

Uncertainty in water management

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**“Advances for Flood Forecasting and the Implications for Risk Management”
May 25-26, 2010. Alkmaar, The Netherlands**

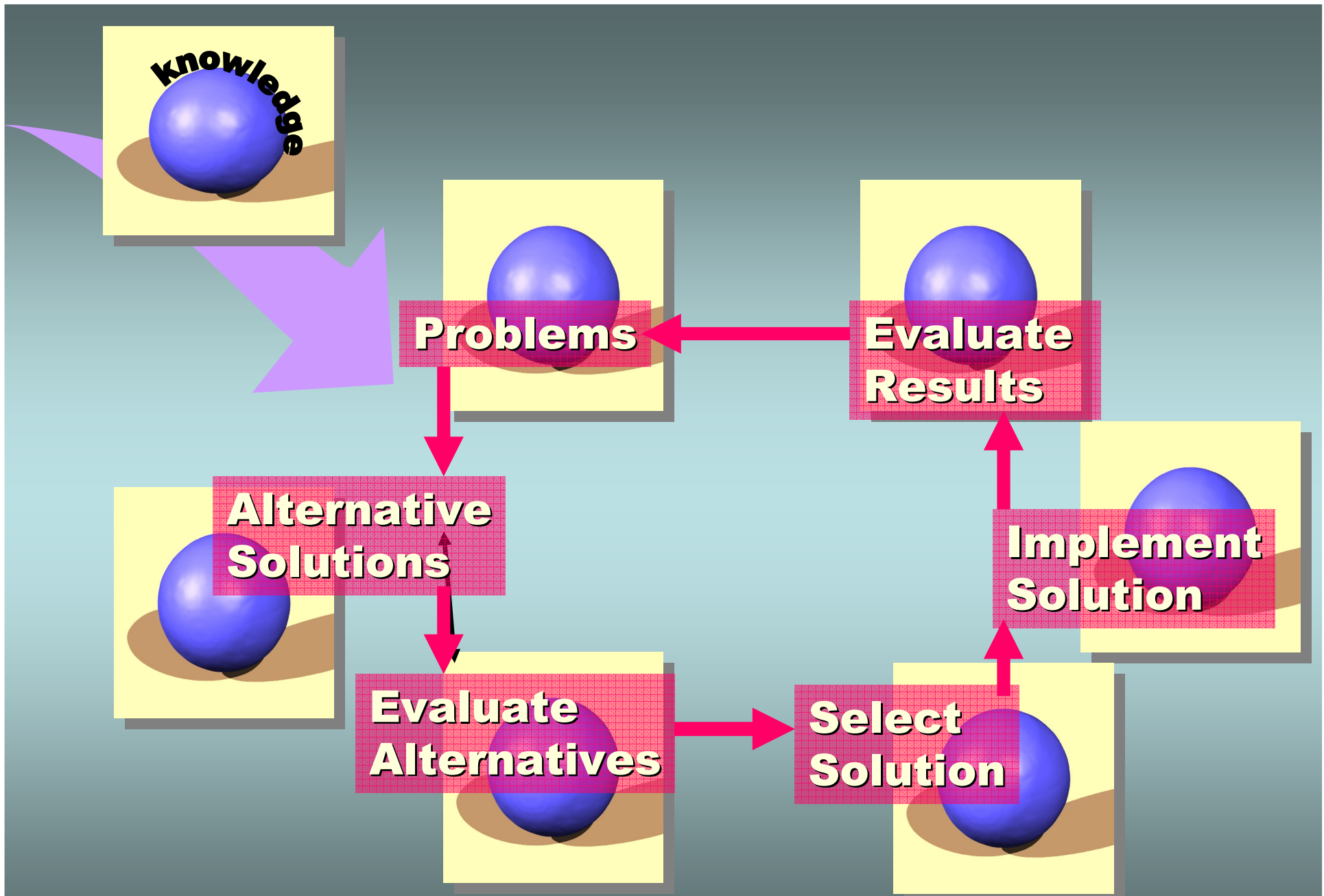
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Variability

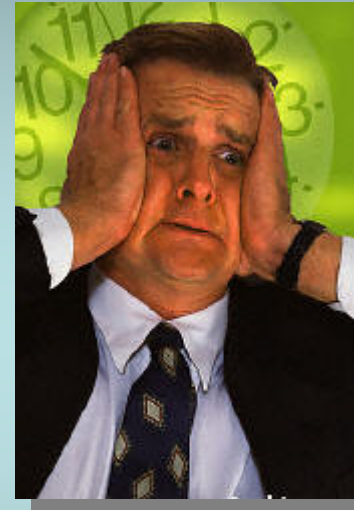
Measurement errors

Information ...

Too little Too much

Too complex

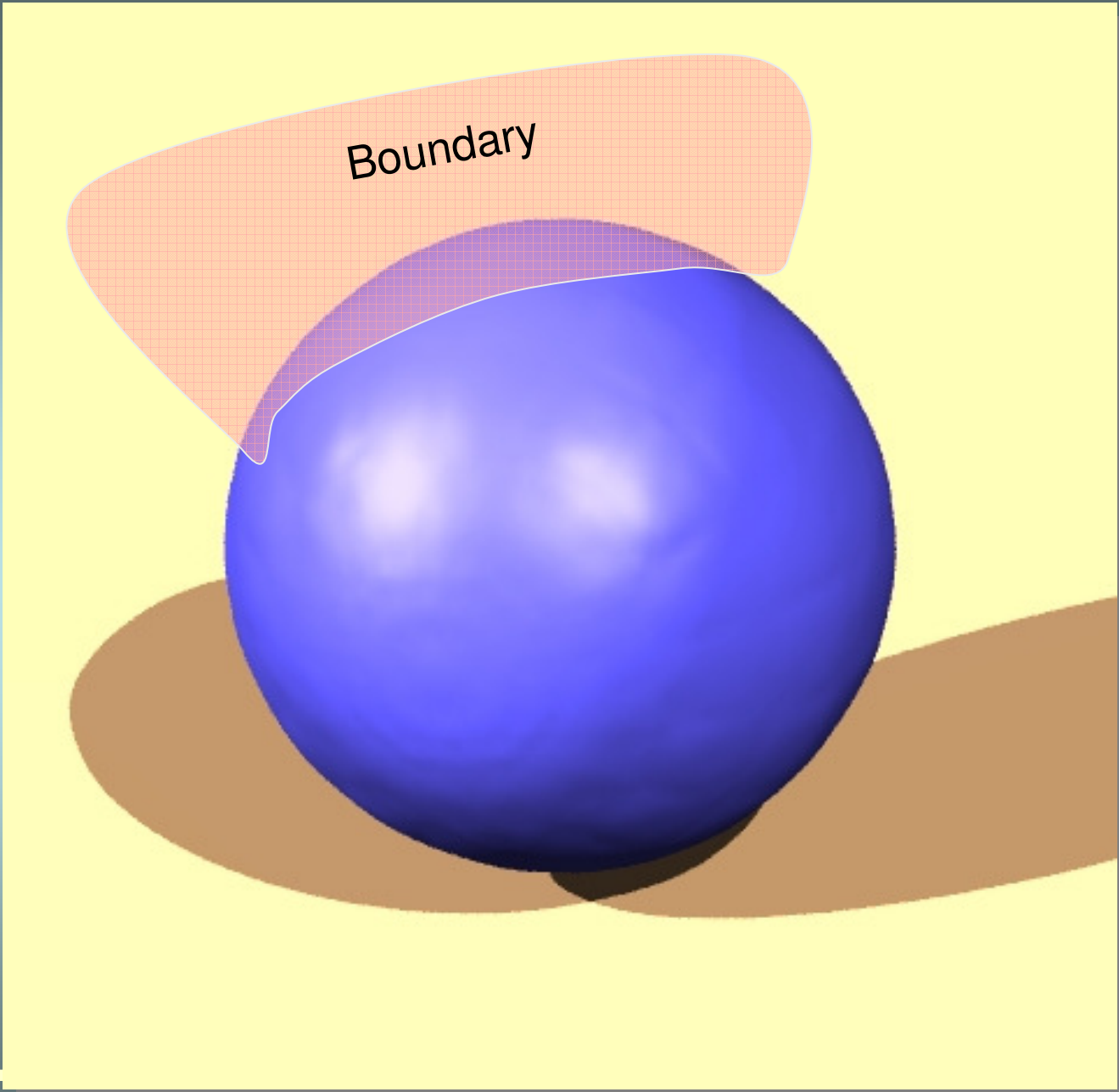
Lack of theory



Things that are ignored

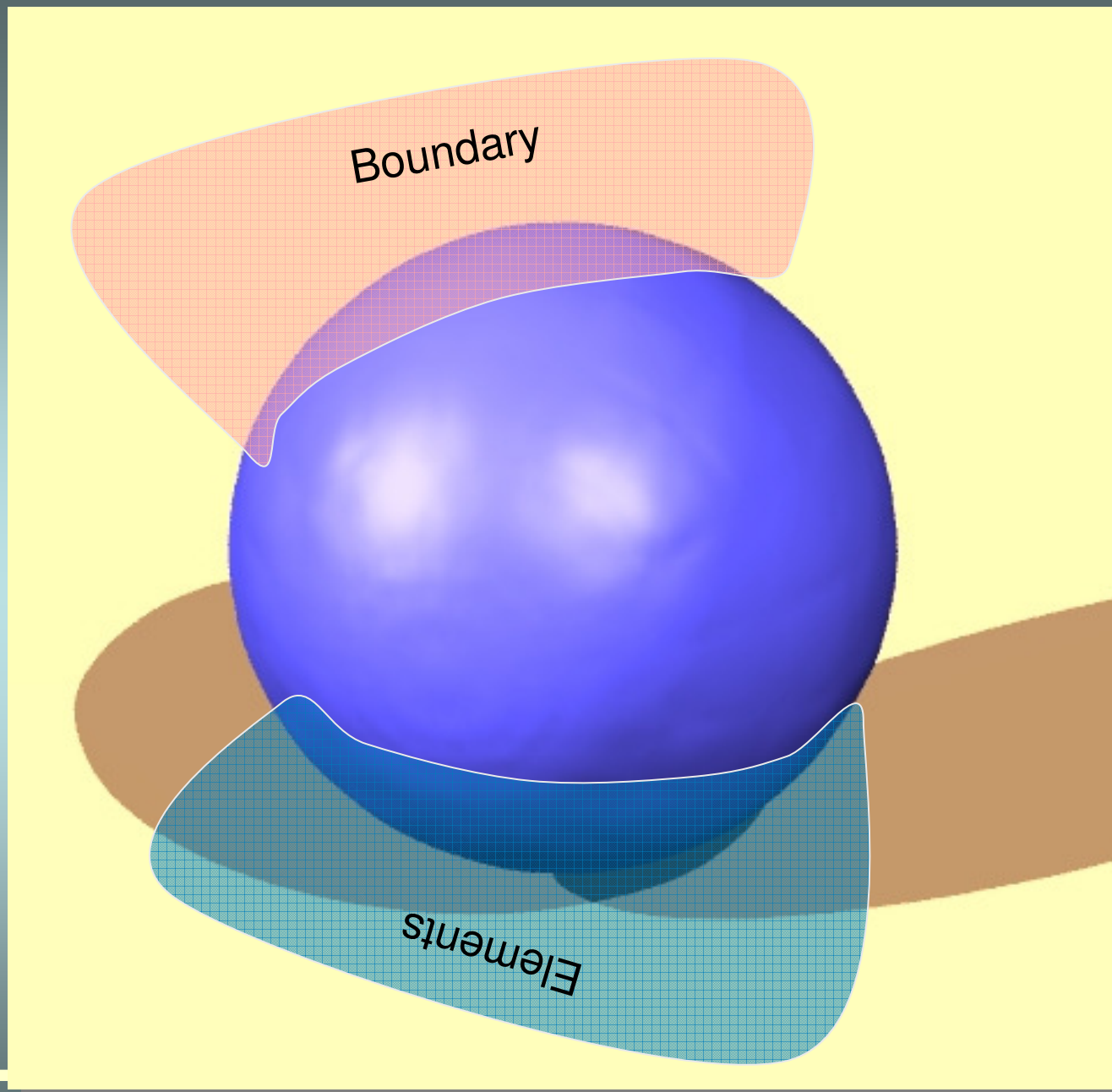
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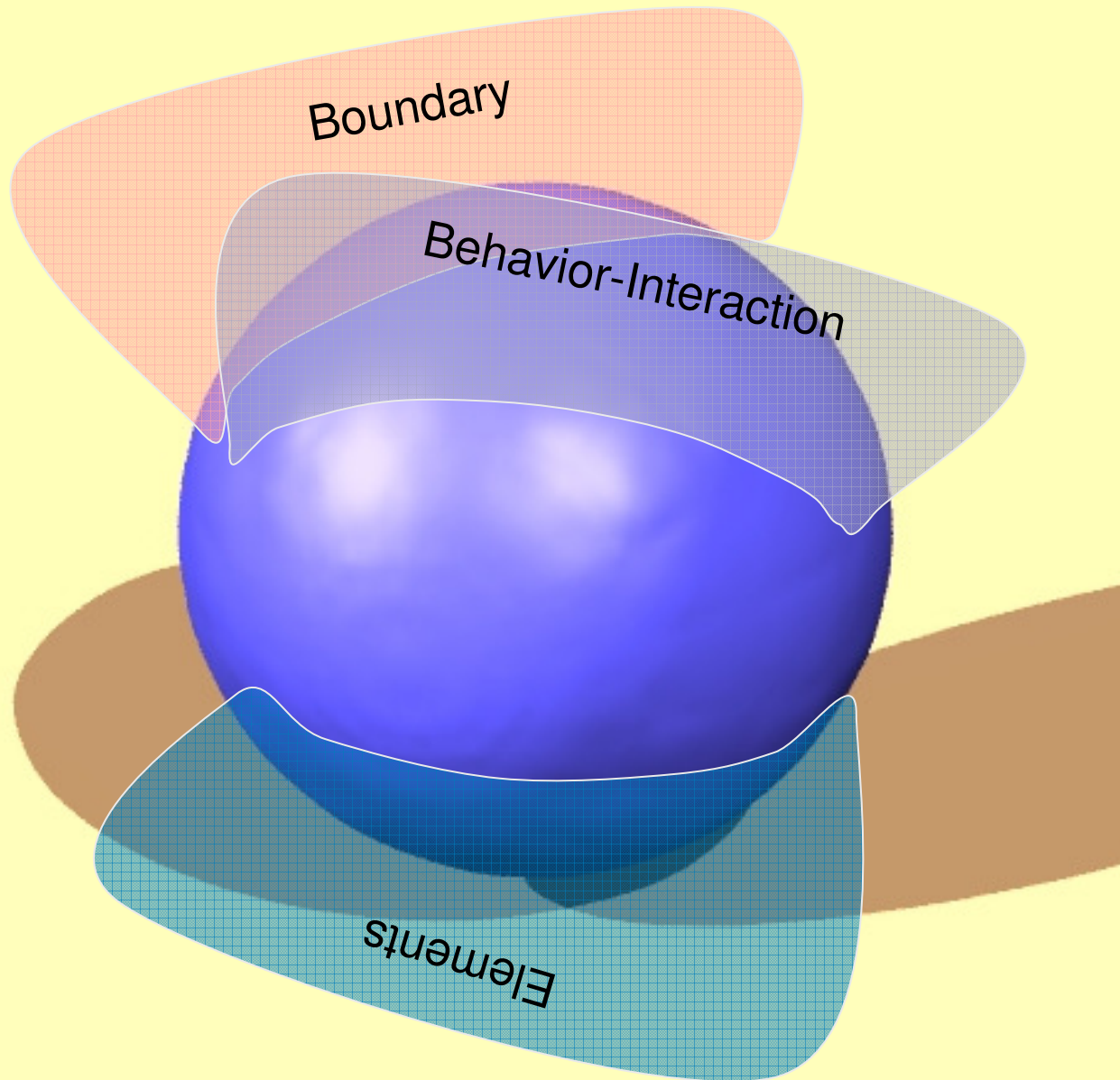
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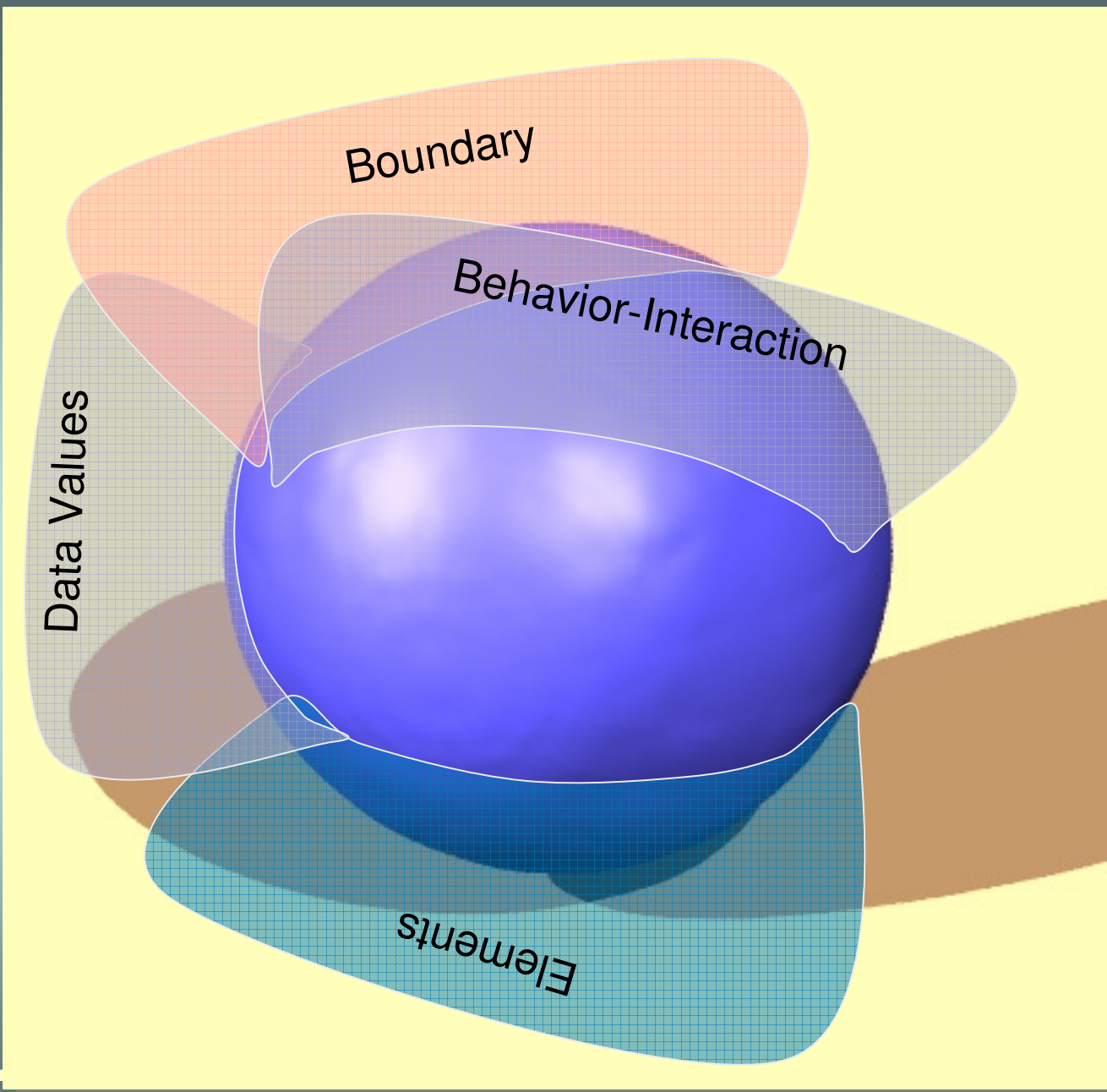
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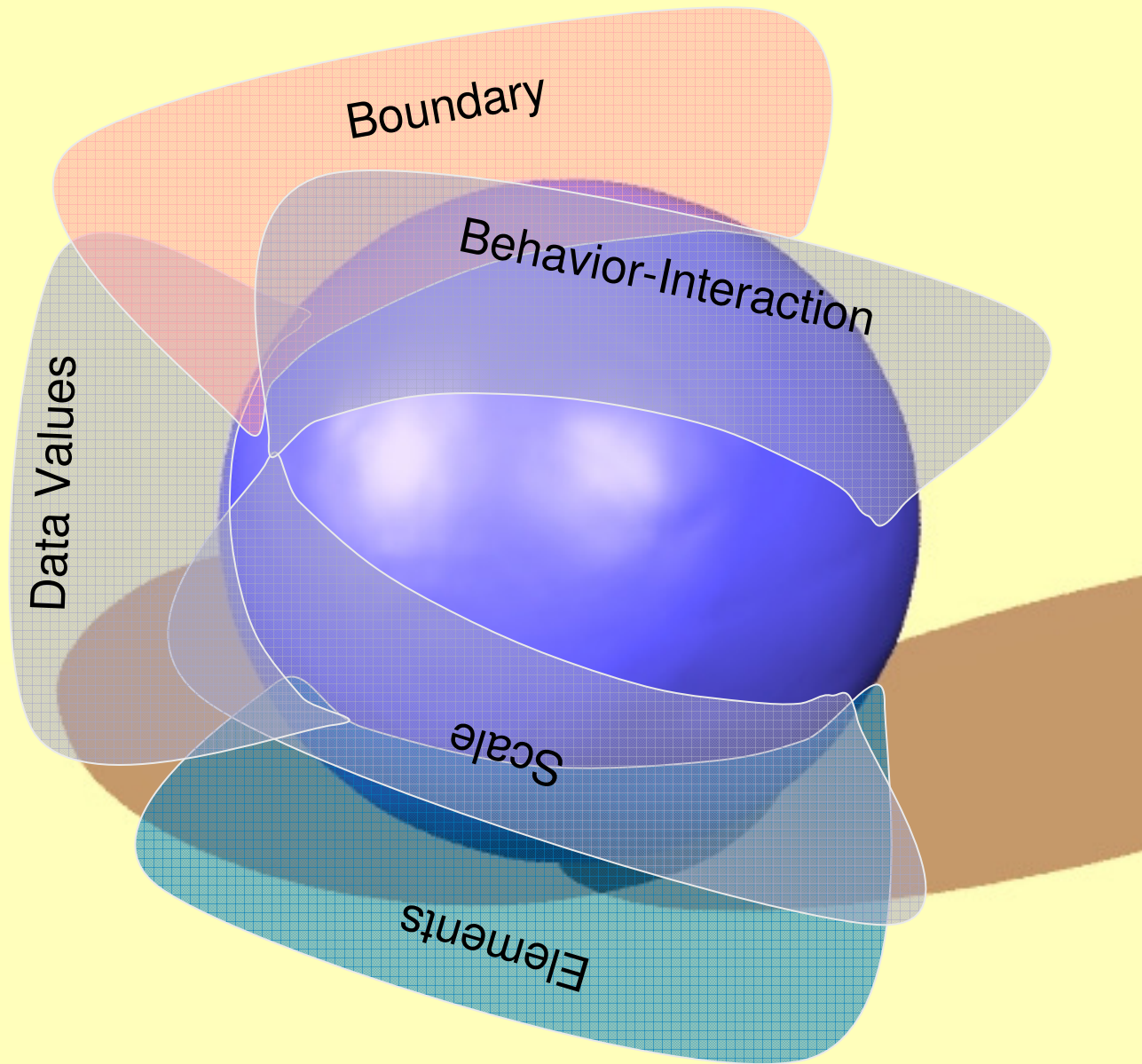
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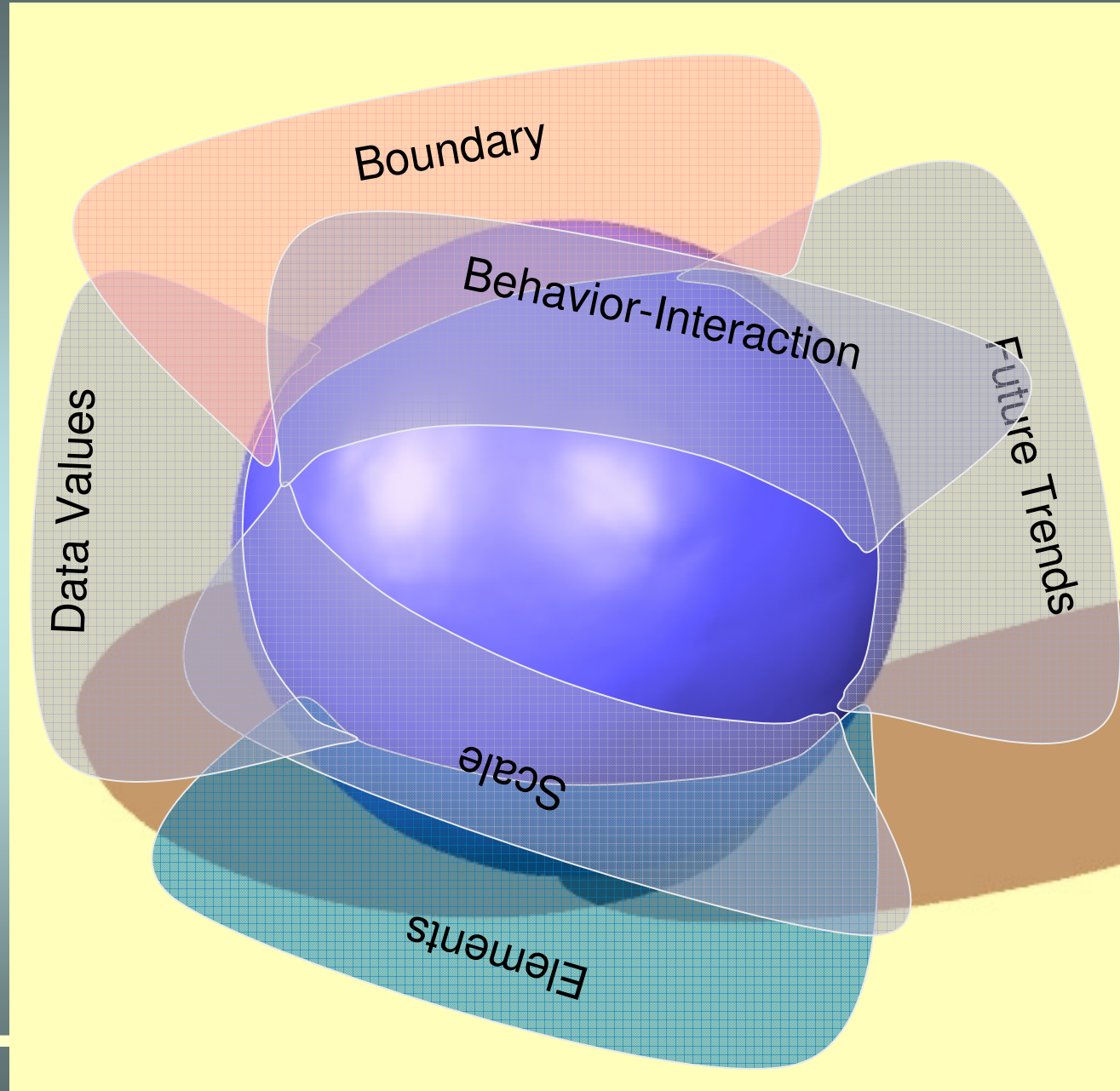
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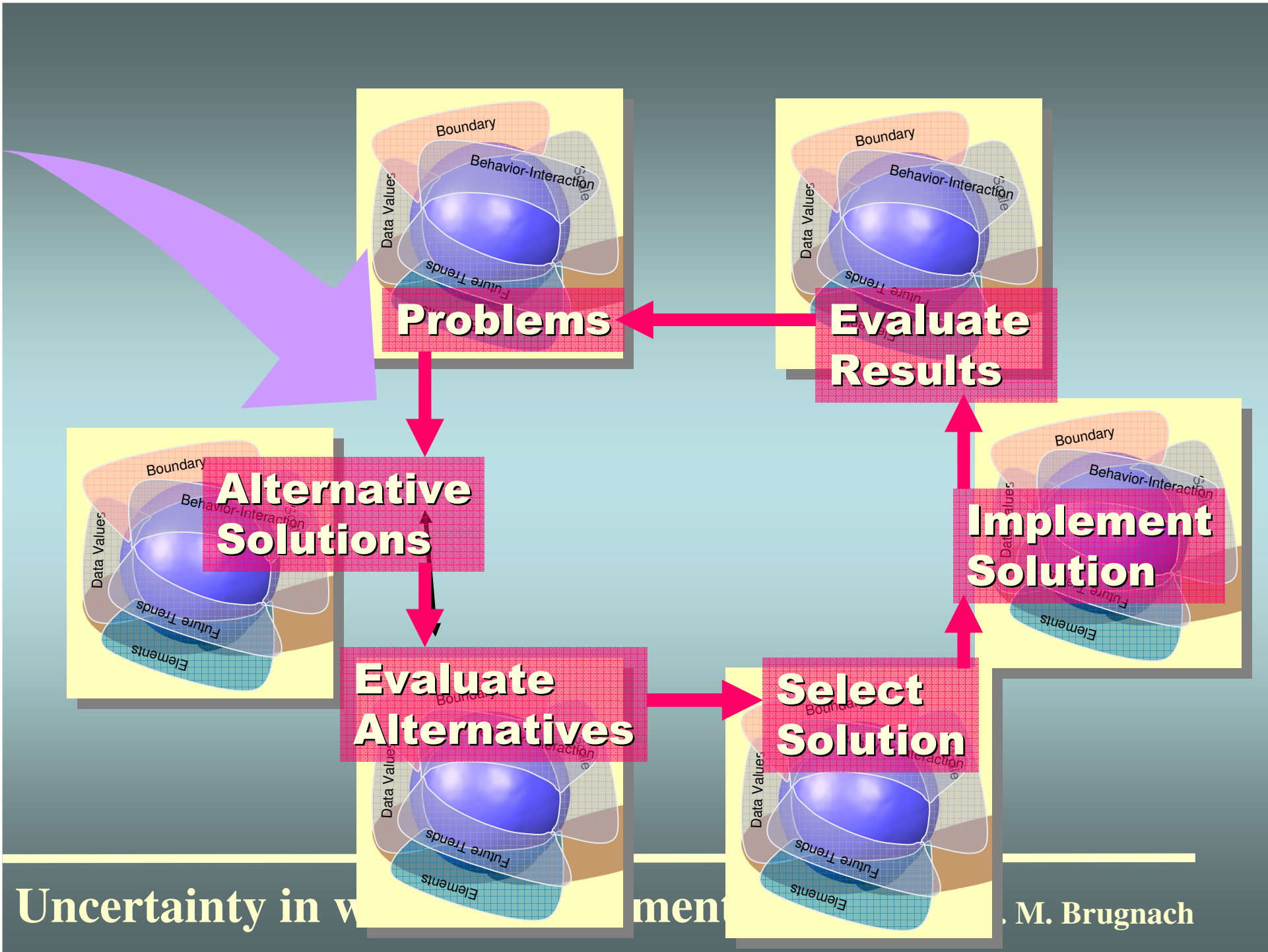
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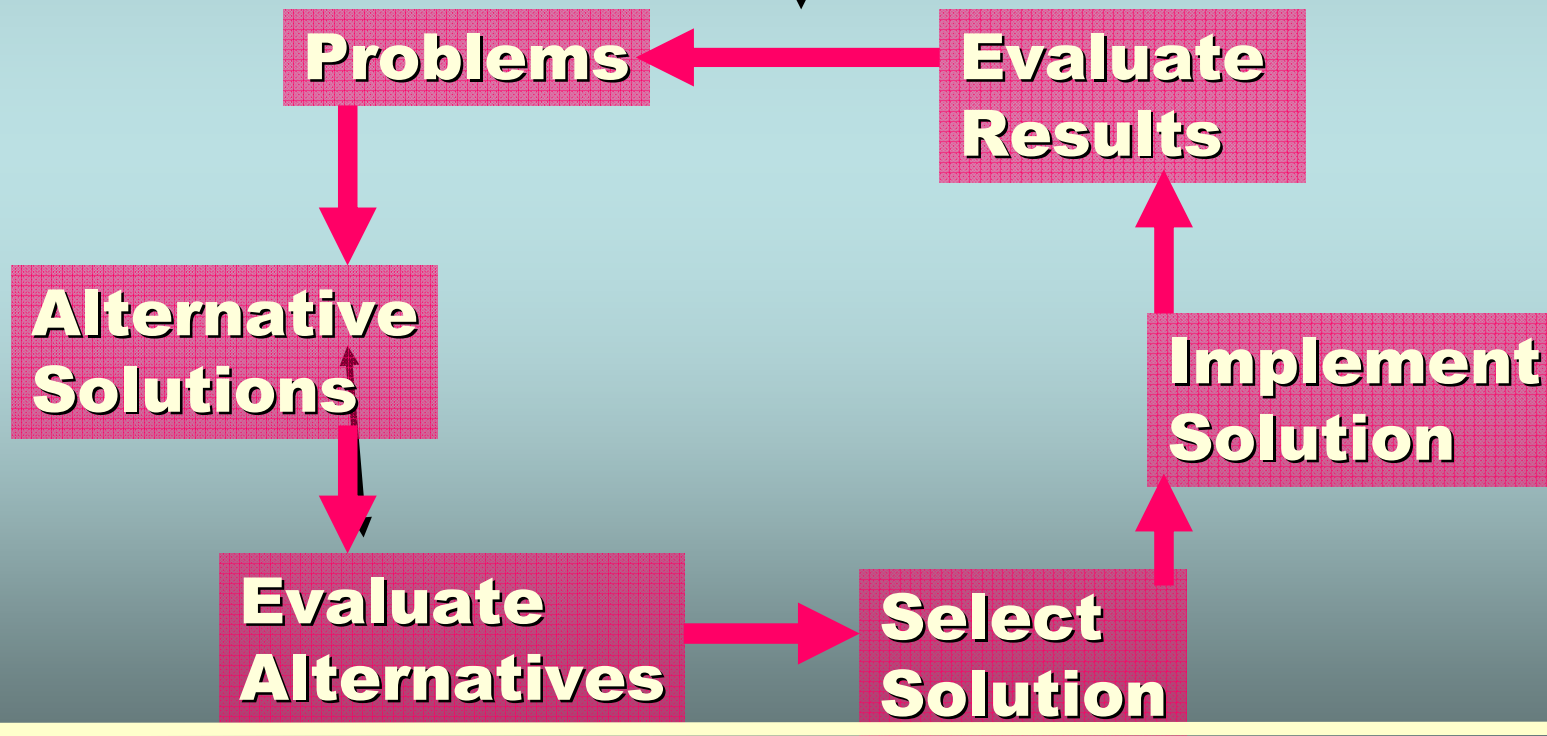
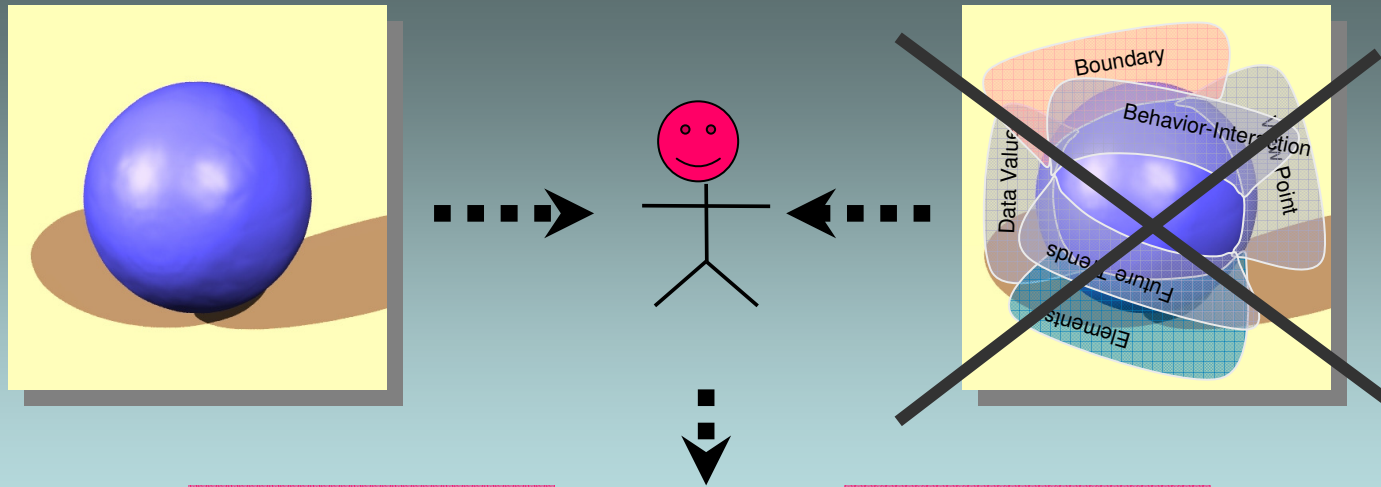




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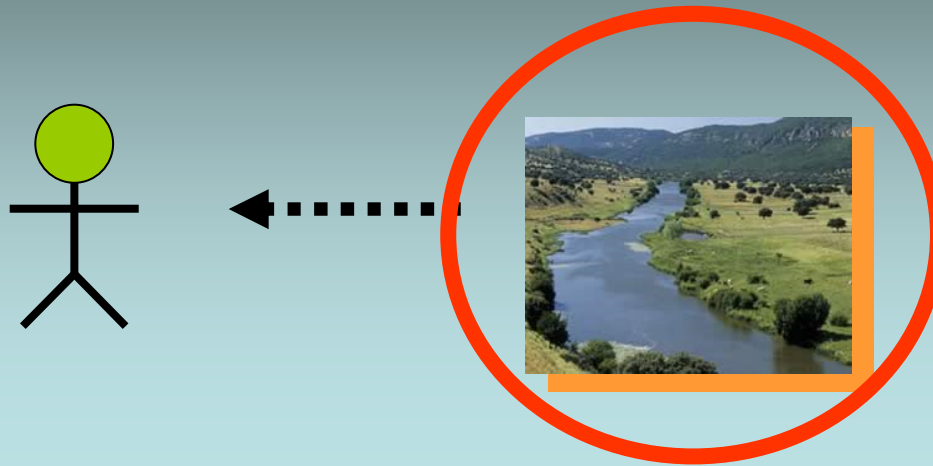


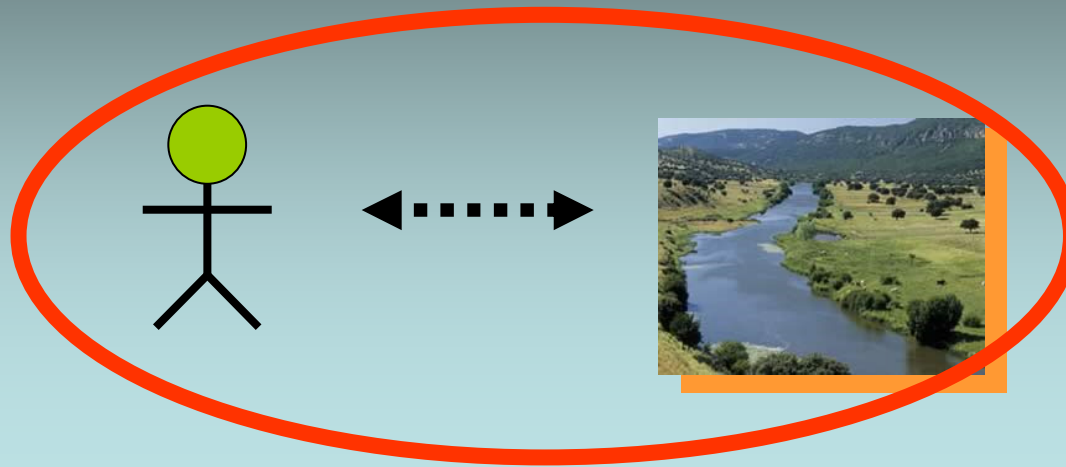


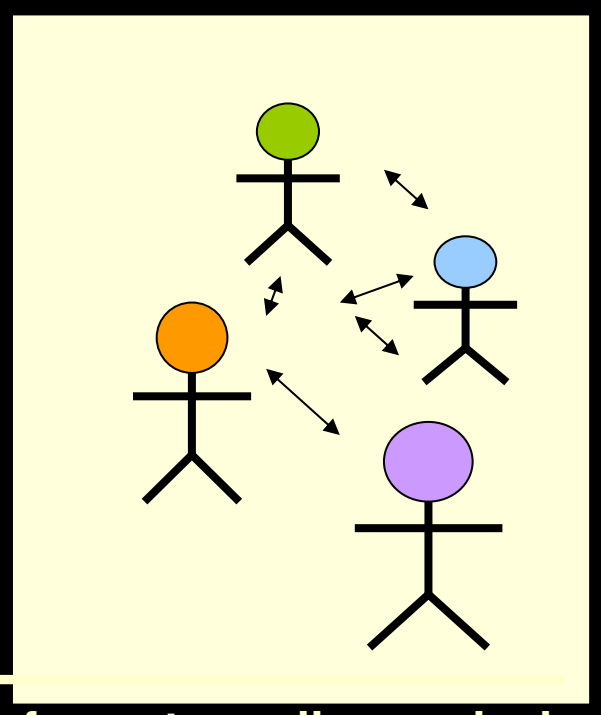
**Uncertainty = Not knowing enough
(Information Deficit)**

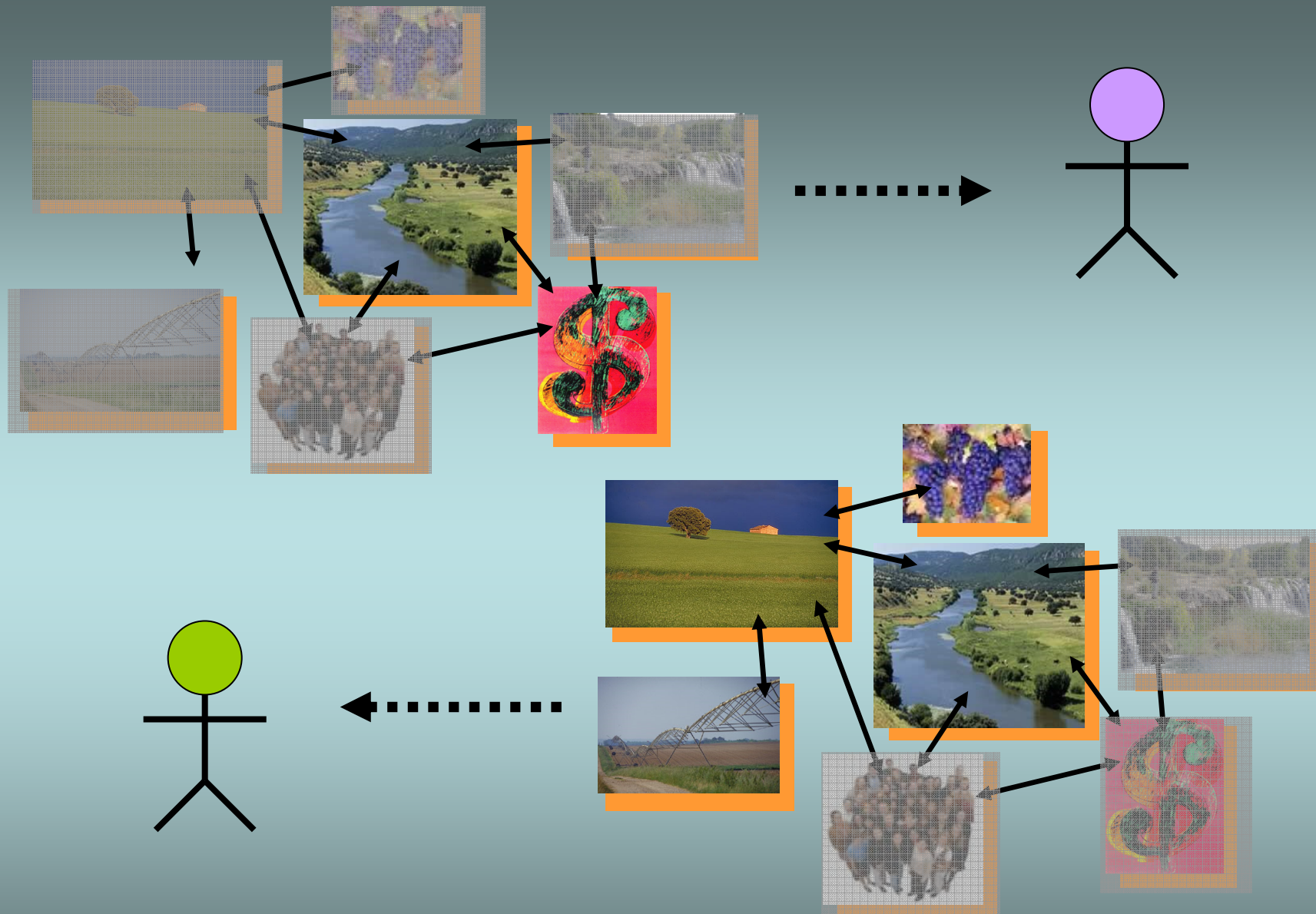


**More research,
collect better data,
uncertainty analyses
etc.**



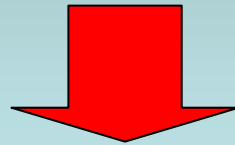






There can be more than one sensible way of framing a problem, resulting in ambiguities about what the problem is and what its solution

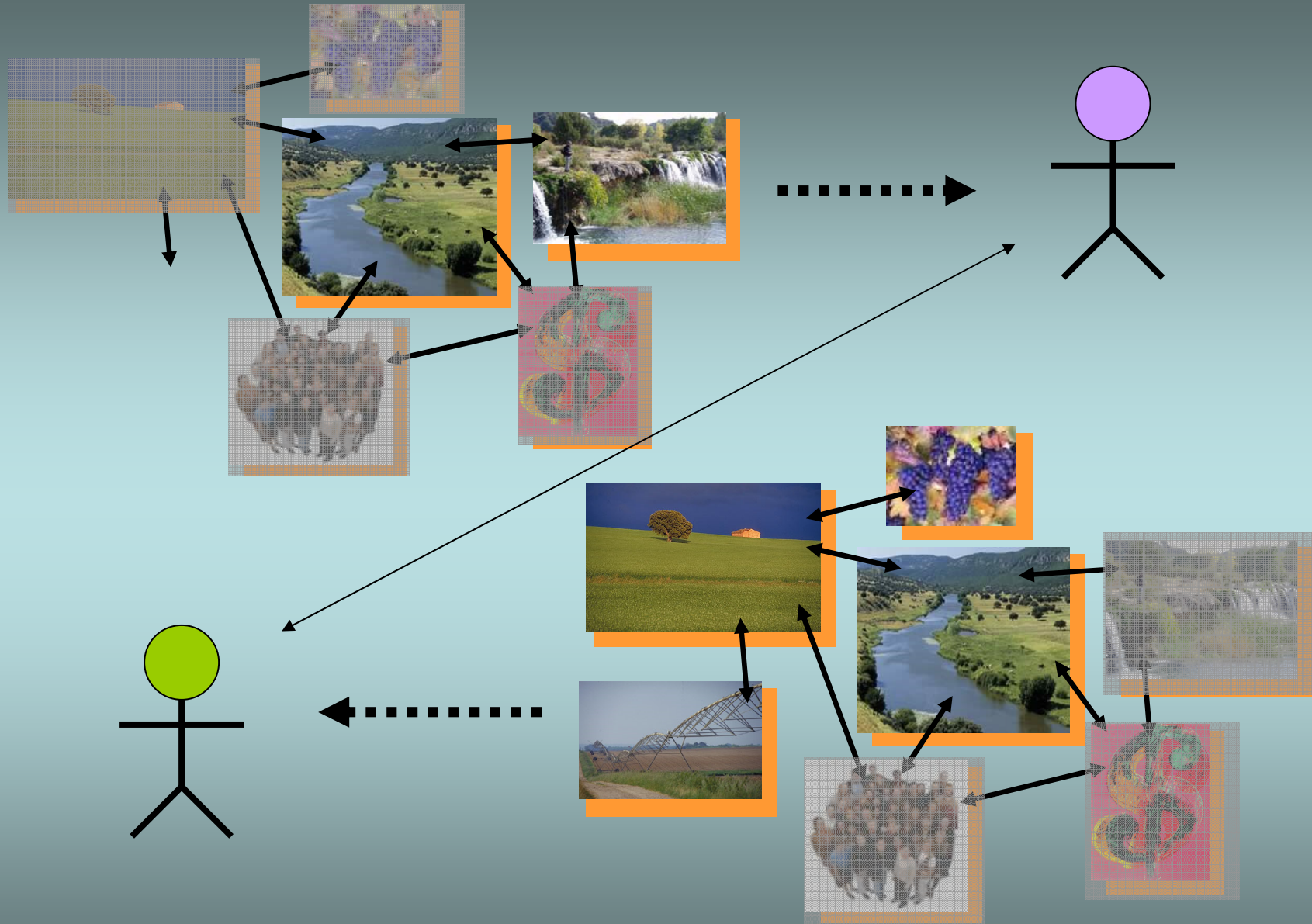
There are many different ways of framing a problem



Ambiguity may result from the encounter of multiple frames that are incompatible or not in complete agreement

In these situations it is not clear:

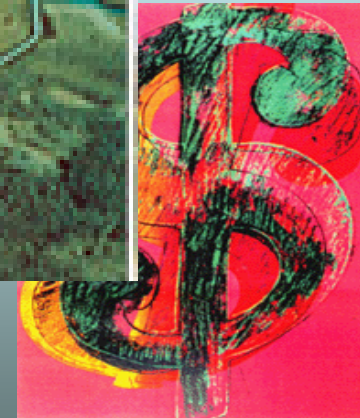
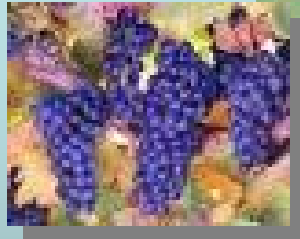
- **First, if there is a problem**
- **Second, if it is clear that there is a problem, it may not be so clear what the problem is**
- **Or, what it's solution is**



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An example. The Upper Guadiana Basin



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**Uncertainty = Not knowing enough
(Information Deficit)**

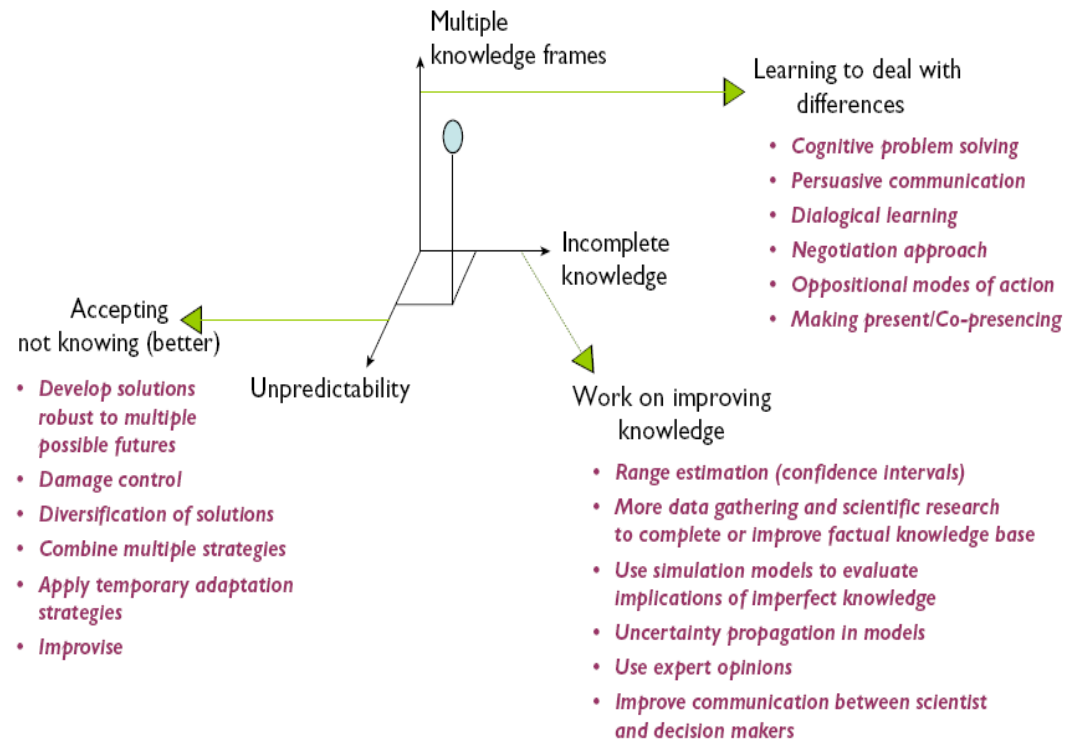
Uncertainty = Knowing differently

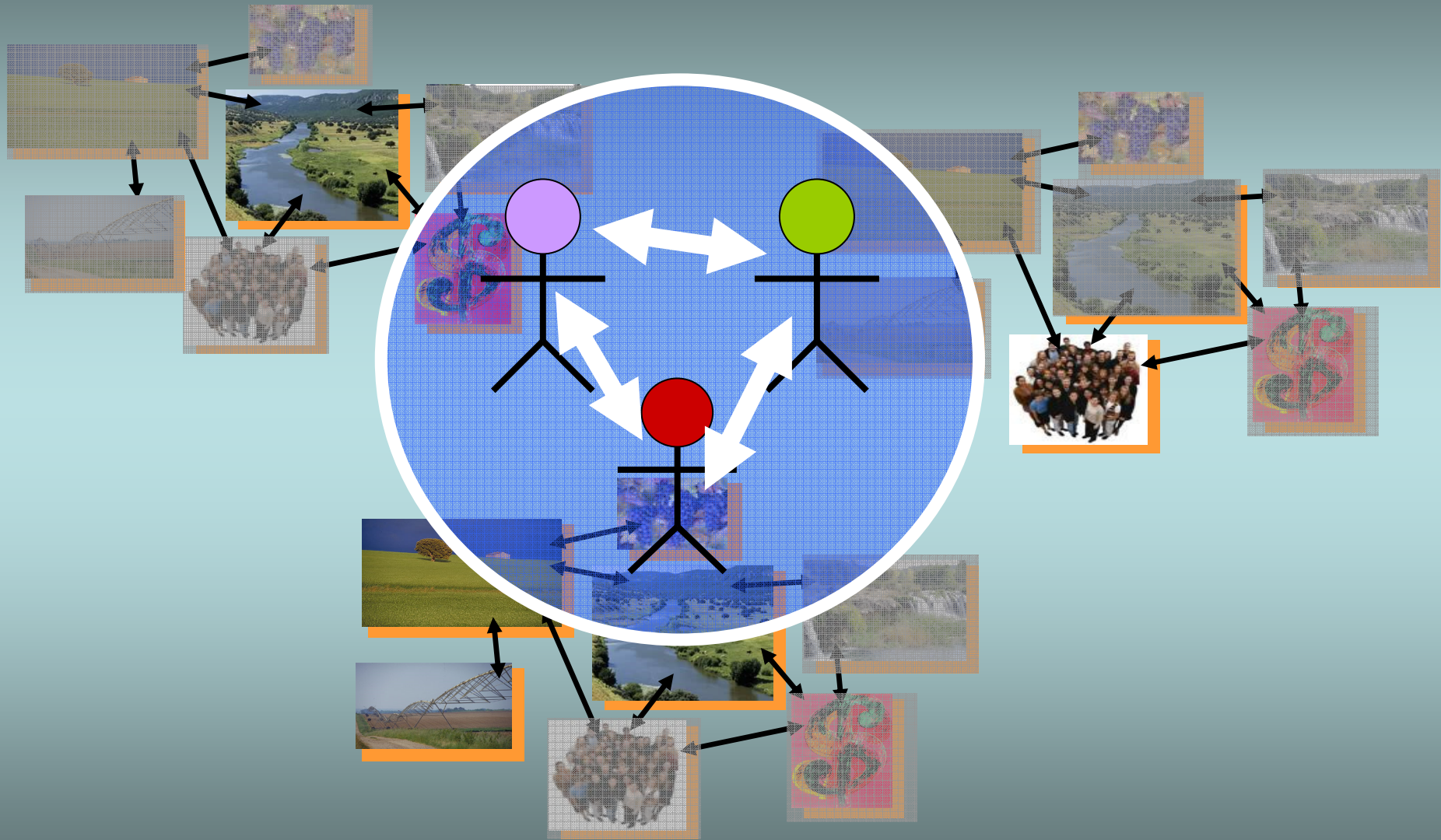
Uncertainty = Knowing differently

More information is not always better

- Unpredictability
- Incomplete knowledge
- Multiple knowledge frames: Ambiguity

Strategies to deal with uncertainty





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Brugnach M., P. van der Keur, J. Mysiak, H.J. Henriksen. Uncertainty in water management. In NeWater Guidebook for the Adaptive Water Resource Management.

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