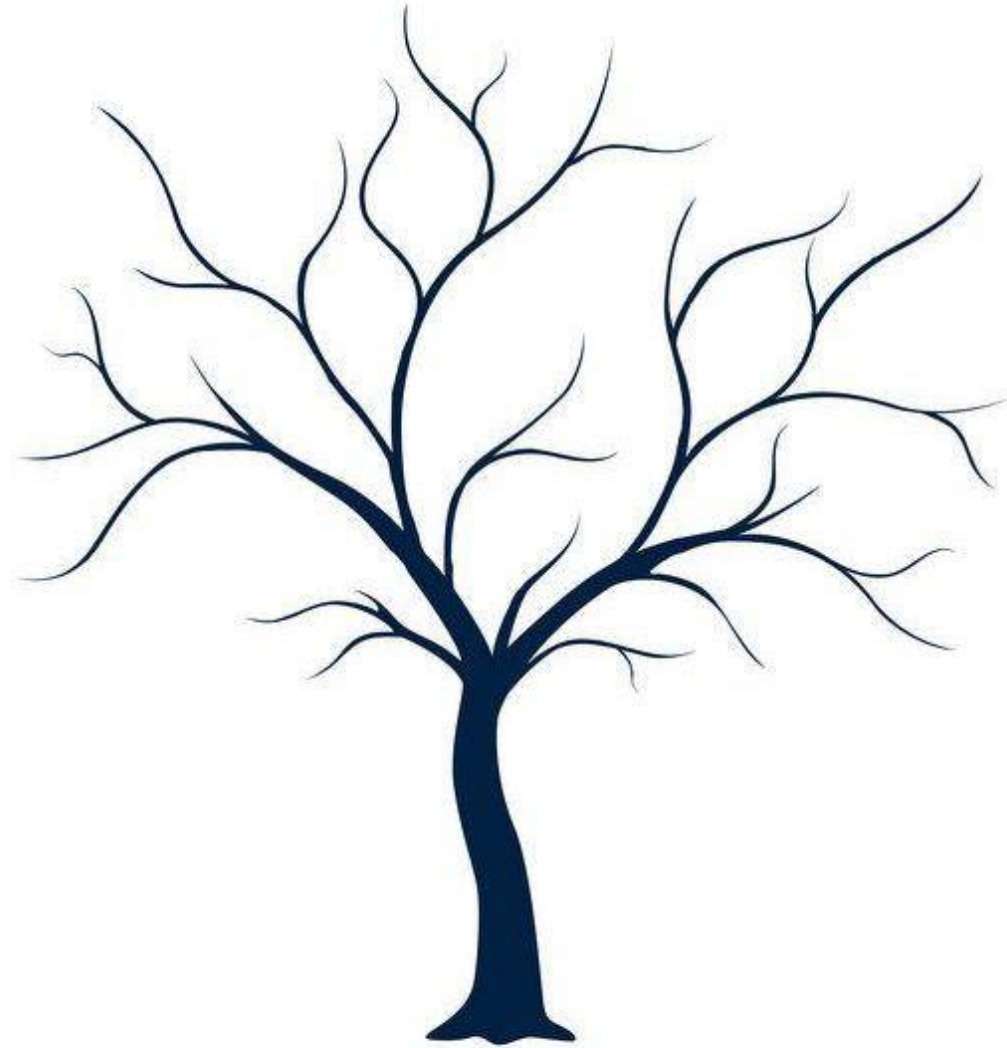


# Looking Back!

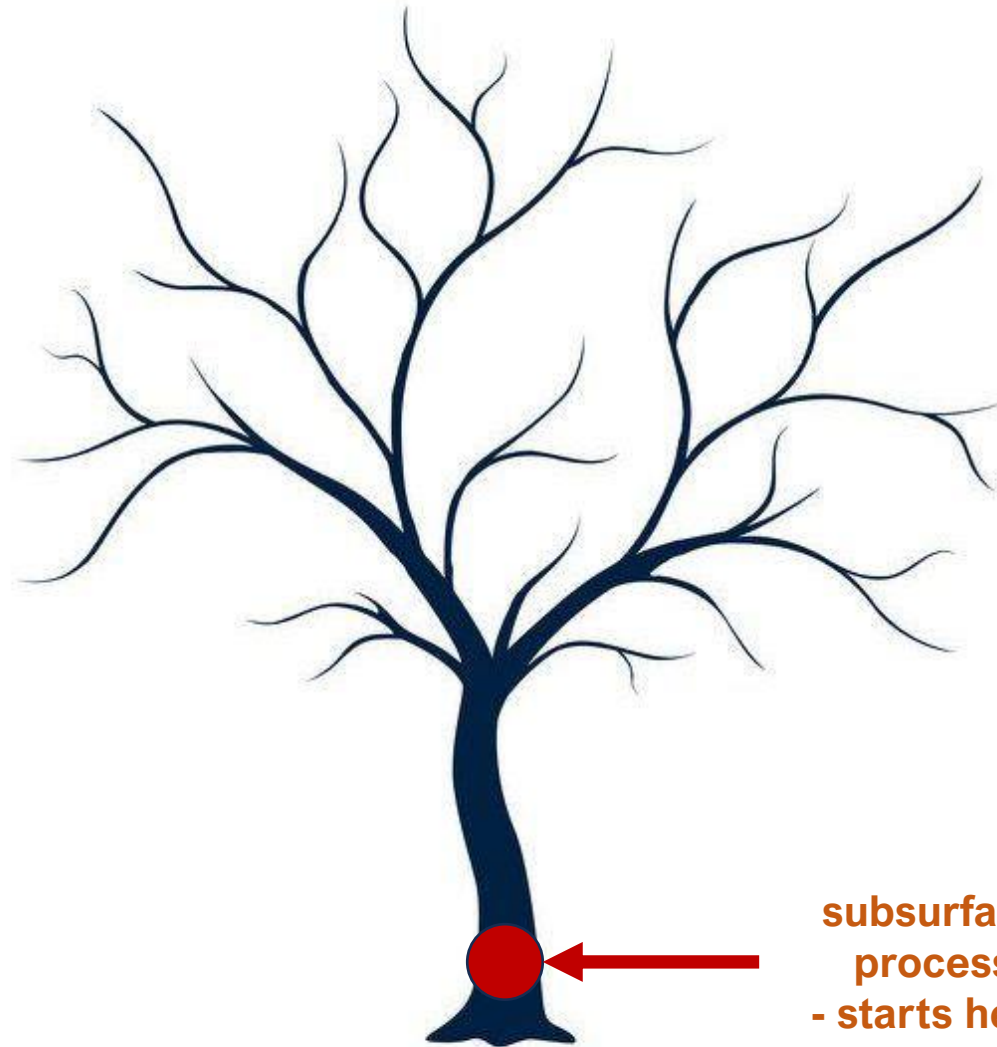
Chris Townsend

Feb 2024



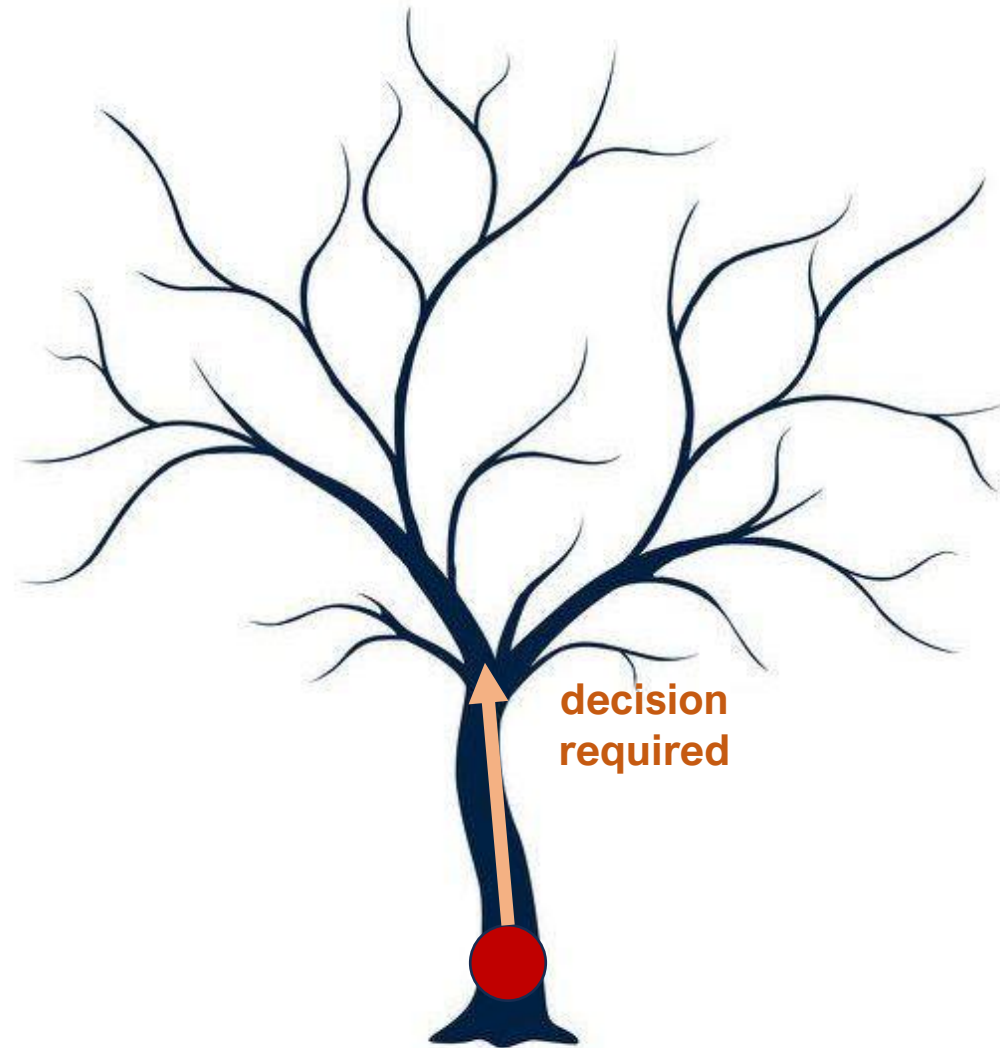
# The Subsurface Tree

# The Subsurface Process



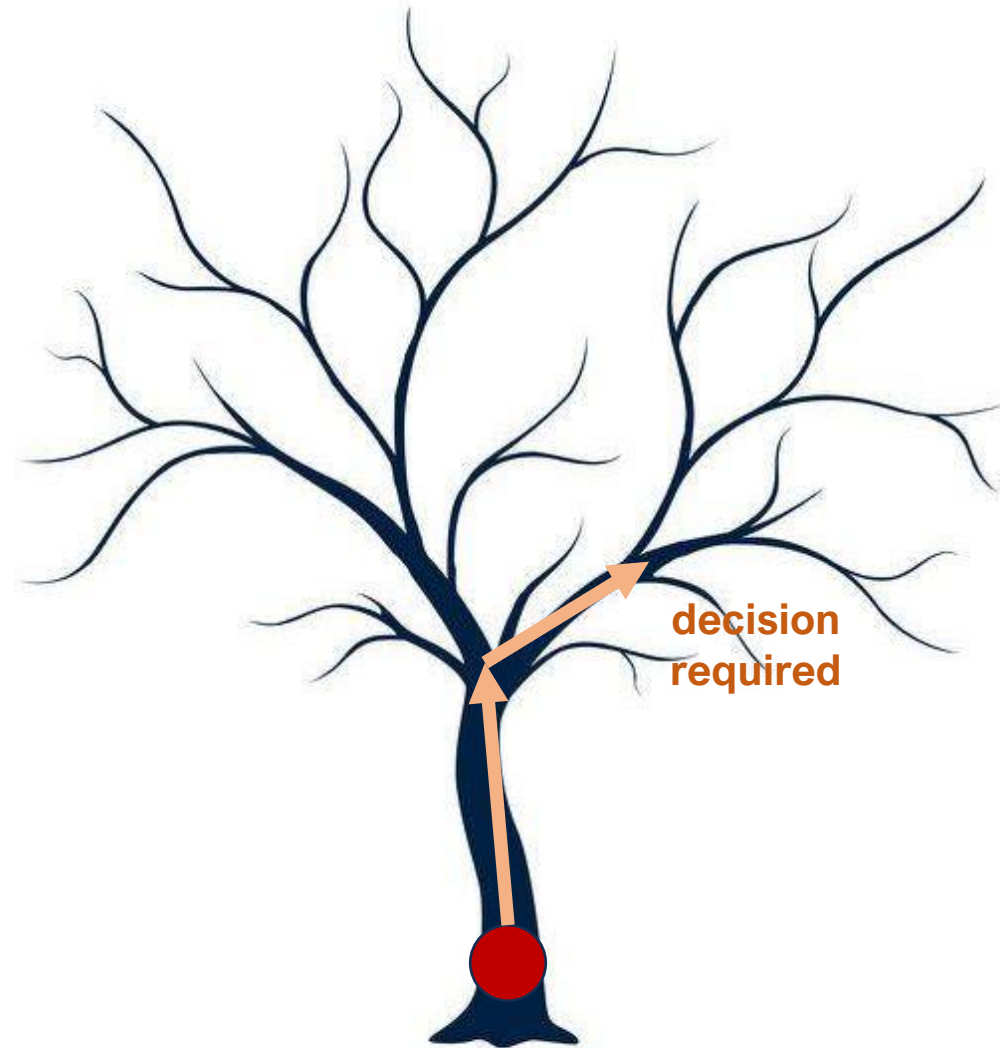
The Subsurface Tree

# The Subsurface Process



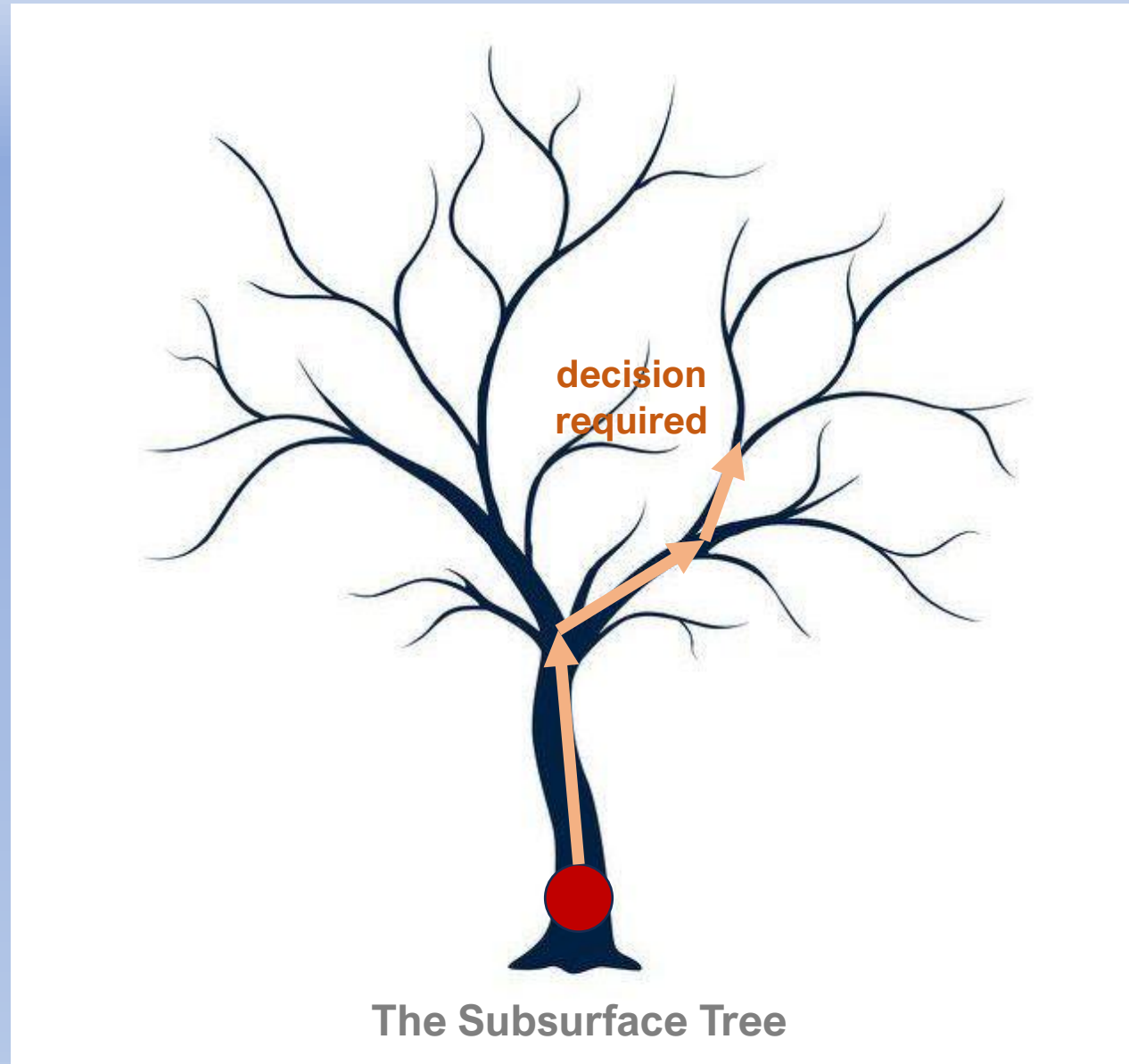
The Subsurface Tree

# The Subsurface Process

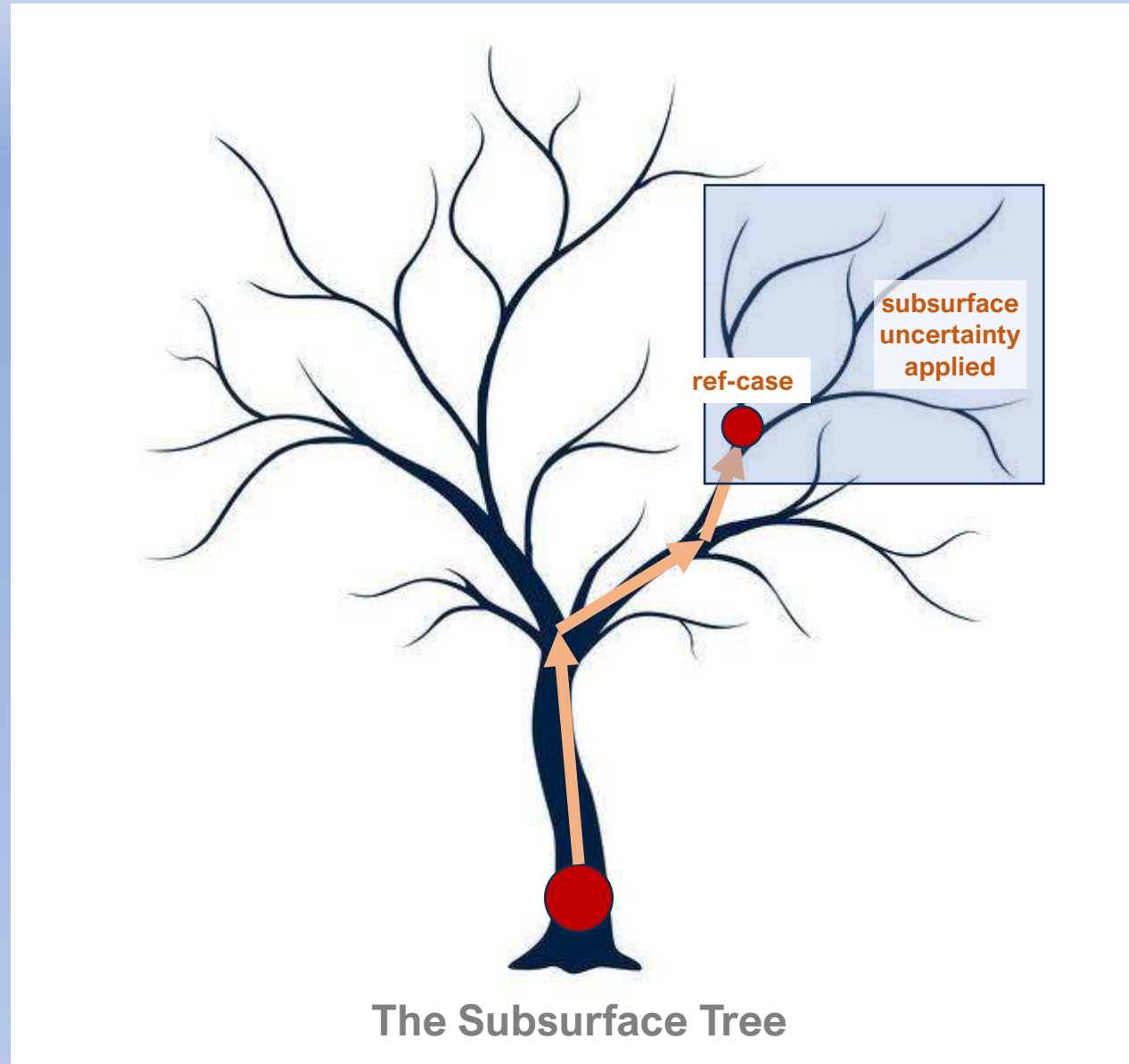


The Subsurface Tree

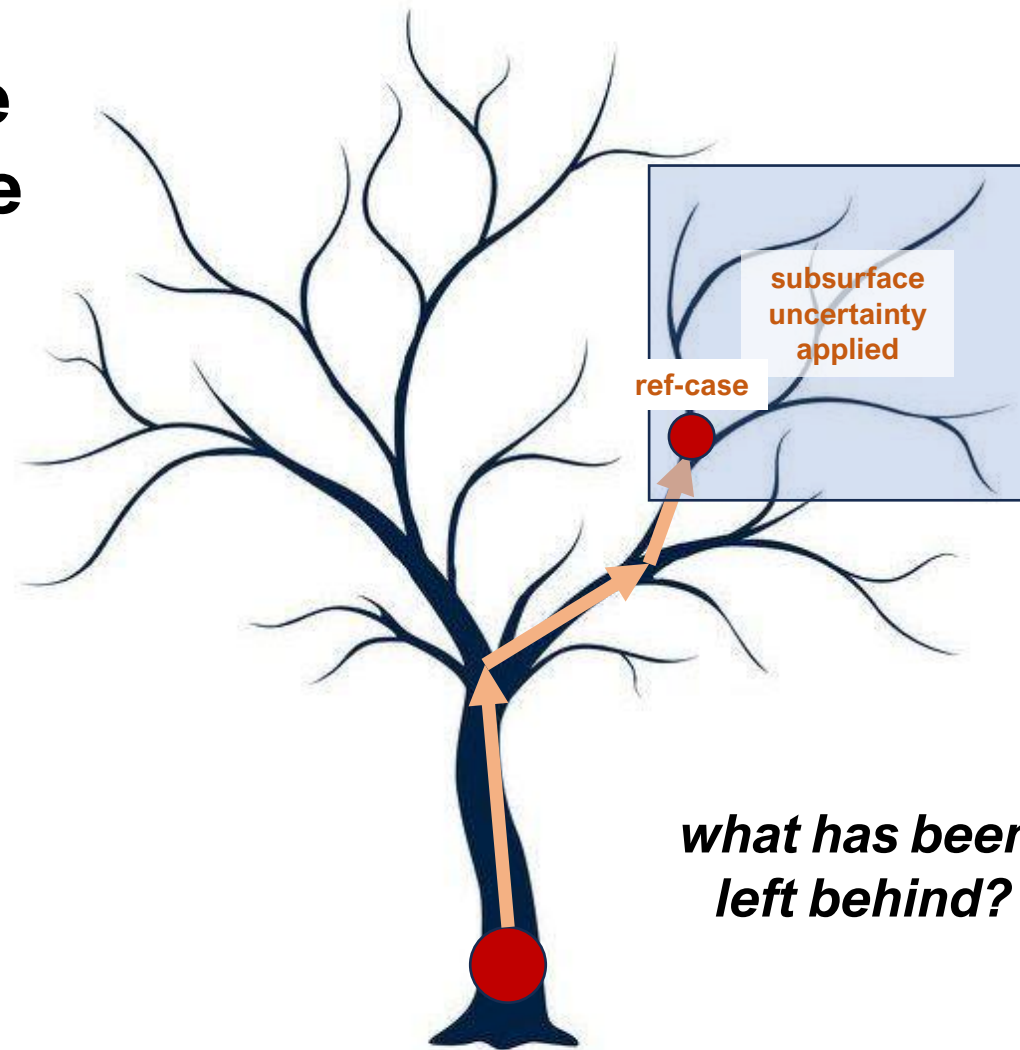
# The Subsurface Process



# The Subsurface Process



**what  
about the  
rest of the  
tree?**



*what has been  
left behind?*

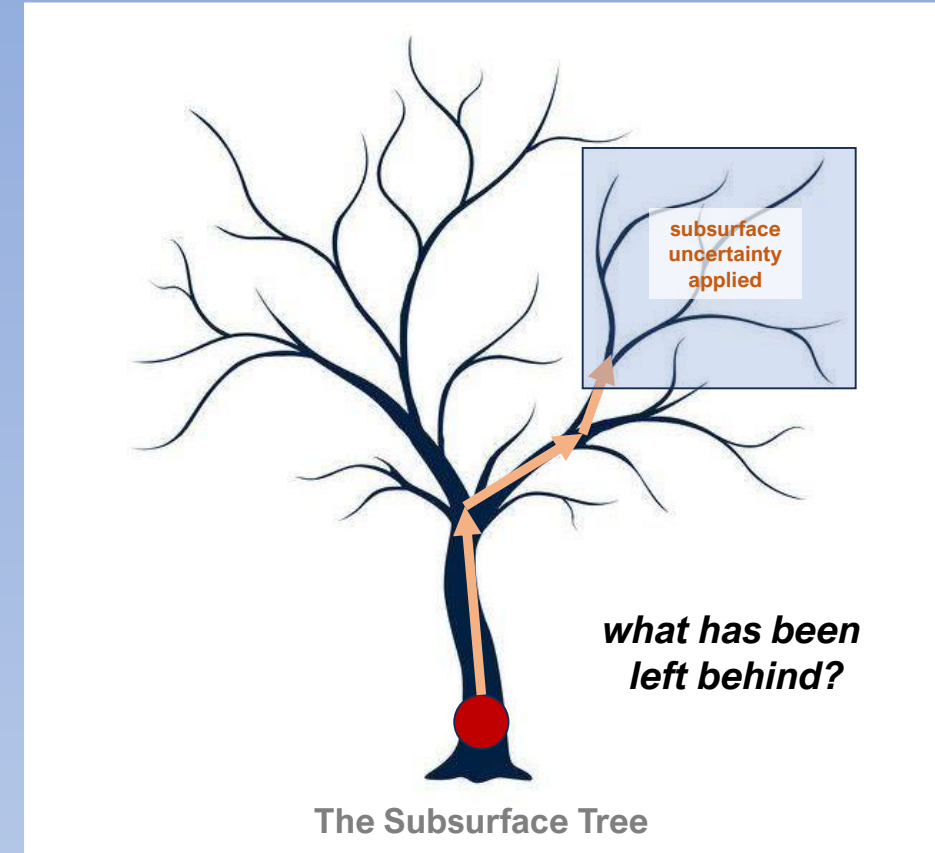
**The Subsurface Tree**

# The Subsurface Process



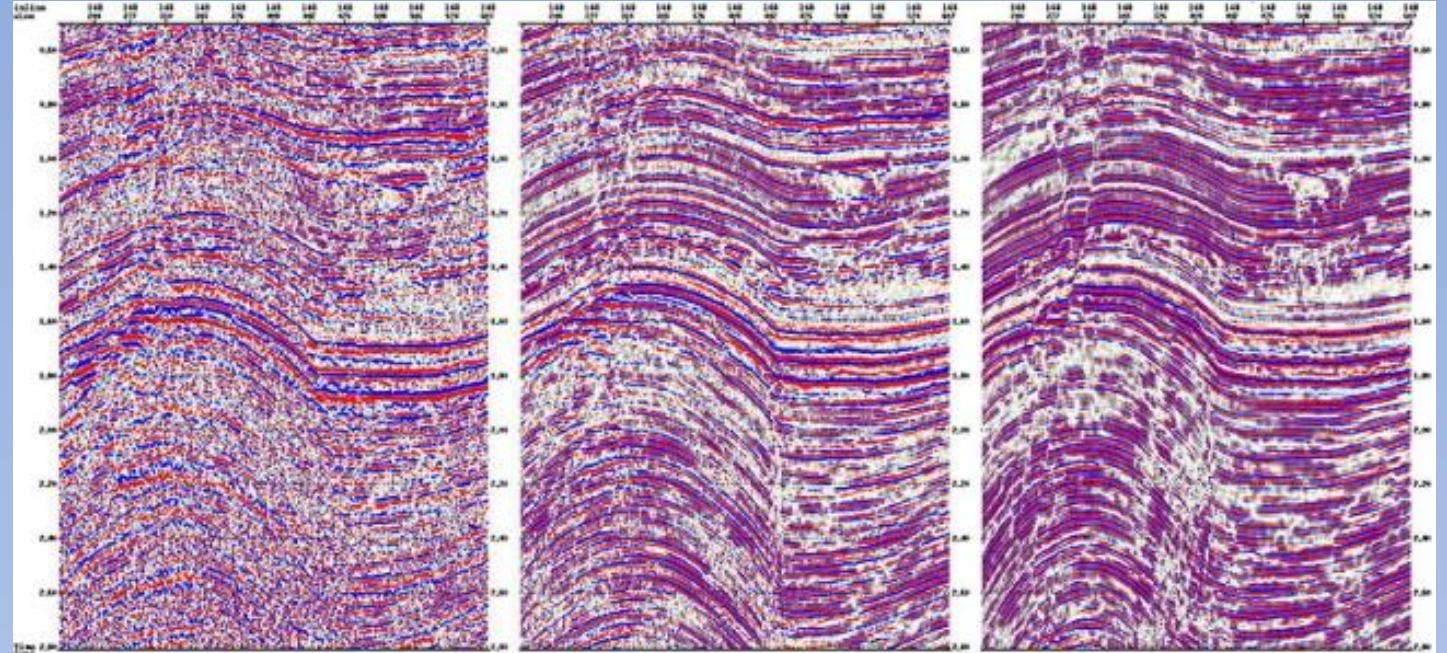
# Left Behind!

- Happens all the time
- Give possible examples from the subsurface workflow
- Make you think about your decisions
- Give 2 real-case examples
- Discuss what to do about the situation



# Branch Examples

- Lots and Lots
- Seismic Acquisition
  - Shooting direction
  - Choice of vendor/vessel
- Seismic Processing
  - Methods/techniques/algorithms
  - 'best image'
  - Single seismic cube
- Wells
  - Location
  - Data acquisition
- etc etc



# Branch Examples

- We make decisions/choices all the time
- Some have more significance than others
  - which ones?
- Audience to understand:
  - decision/choices have consequences
  - forgotten about in uncertainty analysis
  - many are difficult to account for

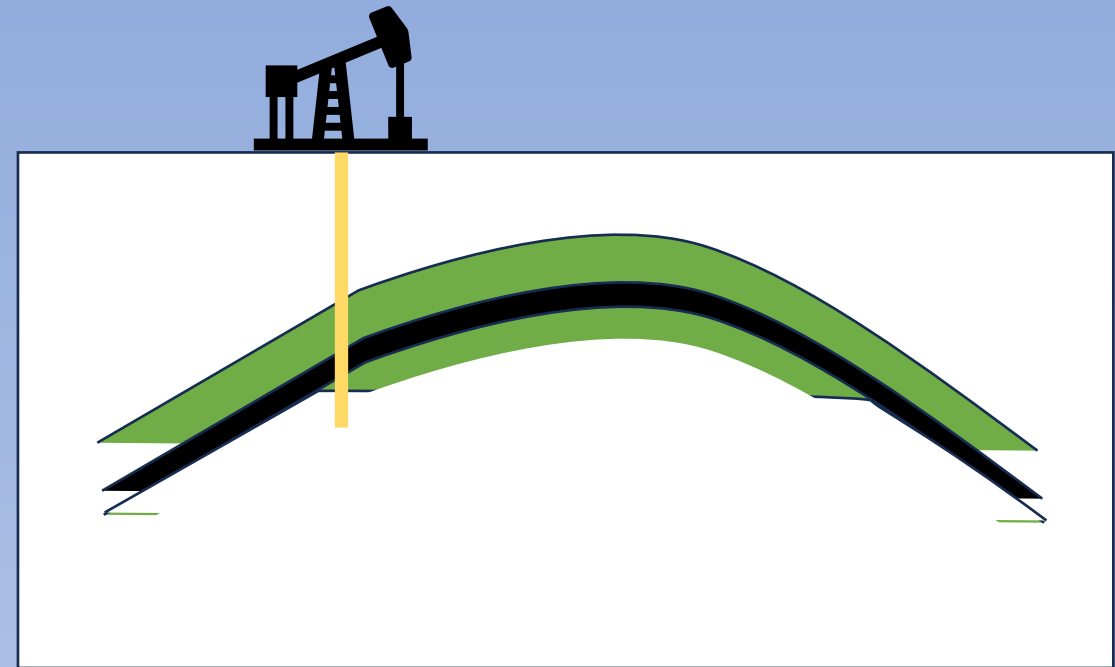


# 2 Real Examples

# Example 1: removed for public sharing

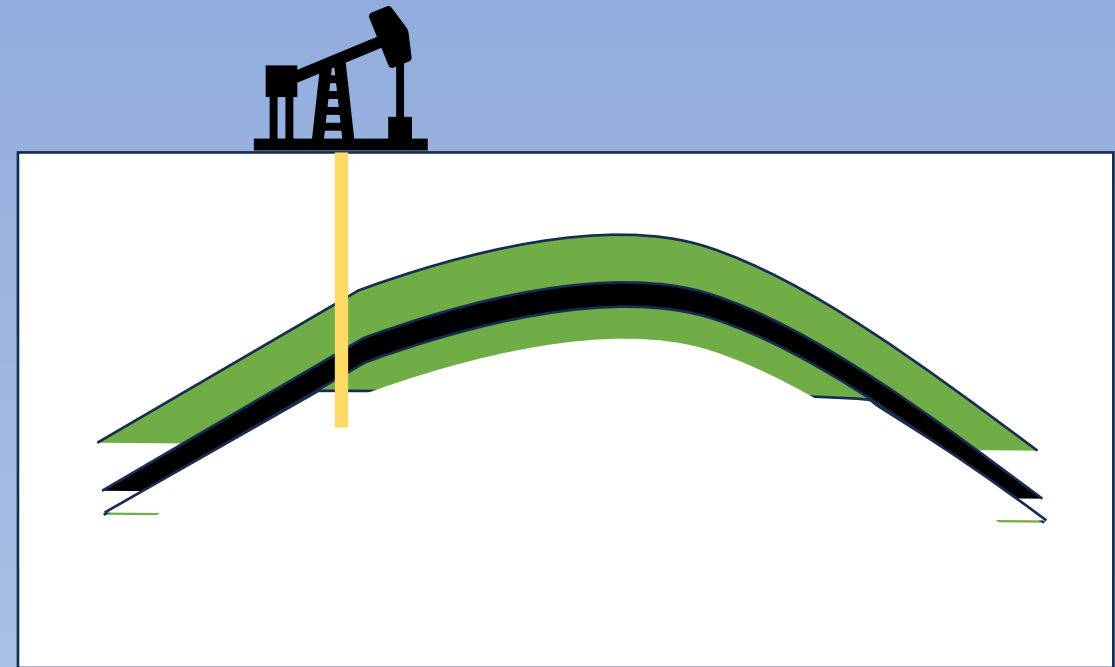
# Example 2: Deeper Reservoir?

- Eocene reservoir
  - 2 good quality reservoir zones separated by prominent shale
- Exploration well (ca 1977)
  - oil and gas in upper reservoir
  - cored section – disintegrated, not encouraged to view
  - lower reservoir:
    - oil noted in top 2-3 m
    - oil in lower reservoir considered insignificant
    - no evaluation made



# Example 2: Deeper Reservoir?

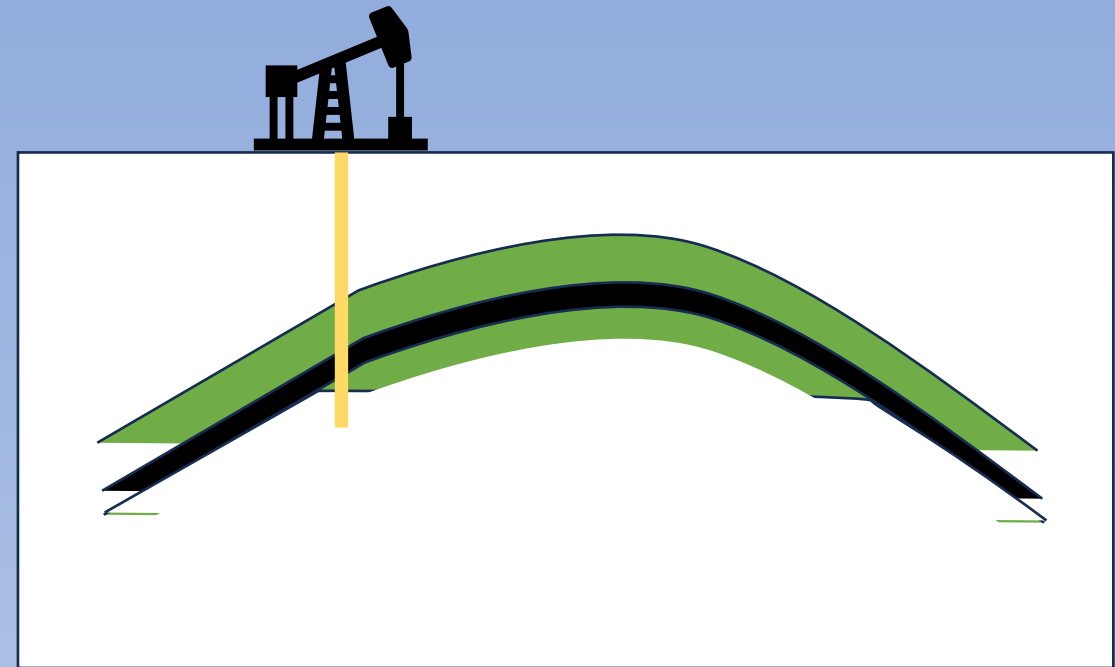
- PDO Evaluation (> 10 years ago)
  - seismic interpretation & depth conversion changed, increased GRV of lower reservoir
  - examined core for other reasons than lower reservoir
  - not as 'disintegrated' has had been suggested
  - 7-9 m oil-stained core at top of lower reservoir
  - lower reservoir became much more interesting!





# Example 2: Under-evaluated Reservoirs

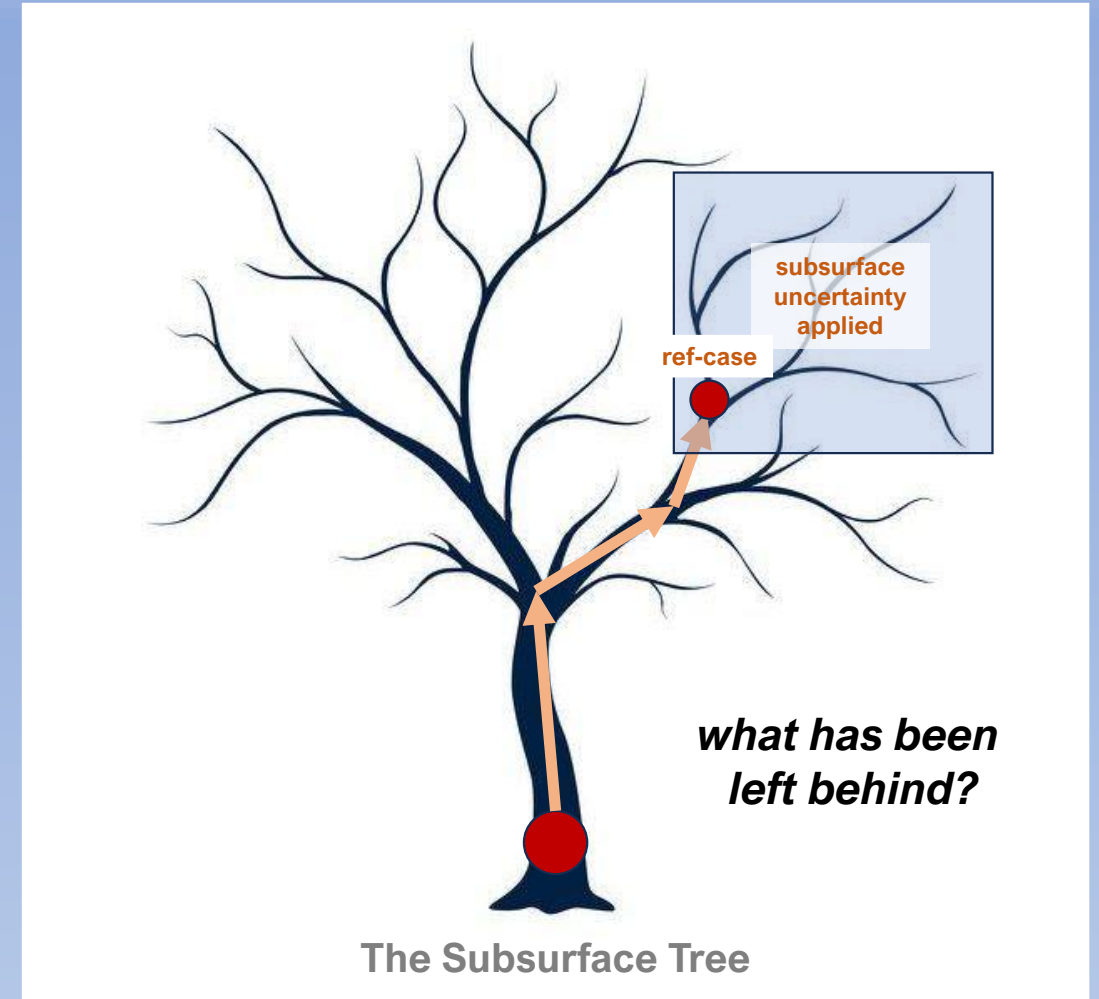
- Common personal observation:
  - additional resources can be found within existing fields
- What do we need to do?
  - time/resources are given for
    - data analysis
    - inquisitiveness
  - oil is there to be found!





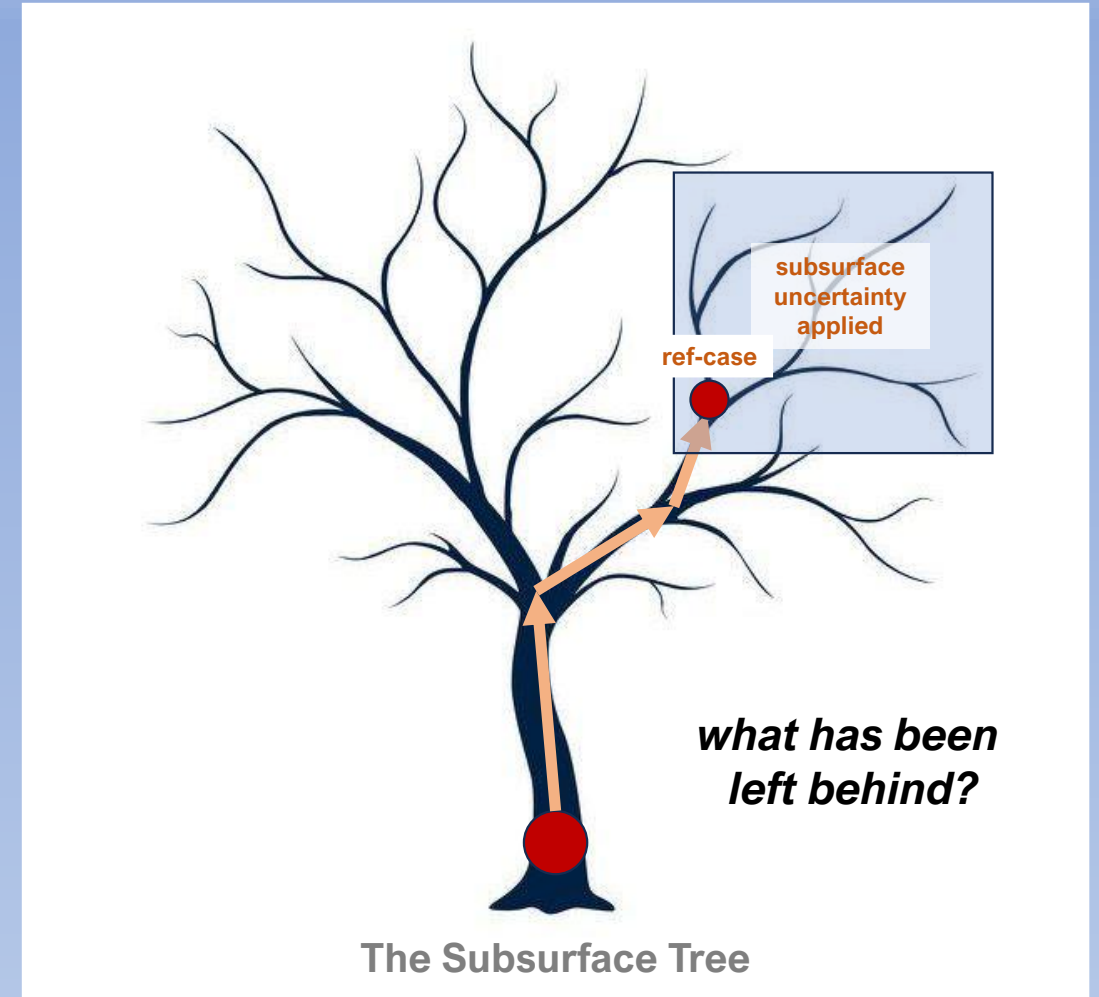
# Left Behind!

- Happens all the time!
- What can be done about it?
  - I'm uncertain !
- Why does it happen?
- eg Seismic:
  - multiple shooting direction
  - multiple processing
  - multiple interpretations



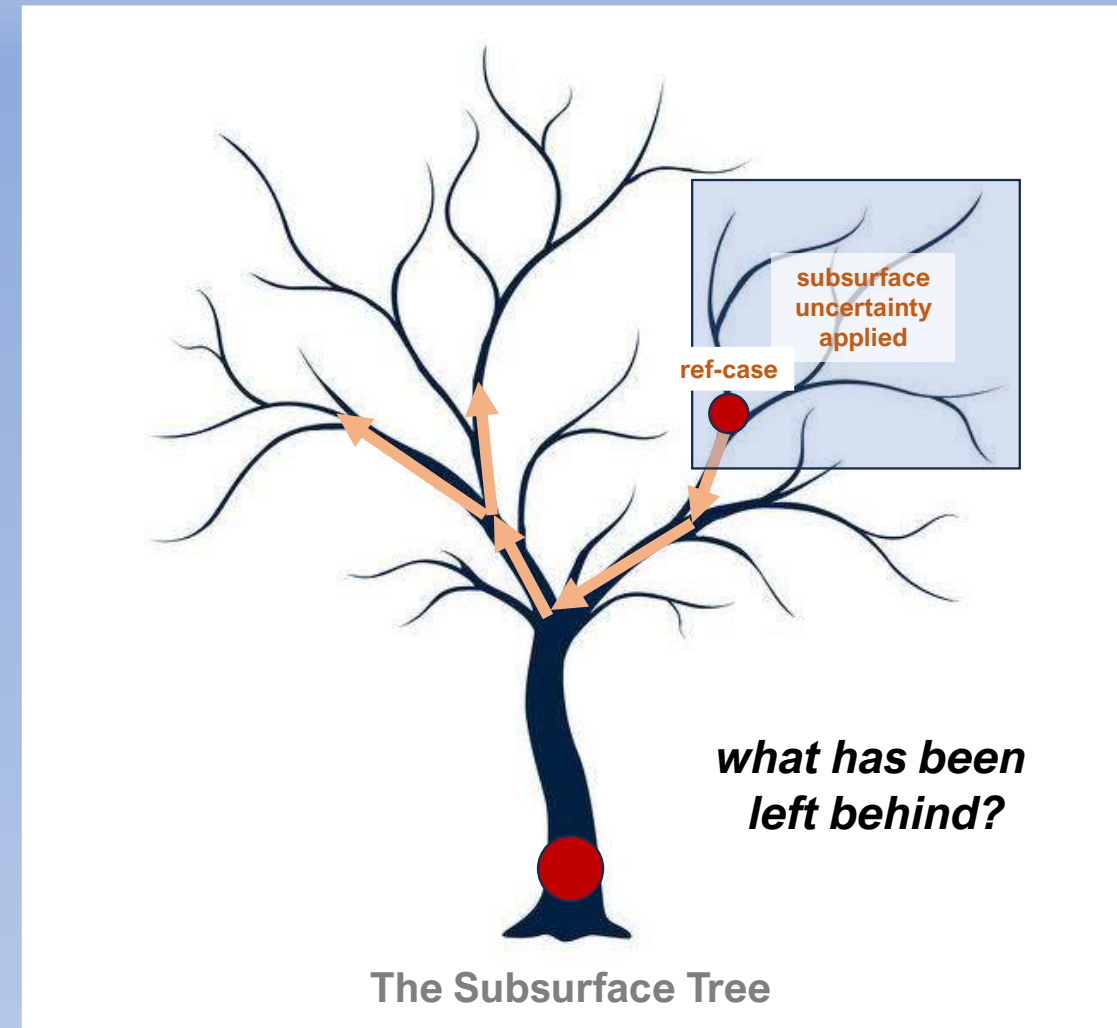
# Left Behind!

- Why?
- Cost, time, practicalities
  - difficult to change?



# Left Behind!

- What can be done about it?
- Soft issues
  - encourage inquisitiveness
  - stop believing the gospel truth
  - look at your data
  - stop 'bully tactics'
- Ref-case + Uncertainty
  - consider what has been omitted
  - look back and consider alternative branches
  - How do we do this?



# Real Trees – Real Reservoirs

