

# Science Lesson #18

## *Are Trees Joking?*

(I Want My Levity!)

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### [Introduction to Fables and Science](#)

#### Today's Lesson

- What the Architects say ... Shanghai & Pudong
  - There are some 20,000 modern Chinese characters with over 100,000 from history, where each character is like a word. Arguably, another one of the largest languages may be English, as spoken in the U.S. We Americans change our language and add so many words, that some count our vernacular and idiomatic expressions to include

650,000 words in English, whereas there are typically 200,000 words in the Romance languages. In China, I taught how Americans have many baseball references such as: *that idea is a home run, that's a close call, that's a swing and a miss, you just hit that one out of the park.*

- As I taught one student in China - the head of the top 50 architects in a 3,000 architect firm - he especially loved hearing sayings that American business associates would use in meetings. One day, as he took his three teachers: my brother-in-law, my son, and I, to the top of one of the magnificent buildings he designed in the twin cities of Shanghai and Pudong, he told us how that particular building could sway 18 inches. I have since learned that the Empire State Building in NYC sways 6 inches, and some buildings sway up to 3 feet. This got me thinking about trees.
- What the Carpenters say ... Hanging Trusses (see video)
- What the Ironworkers say ... Engineering of Steel (see video)
- What the Biologists say ... (see video)
  - **Branch attachment** - woodcarvings and denser, interlocking (can be shown by interlocking fingers of two hands, axillary wood with tortuous patterns of grain and knots)
  - **Weights of trees (in pounds)** - 10-12 inches in diameter, over a 40 ft span in length
    - - white oak - 1131, 1703
    - - red oak - 708, 1074
    - - black oak - 868, 1285

- - hickory - 1138, 1598
- White oak branch tapering 12 to 8 inches over 20 ft weighs 748 lbs
- **Capillary Action** of leaf brings water to the top of the tree. Water comes through cell wall pores, from xylem tubes which are 20 to 200 micrometers wide. But the tiny cell wall pores are 2 to 5 nanometers and can therefore pull many, many small amounts of water to heights that would be impossible to pull if one made a mechanical model of a tree using simple tubes.
- **Swaying** - my treehouse (see video)
- **Center of Gravity** - root system (see video)
- **Bark** may contribute to upright growth as per a French study in 2016

[\[Play video here to see live demonstration.\]](#)

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**Here's a provocative thought...**

Read [[Fable #14](#)], *The Ox and the Mule* below.

So, I ask, "Are trees joking? What do they know that we don't? Can there be some reality to Levity?" Here are three biases of our time that inhibit critical thinking. Sure, we have come a long way since ancient times. Our science is excellent. But watch out for:

1. things you get used to seeing and do not look at anymore (tree branches, bees and butterflies)
2. things you think you understand because we have given it terminology (gravity and levity)

3. we study things out of their context in a larger whole (trees as physical machines - separate from their minerals [EARTH], wind [AIR], rain [WATER], and Sunlight [FIRE])

Wouldn't it be great if we kept OBSERVING and sought to have communication with nature? Think critically about this one question ... is the end goal of science to see how to USE nature, or is it how to be in HARMONY with nature? I think the answer to this could shift our thinking to find a new level of insight!

Here are some fables that deal with this whole idea:

[\[Fable #13\]](#) [\[Fable #14\]](#) [\[Fable #16\]](#) [\[Fable #27\]](#) [\[Fable #30\]](#)  
[\[Fable #35\]](#) [\[Fable #55\]](#) [\[Fable #64\]](#) [\[Fable #67\]](#) [\[Fable #101\]](#)  
[\[Fable #149\]](#) (Bickart, 2020a, Volume 1; 2020b, Volume 2; 2020c, Volume 3).



## #14 *The Ox and the Mule*



*An ox and a cow had been hooked together to a double yoke for as long as they could remember. Day in and day out they pulled the laden cart through hill and vale. One day, the inevitable occurred; and the ox lost his mate to old age. The farmer could only afford a mule to replace the cow. Upon meeting, the ox uttered, in haughty indignation, "I do not care to fraternize with your kind around here." "That's fine," replied the mule. I'll just wait at the top of the hill and introduce myself when you bring up the cart.*

**WE NEED TO PULL TOGETHER**

# *The Ox and the Mule*

## Why Use Fables to Teach Science?

### **Conversation Starters**

- Do you have a very good friend?
- Can you imagine what you would do if you could not be with that friend?

Do you think you would try to replace that friend?

- Do you think nature's plants have some kind of relationships among each other or with the humans? How about the rocks, winds, rain and sun?

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### References

- Bickart, J. (2020a). *Bickart's Just-in-Time Fables (Volume 1)* (Vol. 1). Asheville, NC: Red Shirt Interactive Group.
- Bickart, J. (2020b). *Bickart's Just-in-Time Fables (Volume 2)* (Vol. 2). Asheville, NC: Red Shirt Interactive Group.
- Bickart, J. (2020c). *Bickart's Just-in-Time Fables (Volume 3)* (Vol. 3). Asheville, NC: Red Shirt Interactive Group.