



Land Drainage Conference 2025



October 16 & 17

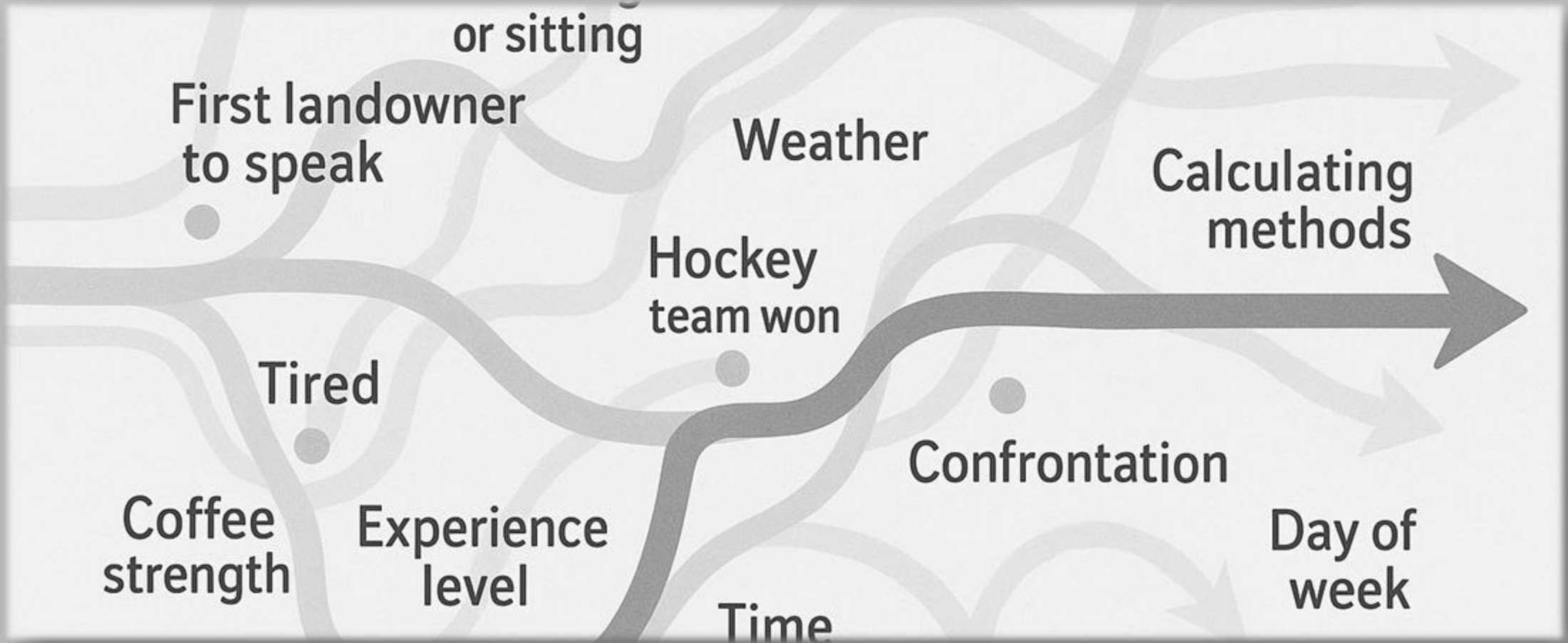


Delta Hotels Guelph Conference Centre

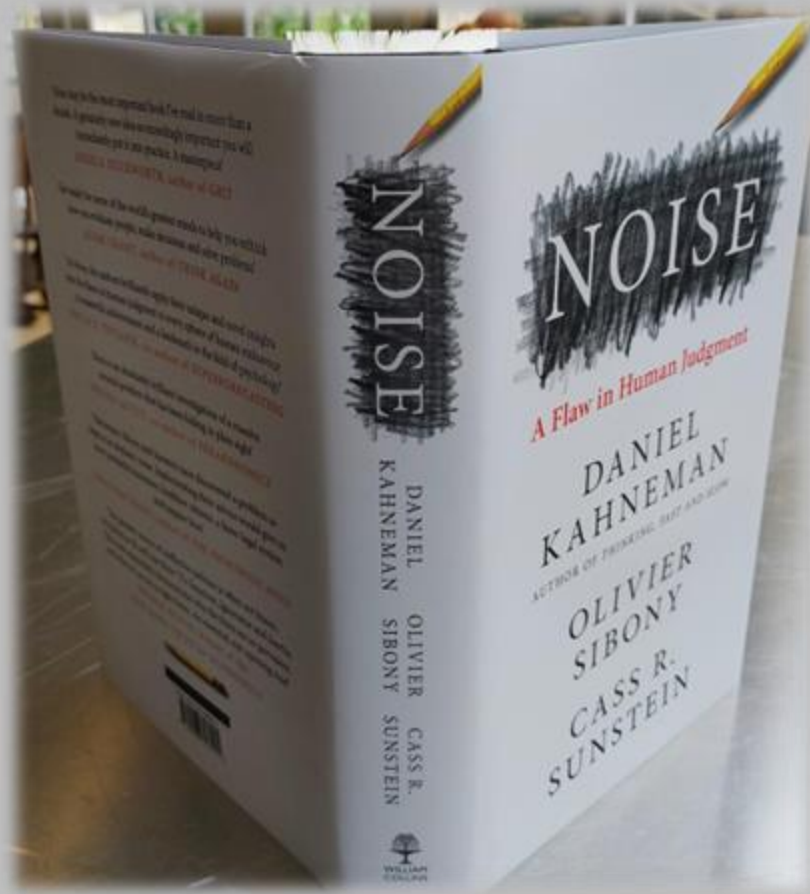


Decisions in the Grey Zone: Professional Judgment under the Drainage Act

Stephen Brickman, P.Eng.



Noise – A flaw in Human Judgment

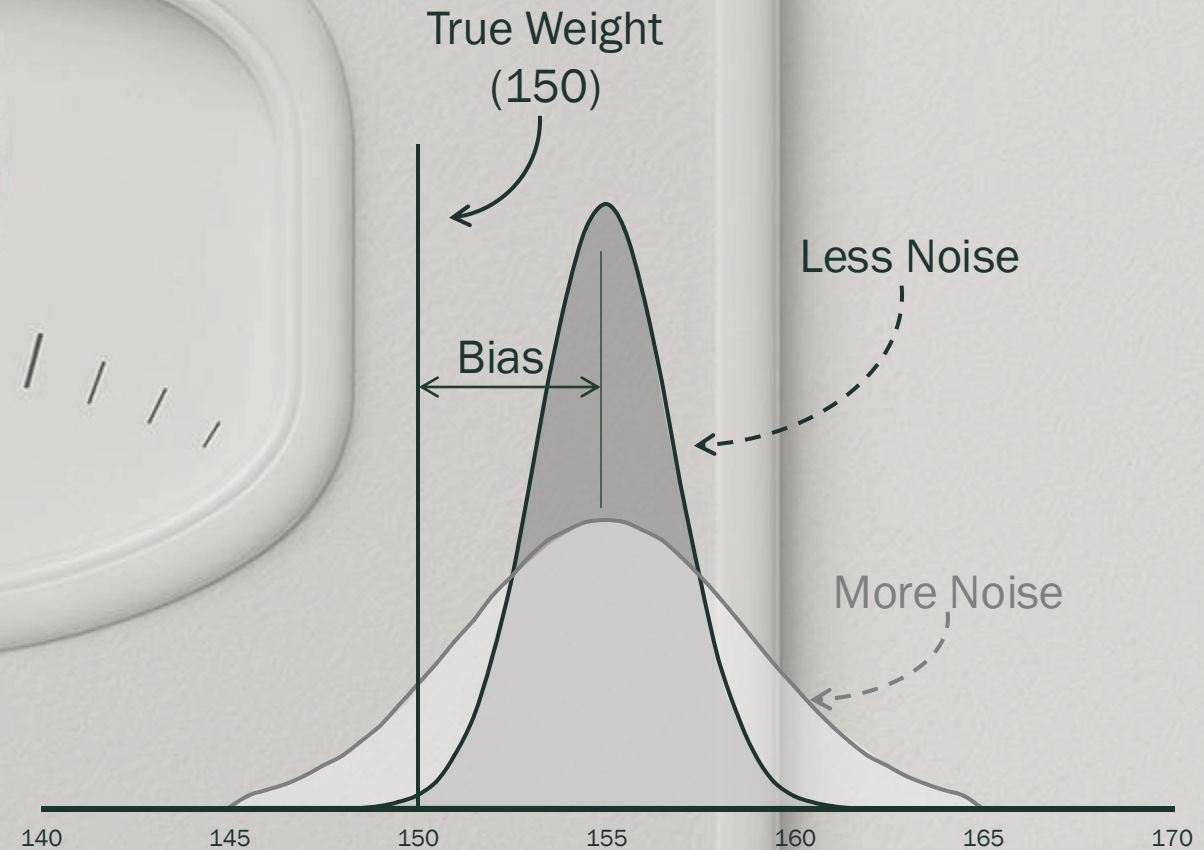


- Daniel Kahneman, Olivier Sibony, Cass R. Sunstein

Different Kinds of Error



Bias is Systemic
Noise is Scatter



Survey

1. What are the last 3 digits of your cell number?
2. Would those three digits be a reasonable straight-line distance (in km) between Windsor and Sudbury?
3. What do you think the actual straight-line distance is (in km)?



Occasion Noise

Same information –
Different Day –
Different Decision





RECEIVED FROM BANK OF AMERICA
NEW YORK, N.Y. 10017
DATE
\$58.40
Dante

RECEIVED FROM BANK OF AMERICA
NEW YORK, N.Y. 10017
DATE
\$35.20
Dante

15 YEARS



30 DAYS



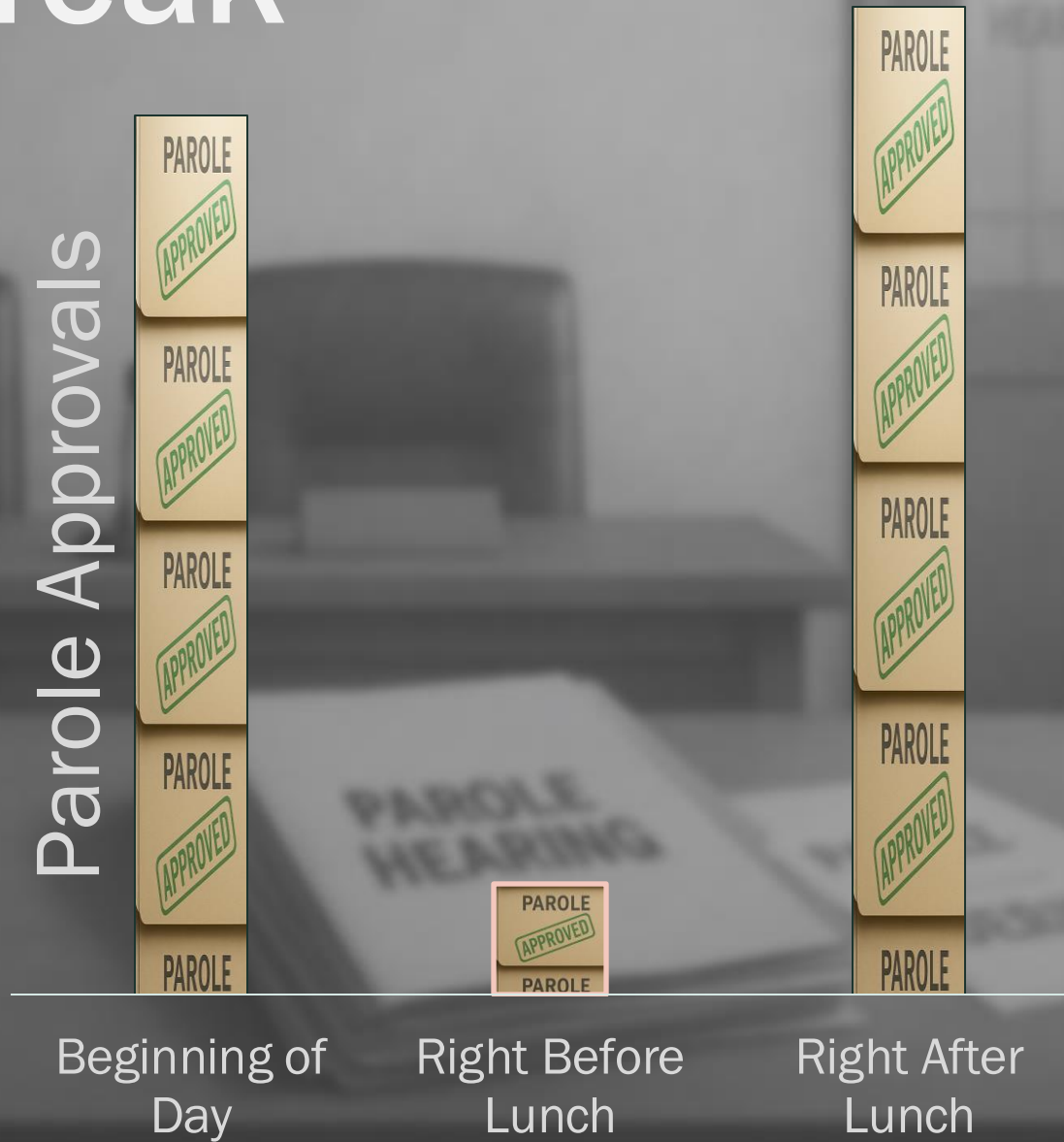
Occasion Noise

A study of 6,000,000 decisions in France
Over 12-year period

**Defendants are given more
leniency on their birthday**



Food Break Bias?



The End of Shift Effect

Opioid Prescriptions



Start of Shift



End of Shift



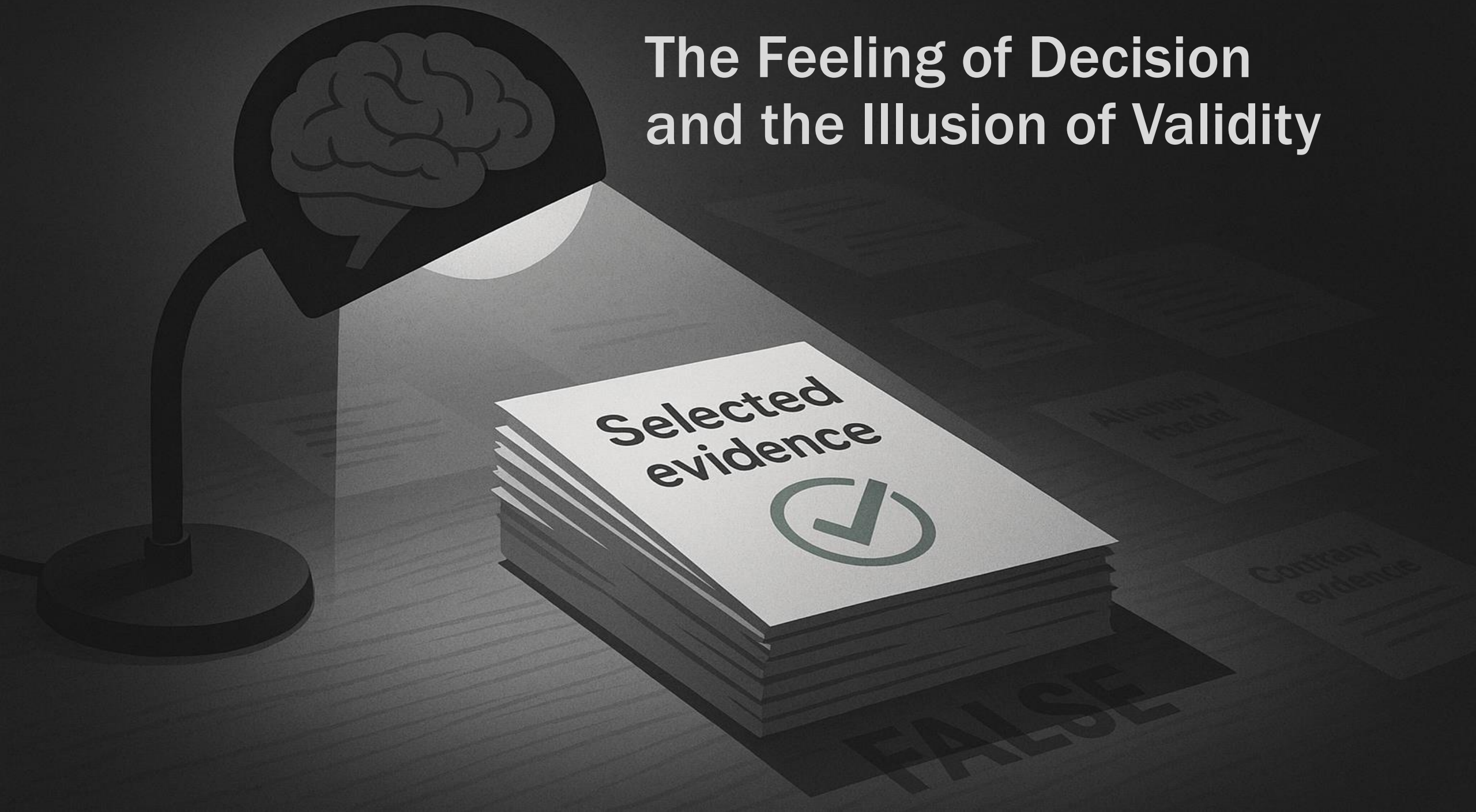
The Pile Position Effect

Occasion Noise

- Time of Day
- Rested or Tired
- Good or Bad Mood
- Did your team win last night
- How strong is the coffee
- What chair you sit in at a meeting
- Standing or sitting
- Gloomy day, hot day, bright day



The Feeling of Decision and the Illusion of Validity



Listening Through a Filter



Good Professionals are:

- Open-minded until the very end
- Hold competing possibilities in mind longer than feels comfortable
- Not decisive at the beginning or middle
- Decisive after all information has been weighed



Mayfield Case

- 2004 Madrid Train bombings
- Fingerprints lifted from a bag of detonators
- FBI match: Brandon Mayfield
 - U.S. Army veteran
 - Married to an Egyptian woman
 - Muslim convert
 - Frequent mosque attendance
 - Outspoken on U.S. foreign Policy
 - **100% fingerprint match**



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- Mayfield hadn't left the U.S. in over a decade.
- His passport was expired.
- Spanish authorities told the FBI directly:
 - Negative Match
 - Other suspects



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Mayfield Case

- FBI searched his home
- Bugged his phones
- Collected DNA from his family
- Detained him... until Spanish Police identified the real bomber.



FBI Fingerprint Identification Protocol



Cascades in Meetings



Signs of Lost Independence

- Loudness taking the place of facts
- The 'Too Techy' dodge: I don't understand that, all I know is...
- Comments on neighbour's lands more than their own
- Turn back to the presenter and focus to others



Wise & Un-Wise Crowds

- Wise Crowds remain independent
- Un-Wise Crowds lose independence, they could:
 - Fuel economic bubbles
 - Follow tyrants
 - Believe in magic
 - Join cults



Structure Outside of the Meeting Room

Rules, Algorithms, Standards



Rules



Algorithms



Standards



Rigid

Flexible

Rule Example

- No debate at checkout till
- No interview or hearing to see if the customer can safely drink (regardless of age)
- Noise is almost zero



Algorithms

Stabilize decisions

Reduce scatter

Open to some interpretation

DRAINAGE ASSESSMENT REVISITED

E.P. DRIES, P. ENG.

H.H. TODGHAM, P. ENG. O.L.S., (RET)

INTRODUCTION

"Drainage Assessment Revisited" seems like rather a strange name for the title of a paper on drainage assessment but I'm sure that a few of you in the room will recall that it was 19 years ago, at the Drainage Engineer's Conference in 1969, that Ross Irwin persuaded me to do a paper on drainage assessment entitled "Distributing the Cost". Since that time, The Drainage Act 1962-63 has been superseded by The Drainage Act 1975 and although none of the changes in the Act have resulted in any changes in the basic principles of assessing the cost, some of the details have changed. When I spoke on this topic in 1969, my talk was based on the practices that had developed over the previous 75 years, largely as a result of decisions handed down by the Courts, and I believe that the 1969 talk was generally accepted by most of the practising Engineers as being reasonable, as well as by the Ontario Drainage Tribunal when it came into being in 1975. Today, I would like to review with you the methods of drainage assessment as I believe they now stand. Following my review of the principles, Ed Dries will look at a sample drainage assessment that incorporates many of these principles.

The major differences between The Drainage Act 1975, under which we now operate and the old Drainage Act 1962-63 are these:

1. What were previously principles relating to "benefit assessment" have now been codified as follows:

Section 1(1) "Benefit" means the advantages to any

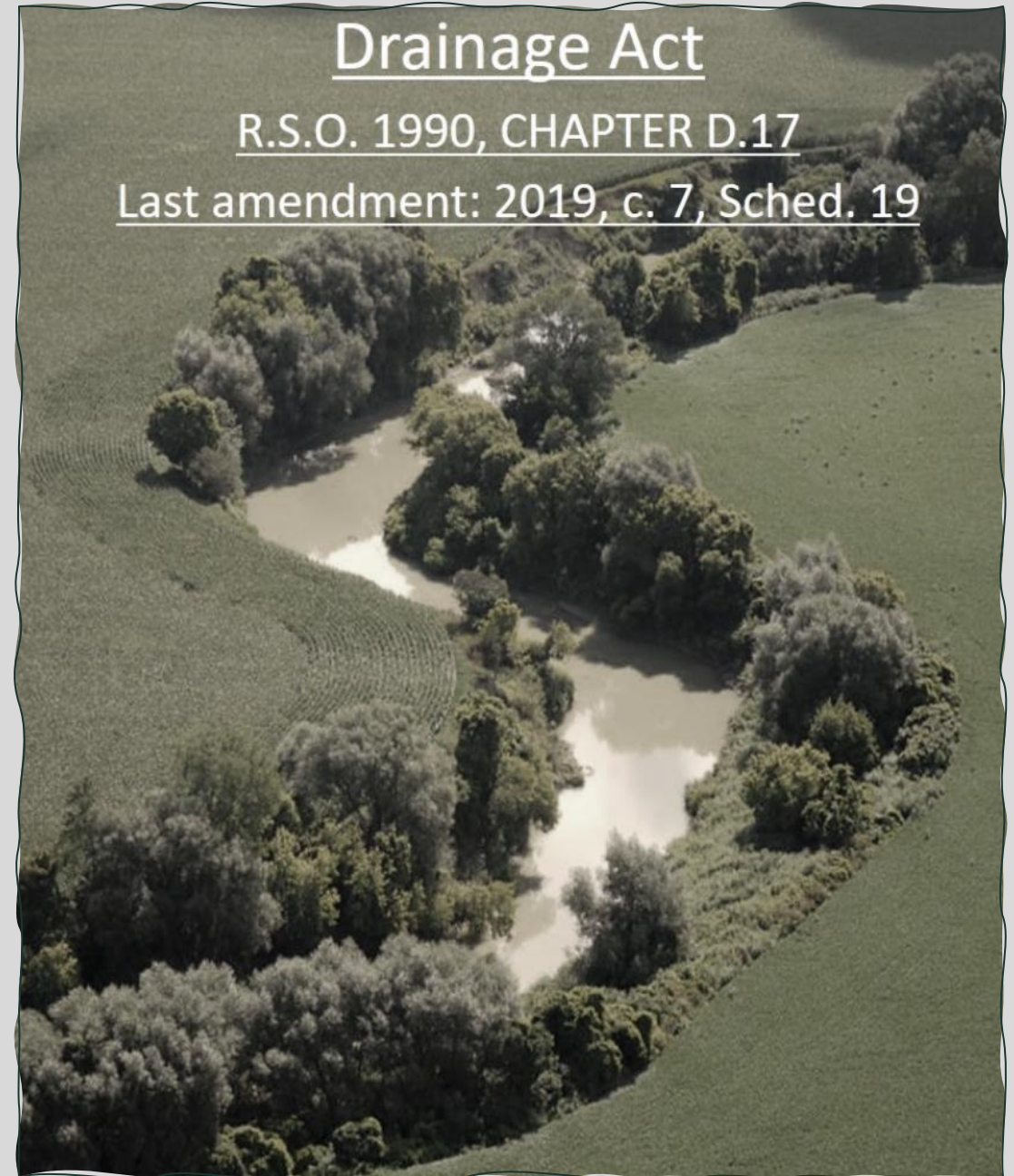
Standards

- Give flexibility
- Invite noise

Examples:

- Benefit: *“Benefit means.... Or any other advantages relating to the betterment of lands...”*
- Sufficient Outlet: *“means a point... no damage to lands...”*

Section 11: *“The engineer shall, to the best of the engineer’s skill, knowledge, judgment and ability, honestly and faithfully, and without fear of, favour to or prejudice against any person, perform the duty assigned to the engineer in connection with any drainage works and make a true report thereon.”*



Drainage Act

R.S.O. 1990, CHAPTER D.17

Last amendment: 2019, c. 7, Sched. 19



Decision Hygiene

Decision Hygiene in Drainage Engineering



Multiple Opinions. Two Person Rule. Two people at:

- Meetings
- Scope decisions
- Design standard selection (special cases)
- Cost Distributions
- Independence before Aggregation

Solo fall back:

- First Decision, WAIT A PERIOD, Second Decision

Algorithms where possible

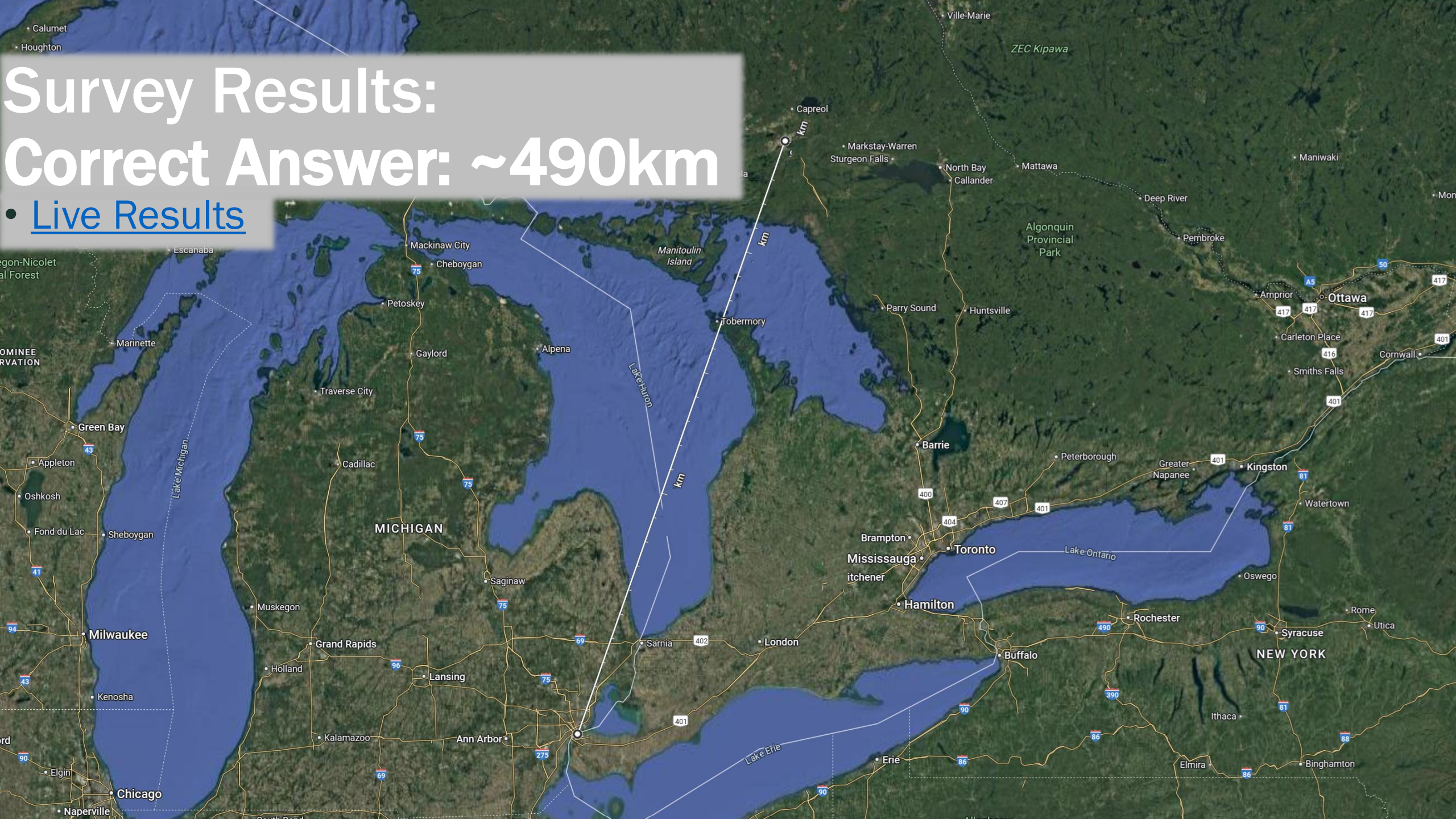
- Design Scope
- Design Standards
- Cost Correction
- Cost Distributions (Assessments)
- Report QA
- Construction Changes
- Algorithms prevent noise and improve consistency

Reserve Intuition – save it for the end

Survey Results:

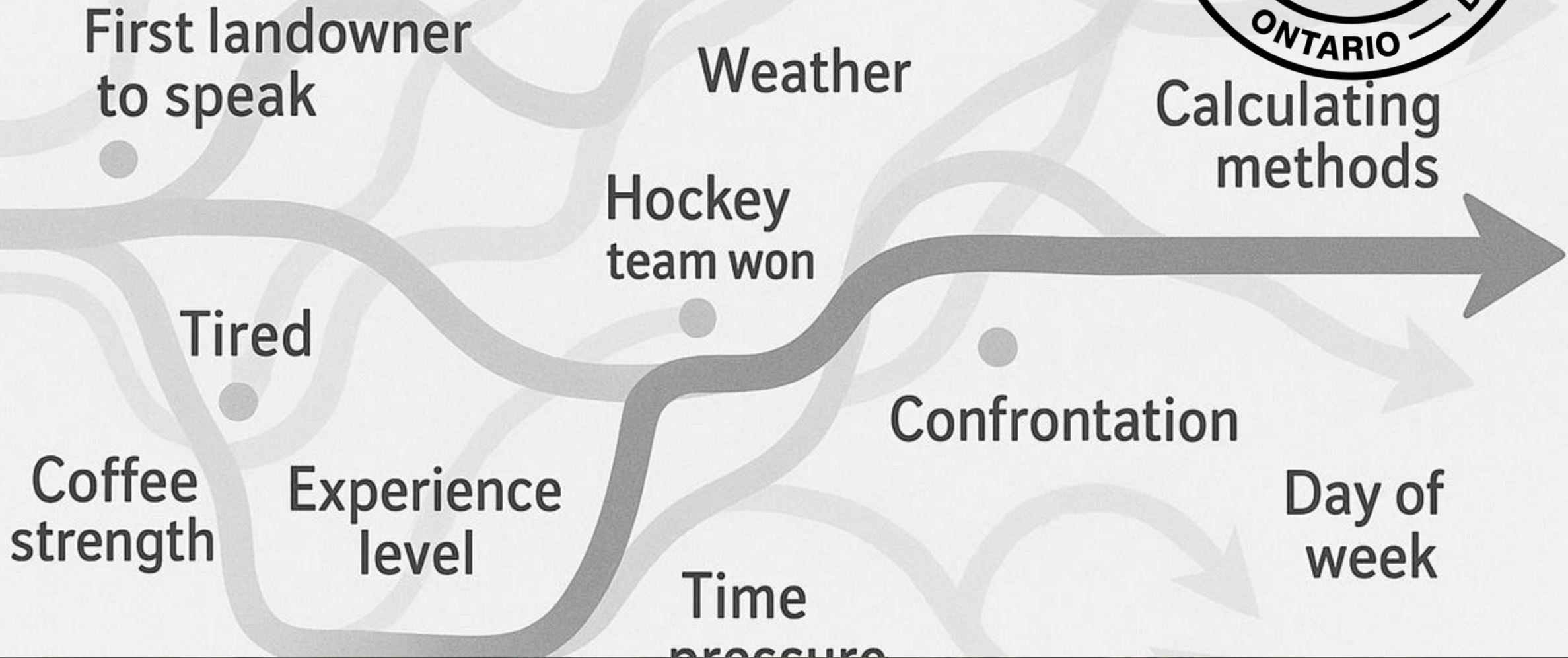
Correct Answer: ~490km

• [Live Results](#)



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First landowner
to speak

Day

Weather

Calculating
methods

Hockey
team won

Tired

Confrontation

Coffee
strength

Experience
level

Day of
week

Time
pressure

Land Drainage Conference 2025

Questions?



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Thank you!

