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'Good' is Better than 'Best': Strategic Decisions with Uncertain Scientific Models

§ **The problems of uncertainty:**
- Design or decide. • Robustness to noise and info-gaps. • Opportuneness: exploit windfall.
- Satisfice or optimize.

§ **Information-gap uncertainty:**
- Uncertainty is a limitation of knowledge.
- Uncertainty is a gap between what is known and what could be known.
- Surprises and ignorance.

§ **Models:** • Characterize reality. • Attributes of model correspond to attributes of reality.

§ **Model-based decision:** adapt decision to attributes of model.

§ **Optimal model-based decision:** Use best model to choose decision with best outcome.

§ **Fallacy of optimal model-based decision:**
- Severe uncertainty:
  - Best model errs seriously.
  - Some model attributes are **correct.**
  - Some model attributes **err greatly.**
- Best-model optimization:
  - Exploits **all model attributes** to the extreme.
  - Vulnerable to model error.

§ **Resolution:** robust-satisficing
- Trade performance for robustness.
- Satisfice performance. • Optimize robustness to uncertainty.

§ **Robust-satisficing syllogism:**
- Adequate performance must be attained.
- High reliability of adequate performance preferred over Low reliability of optimal performance.
- Max reliability of adequate performance is best.

§ **Trade-off:** • Robustness vs. performance. • Pareto efficiency.

§ **Preference reversal:** crossing of robustness curves.

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