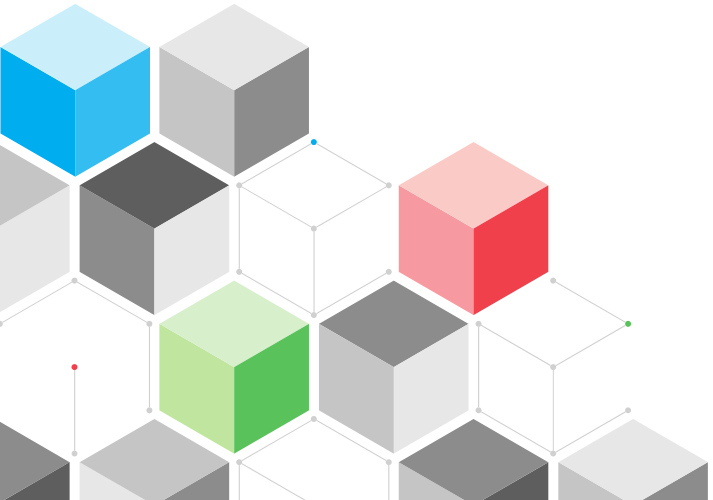
# Non-linear Idea Generation

Santeri Palomäki



# A republican named Donald once said

*As we know, there are known knows; these are things we know we know.*

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*As we know, there are known knows; these are things we know we know.*

*We also know there are known unknowns; that is to say we know there are some things we do not know.*

# A republican named Donald once said

*As we know, there are known knows; these are things we know we know.*

*We also know there are known unknowns; that is to say we know there are some things we do not know.*

*But there are also unknown unknowns—the ones we don't know we don't know.*

# A republican named Donald once said

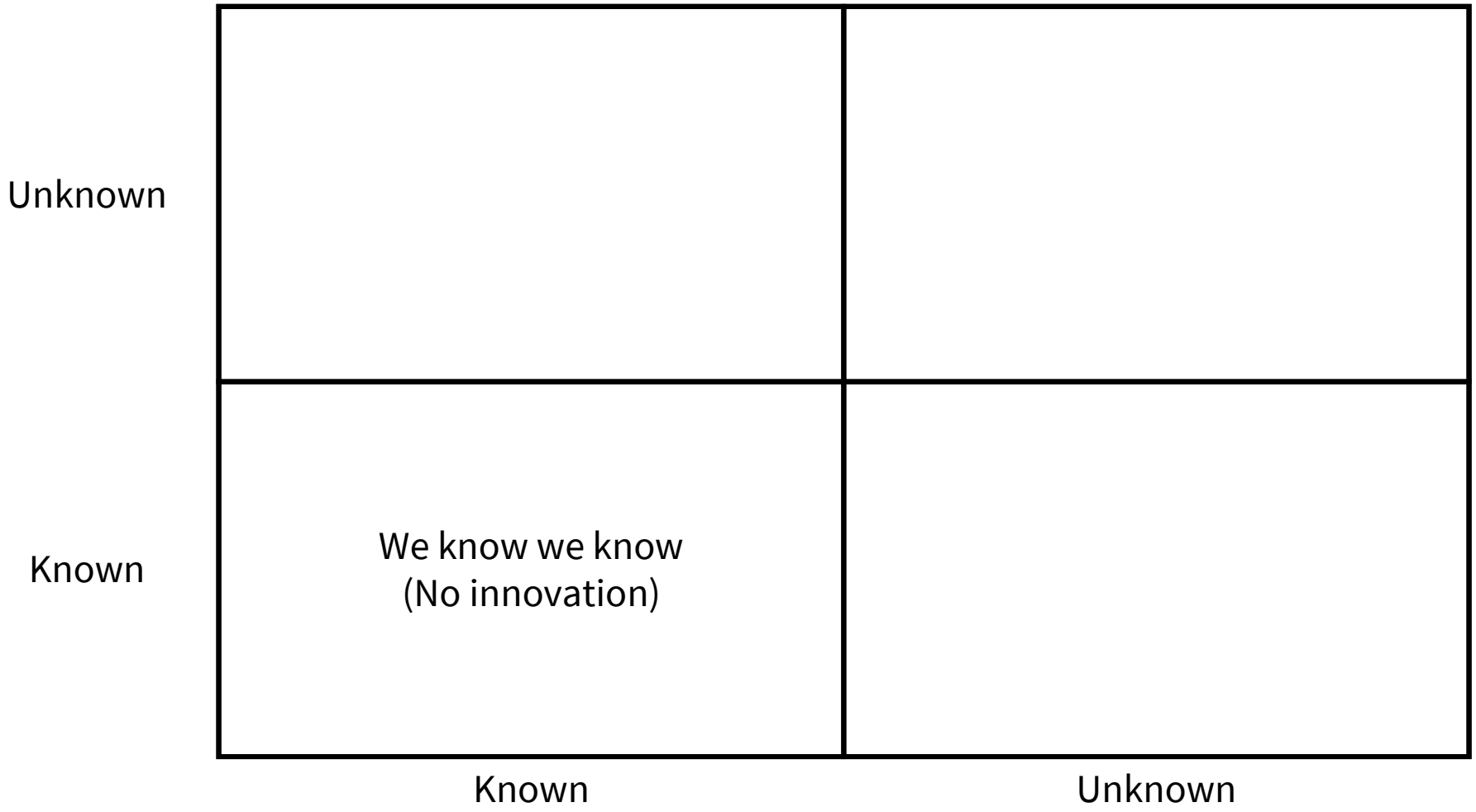
*As we know, there are known knows; these are things we know we know.*

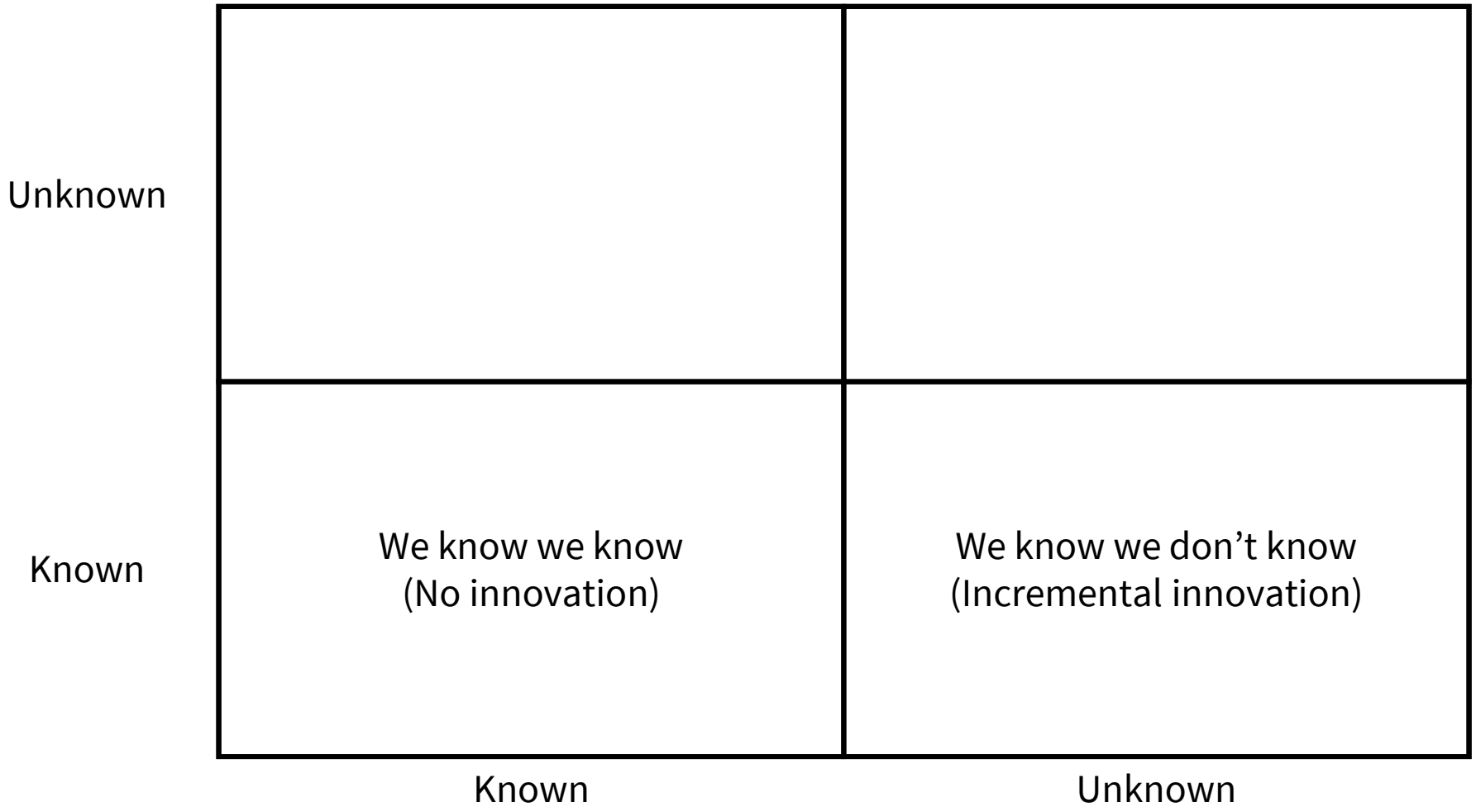
*We also know there are known unknowns; that is to say we know there are some things we do not know.*

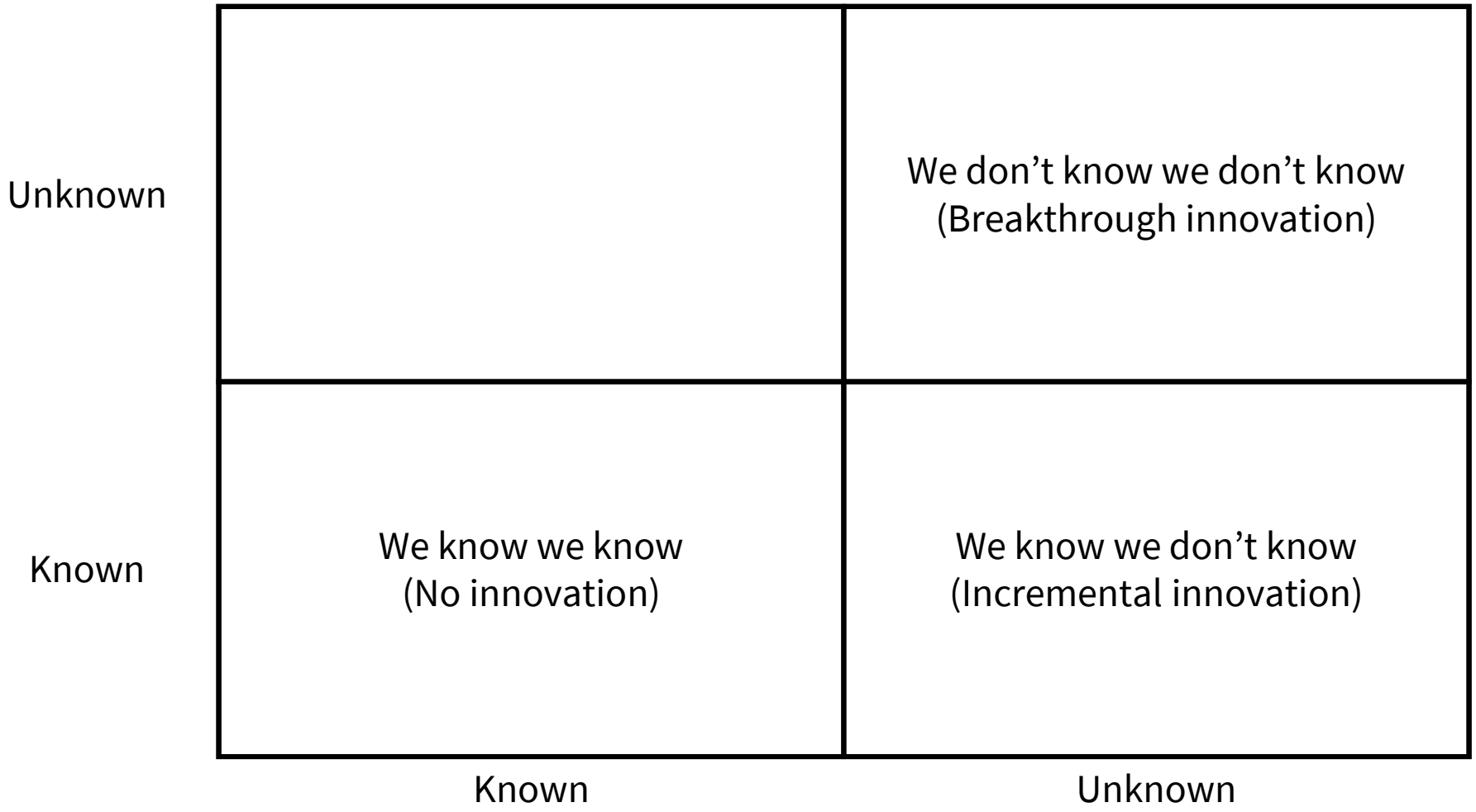
*But there are also unknown unknowns—the ones we don't know we don't know.*

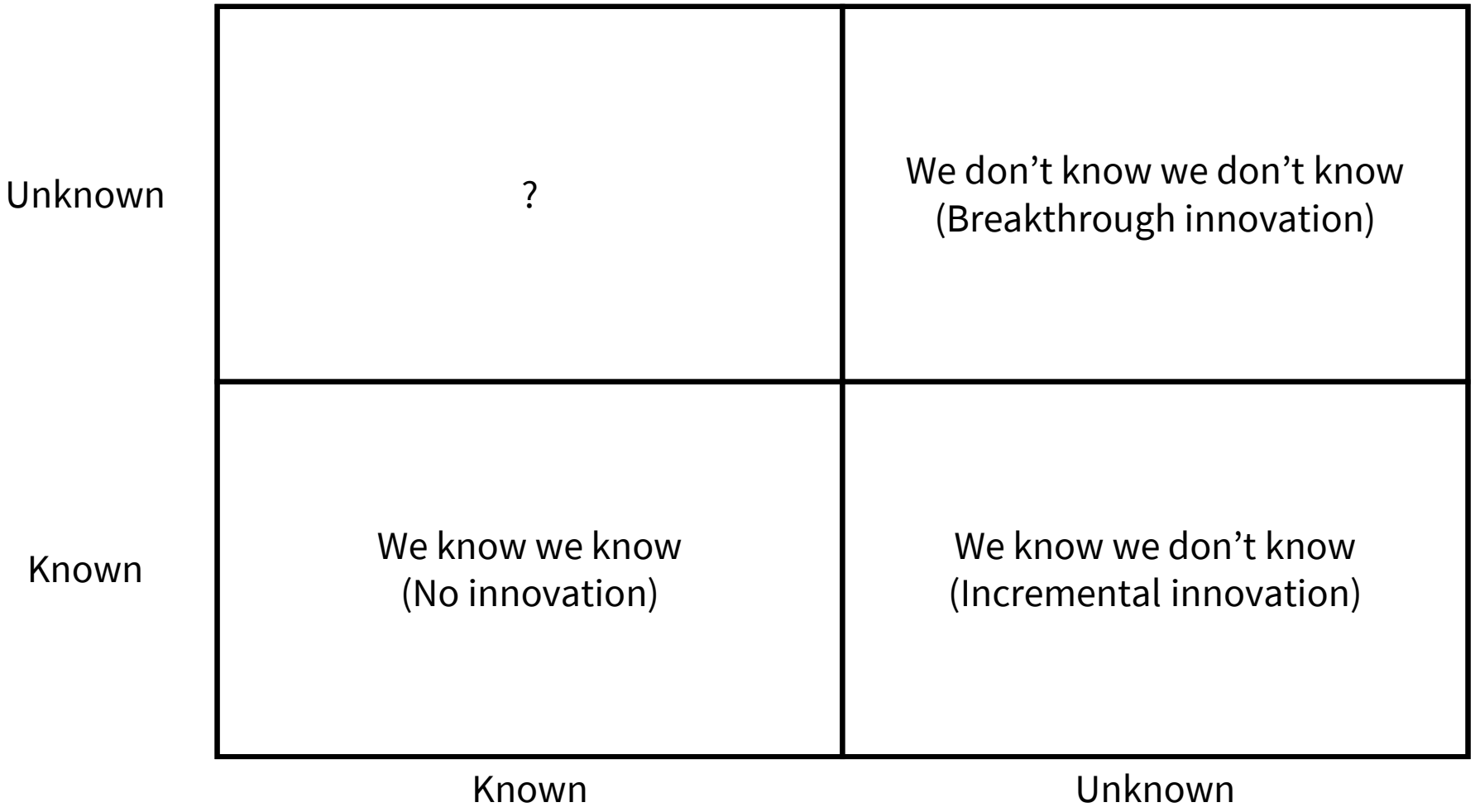
Donald Rumsfeld, US Secretary of Defense, 2002

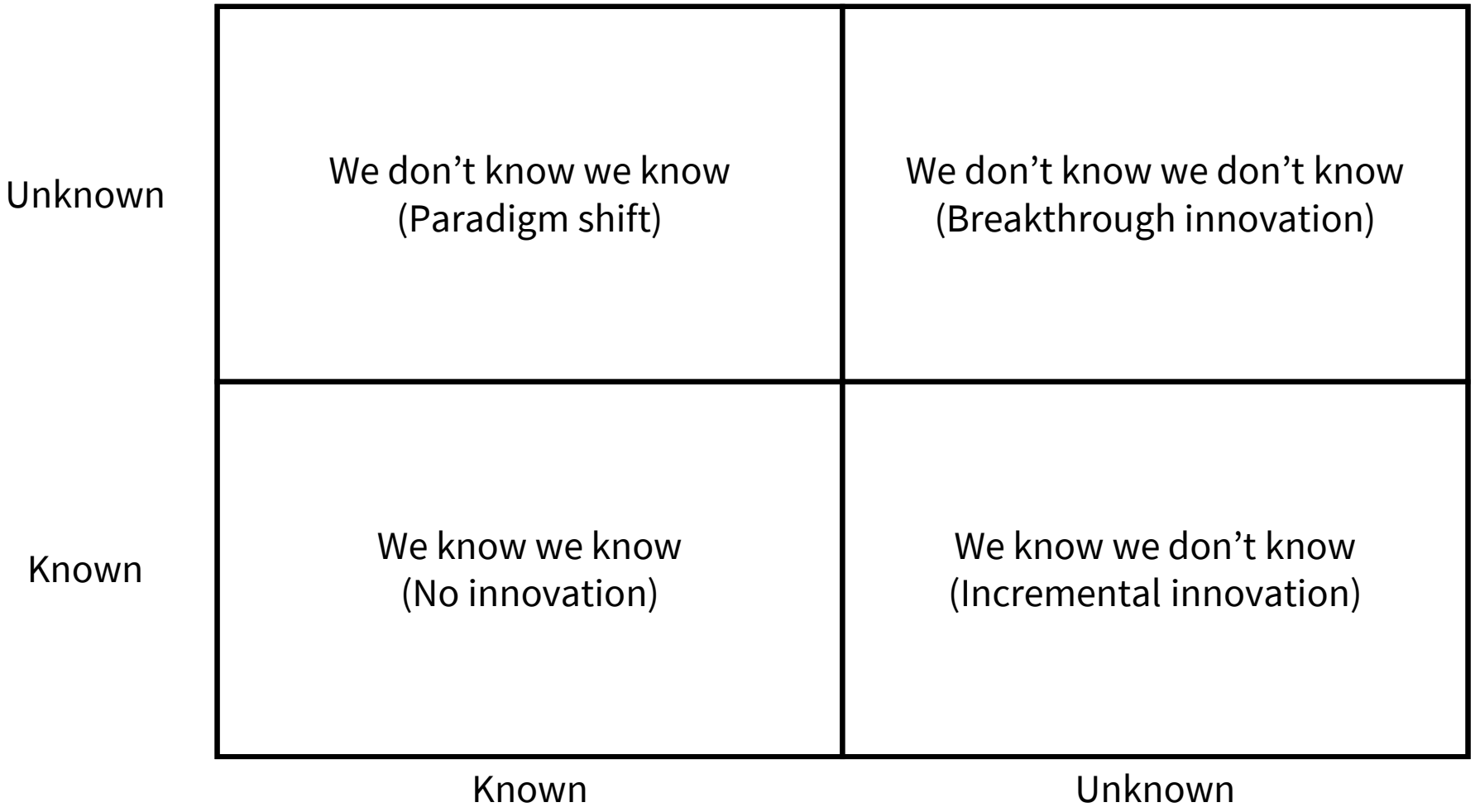
| | Known | Unknown |
| --- | --- | --- |
| Unknown | | |
| Known | | |


Unknown
Known
We know we know
(No innovation)
Known
Unknown


Unknown
Known
We know we know
(No innovation)
We know we don’t know
(Incremental innovation)
Known
Unknown


Unknown
Known
We don’t know we don’t know
(Breakthrough innovation)
We know we know
(No innovation)
We know we don’t know
(Incremental innovation)
Known
Unknown


Unknown
Known
?
We don’t know we don’t know
(Breakthrough innovation)
We know we know
(No innovation)
We know we don’t know
(Incremental innovation)
Known
Unknown


Unknown
Known
We don’t know we know
(Paradigm shift)
We don’t know we don’t know
(Breakthrough innovation)
We know we know
(No innovation)
We know we don’t know
(Incremental innovation)
Known
Unknown

| | | |
|---|---|---|
| Unknown | We don’t know we know<br>(Paradigm shift) | We don’t know we don’t know<br>(Breakthrough innovation) |
| Known | We know we know<br>(No innovation) | We know we don’t know<br>(Incremental innovation) |
| | Known | Unknown |

Where business as usual happens

| | | |
|---|---|---|
| Unknown | We don’t know we know<br>(Paradigm shift) | We don’t know we don’t know<br>(Breakthrough innovation) |
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| | Known | Unknown |

Where the magic happens

Where business as usual happens

Icon by Those Icons / flaticon.com

| | | |
|---|---|---|
| Unknown | **We don’t know we know (Paradigm shift)** | We don’t know we don’t know (Breakthrough innovation) |

Where the magic happens

Icon by Those Icons / flaticon.com

# Paradigm shifts

Newtonian physics

Your bedroom

Taylor Swift album

Cow shit

# Paradigm shifts

Newtonian physics → Relativistic physics

Your bedroom

Taylor Swift album

Cow shit

# Paradigm shifts

Newtonian physics → Relativistic physics → Quantum mechanics

Your bedroom

Taylor Swift album

Cow shit

# Paradigm shifts

Newtonian physics → Relativistic physics → Quantum mechanics

Your bedroom → Someone's hotel room (sharing economy)

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# Paradigm shifts

Newtonian physics → Relativistic physics → Quantum mechanics

Your bedroom → Someone's hotel room (sharing economy)

Taylor Swift album → On-demand music (servitization)

Cow shit

# Paradigm shifts

Newtonian physics → Relativistic physics → Quantum mechanics

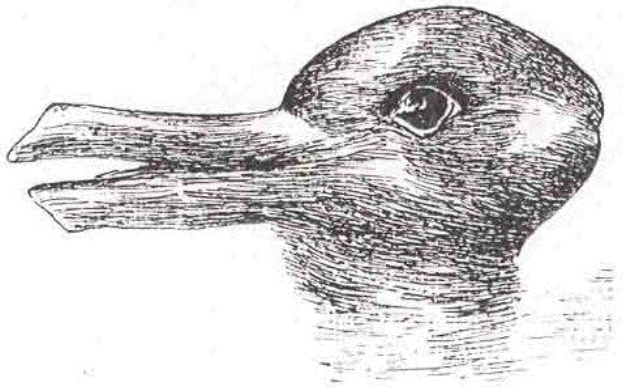
Your bedroom → Someone's hotel room (sharing economy)

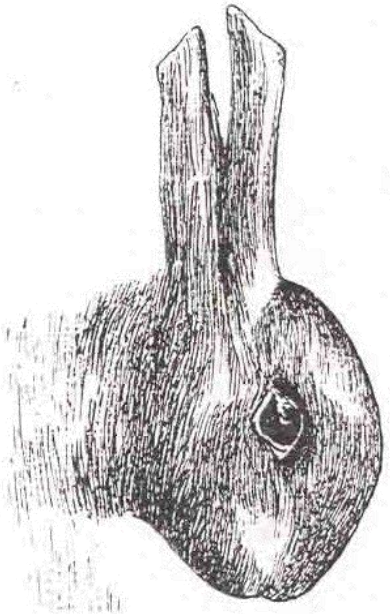
Taylor Swift album → On-demand music (servitization)

Cow shit → Building material (circular economy/frugal innovation)

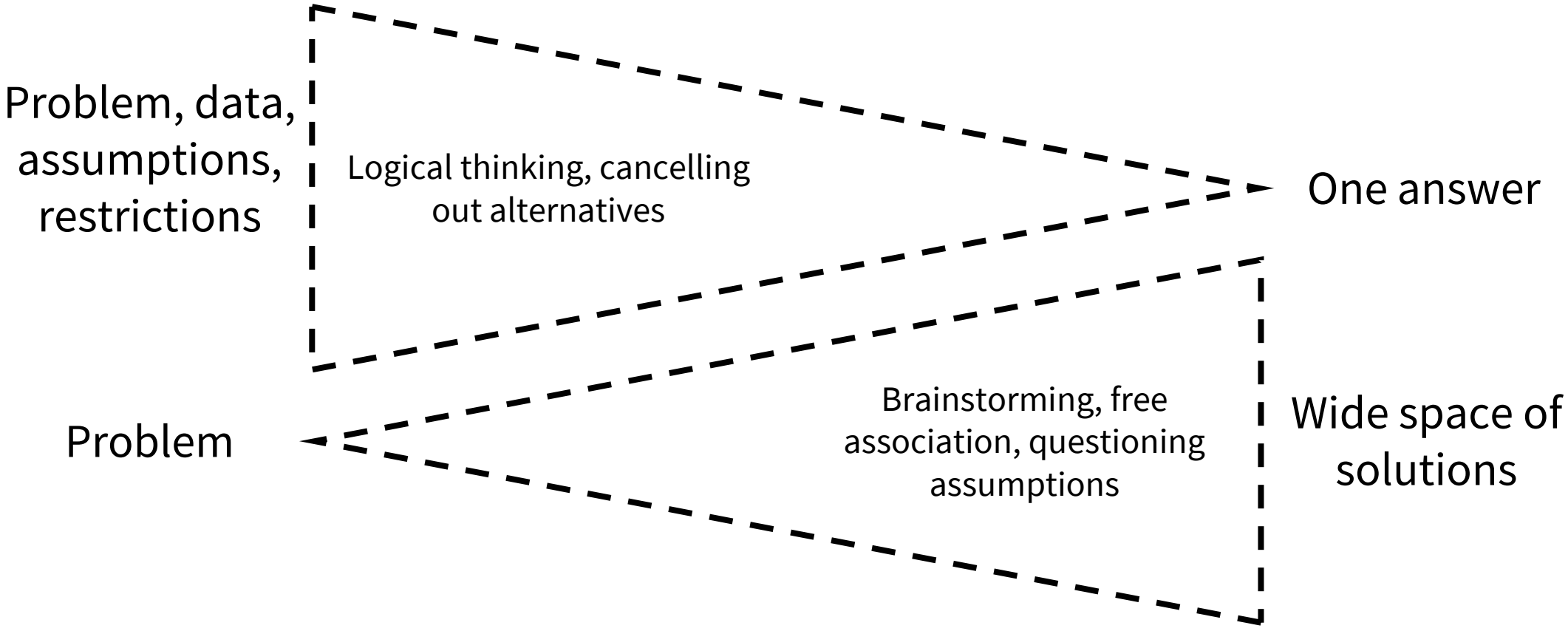
# How to shift your paradigm?

- A paradigm shift in your business or project requires often a paradigm shift in your thinking
- Our education system teaches us to think logically. However, sometimes coming up with transformative ideas requires thinking laterally.





# Achieving paradigm shift through lateral thinking



# Plan a holiday!

1. Pick a pair for you
2. Start planning a holiday. One gives suggestions, the other replies “yes, but…” to each suggestion
3. See where you end up in one minute

# Plan an innovative holiday!

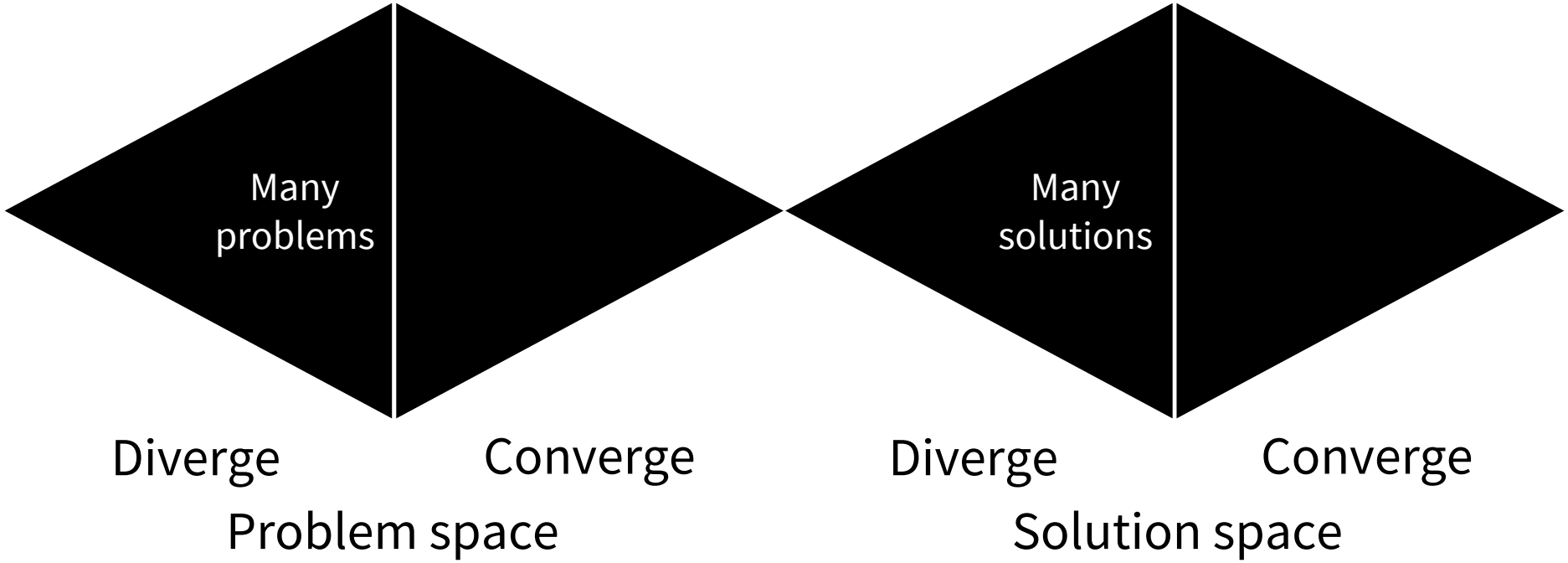
1. Pick a pair for you
2. Start planning a holiday. One gives suggestions, the other replies “yes, and…” to each suggestion
3. See where you end up in one minute

# Methods_1: Suspending judgement

Yes, but…

Yes, and…

# Methods_2: Diverging sessions




The “design thinking double diamond”

# Methods_3: Reversal

Images by VanjeenJF & Vlad Tchompalov / Unsplash

| | | |
|---|---|---|
| Unknown | We don’t know we know<br>(Paradigm shift) | **We don’t know we don’t know**<br>**(Breakthrough innovation)** |

Where the magic happens

Icon by Those Icons / flaticon.com

# Curiosity sparks breakthrough innovation

1. First *imagine*, and then create the world in which we want to live
2. Don’t be afraid to be wrong
3. Seek to actively question and break assumptions

# Methods_4: Scenario building

Image credits: Nicolas Lobos / Unsplash

# Methods_5: Parallel processes

*CLIC*
*VS.*
*FCC*

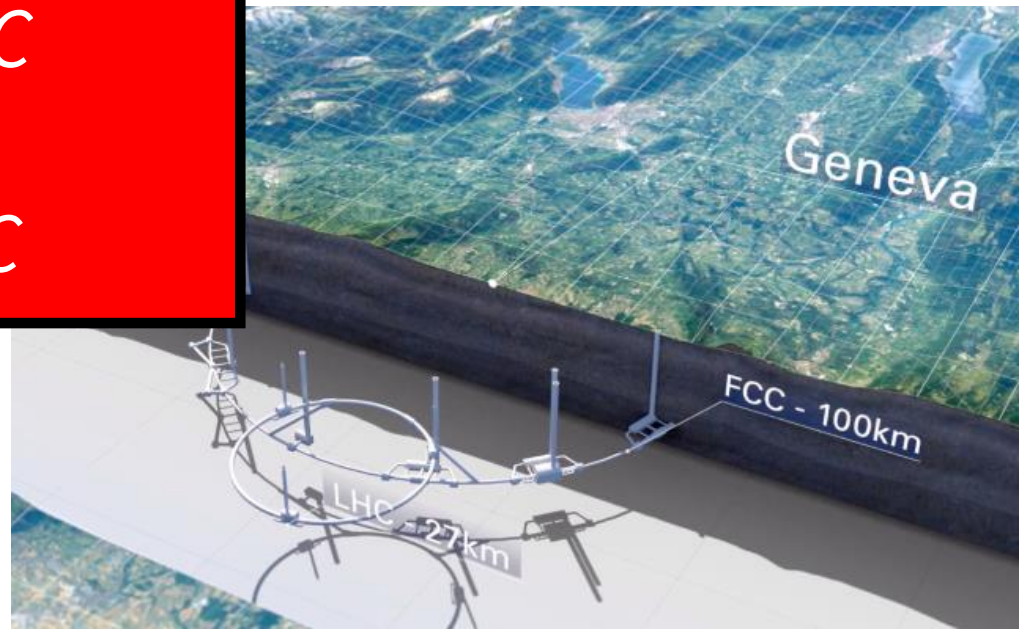



Image credits: CERN

# Methods_6: Random variable addition

amazon

Google

The Walt Disney Company

Image credits: Sandy Millar / Unsplash. Logos from Wikipedia

# Lateral thinking

| Logical thinking | Lateral thinking | Methods |
| --- | --- | --- |
| One is looking for the BEST POSSIBLE approach. | One is trying to produce as MANY ALTERNATIVES as possible. | Starting with quantity over quality |
| One stops when one comes to a promising approach. | One acknowledges the promising approach and may return to it later but goes on to generating others. | Parallel processes, internal competition |
| One works within the constrained box of familiarity | One explores new boxes and possibilities | Scenario building, random variable addition |
| One considers only reasonable alternatives. | One entertains also crazy ideas | Refrain judgement (“yes, and…” NOT “yes, but”); |

CERN Ideas