the first time through the darkness full of stars

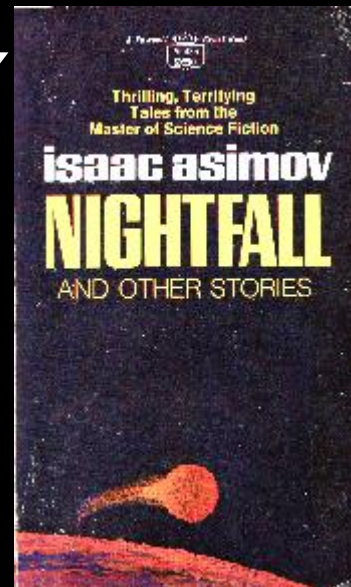
# Nightfall (1)

- *We've located series of civilizations, nine of them definitely, and indications of others as well, all of which have reached heights comparable to our own, and all of which, without exception, were destroyed by fire at the very height of their culture.*
- *And no one could tell why. All centers of culture were thoroughly gutted by fire, with nothing left behind to give a hint as to the cause.*

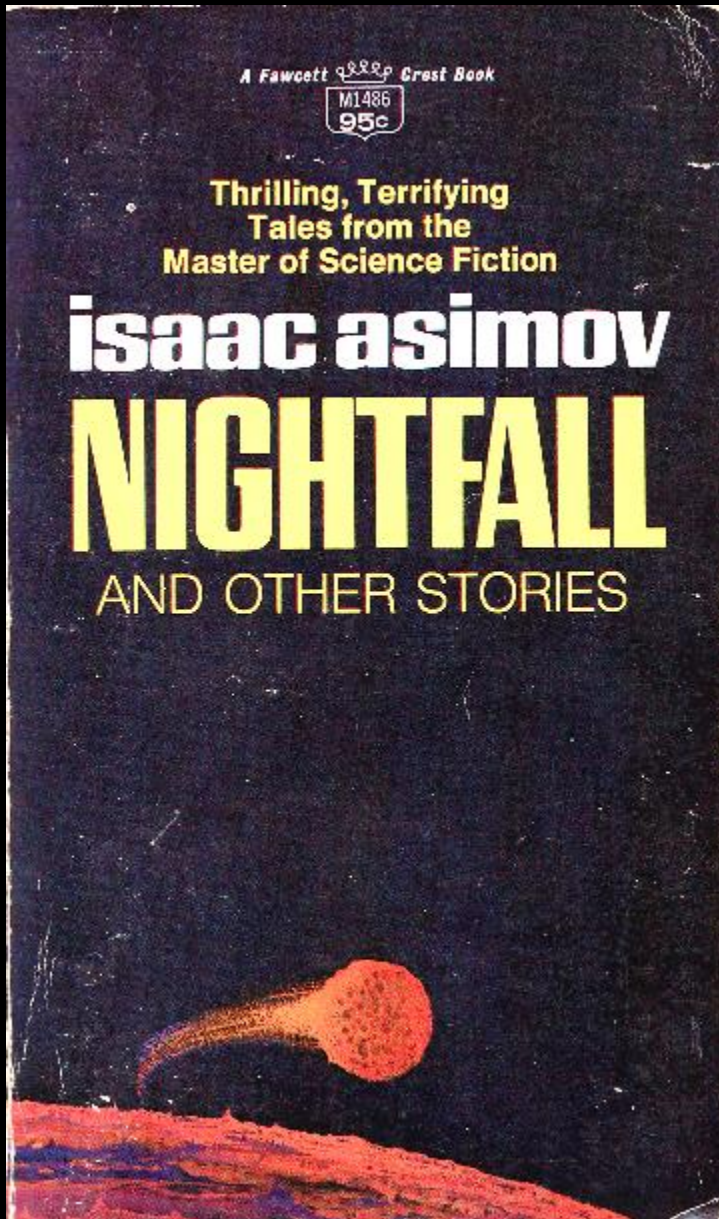


# Nightfall (2)

- *The Cultists said that every two thousand and fifty years Lagash entered a huge cave, so that all the suns disappeared, and there came total darkness all over the world! And then, they say, things called **Stars** appeared, which robbed men of their souls and left them unreasoning brutes, so that they destroyed the civilization they themselves had built up.*



# Nightfall



- “Light !” he screamed. Aton, somewhere, was crying, whimpering horribly like a terribly frightened child.
- *“Stars -- all the Stars -- we didn't know at all. We didn't know anything.”*

# A goal of science

- To answer the (known) fundamental questions
  - No doubt, but is that all ?
- It is equally, or even more, important *to discover unknown fundamental questions, or to recognize that we didn't understand anything*
- 学問 (Gaku Mon)
  - No good counterpart in English (academia ? Learning ?)
  - 学 (Gaku) is to learn, and 問 (Mon) is to ask
  - Indeed you can ask questions only after you learn something seriously. Learning without asking later does not bring any future progress.

# Invaluable > valuable

- Despite such huge differences in culture, scientists all over the world can work together in order **to see more of the world, and to confirm that we did not know anything.**
- To me, this is quite amazing, but it may just point to the reassuring fact that **science is the same** all over the world, purely driven by intellectual curiosity.
- Astronomy may **not be useful but useless.** It is not even merely valuable but significantly **invaluable.**



***Beyond Dark:  
Intellectual curiosity***

*if you really  
want to know  
something*

*you have to be  
willing to pay  
the price*

# Goal: to do good science

- After all, science is universal
  - The primary goal of doing good science is not affected by the difference in cultures
  - In general, a novel environment naturally leads to a good scientific outcome, which is one of the advantages to join UTRIP !
- We do hope that you will give UTRIP a big © when you complete the program.