

# Decision-Making Foundations in Cognition and Probability

by Harvey Langholtz, Ph.D. (I welcome your suggestions, comments, and thoughts. [hjlang@wm.edu](mailto:hjlang@wm.edu))



## Why this book now?

Until now, books on decision theory and decision making have primarily come from one of two disciplines – Psychology or Management Science. Within Psychology, the focus has been on normative and descriptive models. Management Science offers prescriptive mathematical models to determine optimal solutions to real-world practical problems. This book will link these two domains, bridge this gap, and also include related topics.



## Section I Prescriptive Models and Foundations of Decision Making

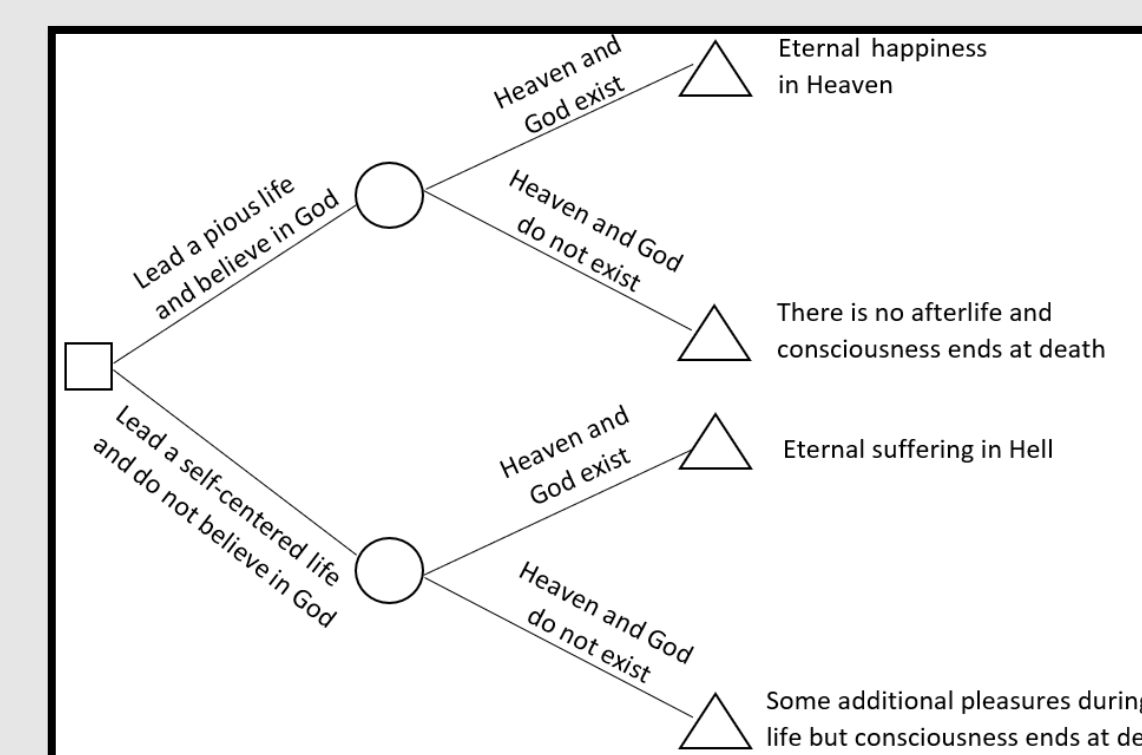
**Chap 1:** Introduction to Decision Theory and Decision Making

**Chap 2:** Thinking like a gambler:

We already intuitively use decision-making logic and basic math without realizing it

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**Chap 3:** Using decision trees to see through the forest ahead

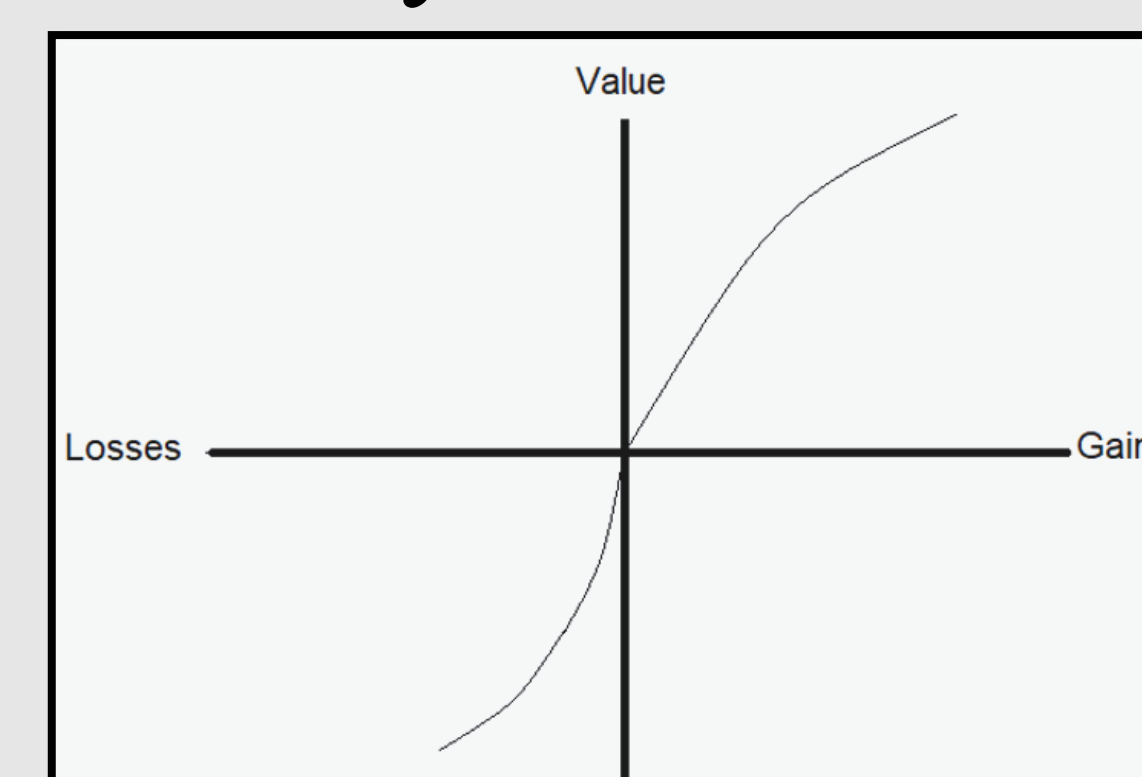
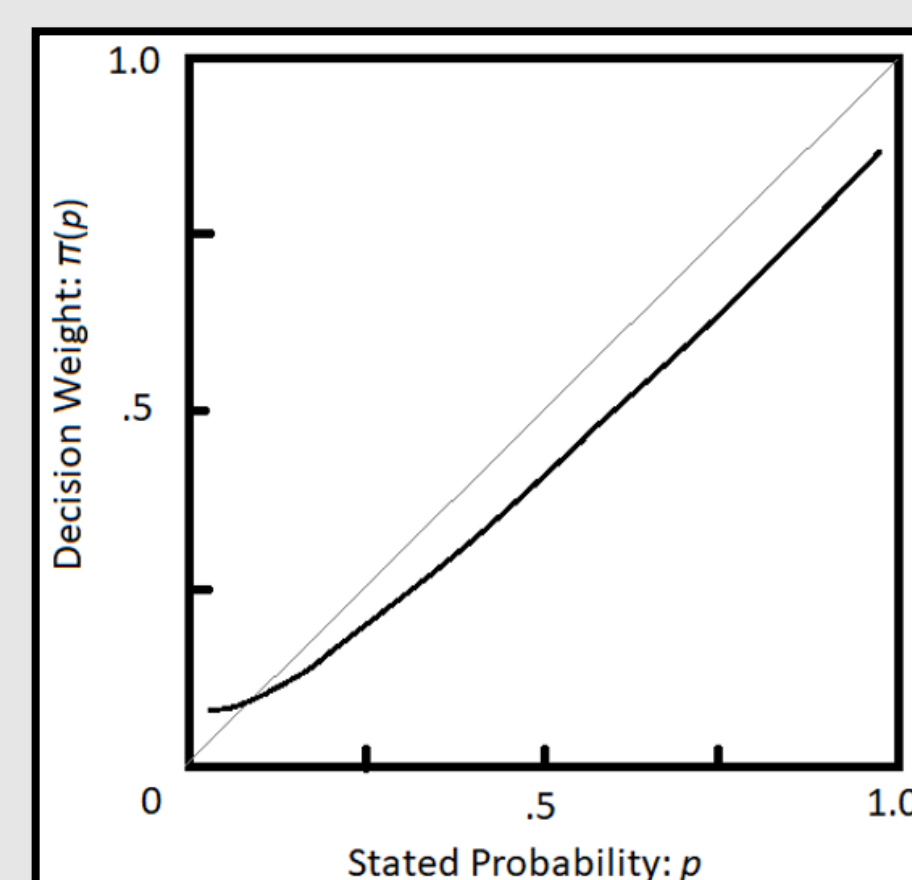


**Chap 4:** Decision strategies: How to get the most and avoid the worst, no matter what

## Section II Descriptive models

**Chap 5:** Heuristics: Assumptions and quick rules of thumb we all use – but maybe shouldn't

**Chap 6:** Prospect Theory



**Chap 7:** Two Systems: Thinking Fast and Slow

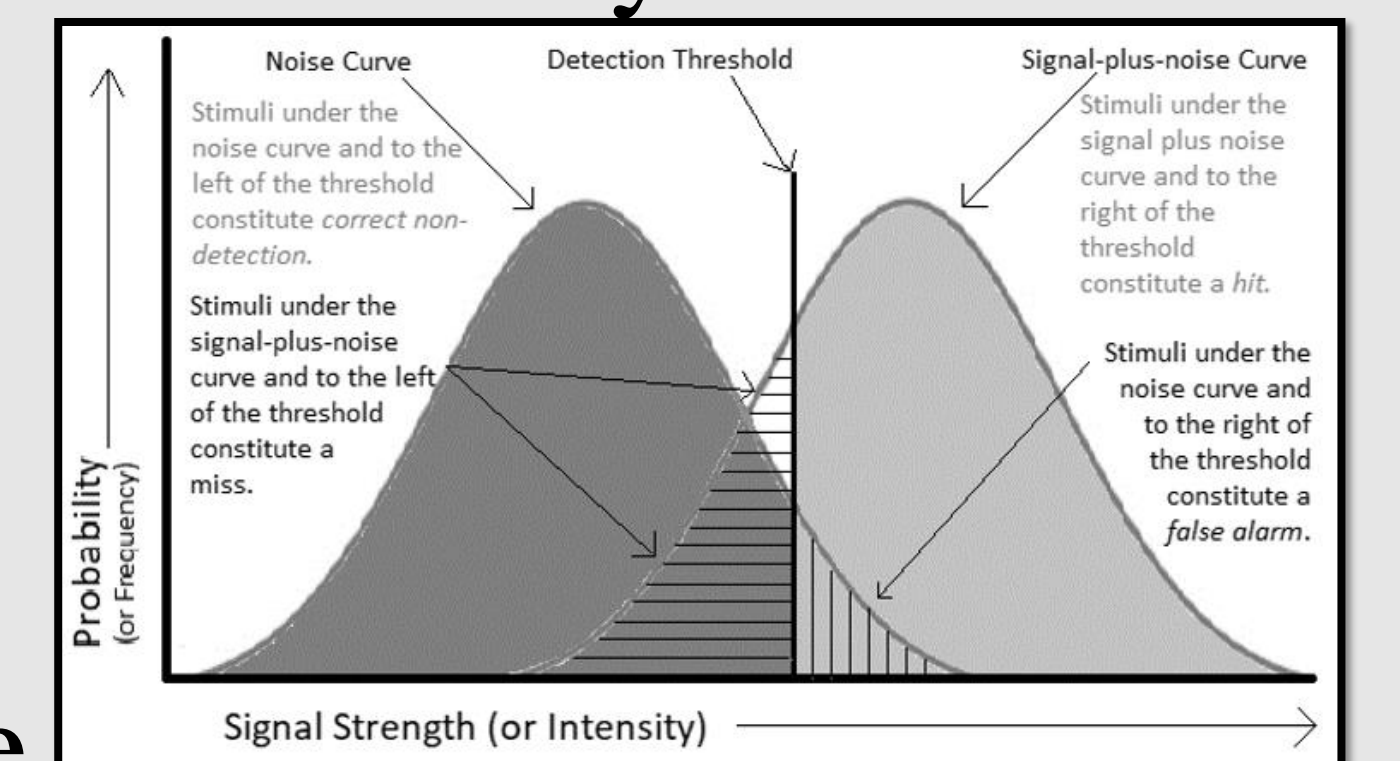
**Chap 8:** Decisions are made based on our memories. But how reliable are our memories?

**Chap 9:** Behavioral Economics

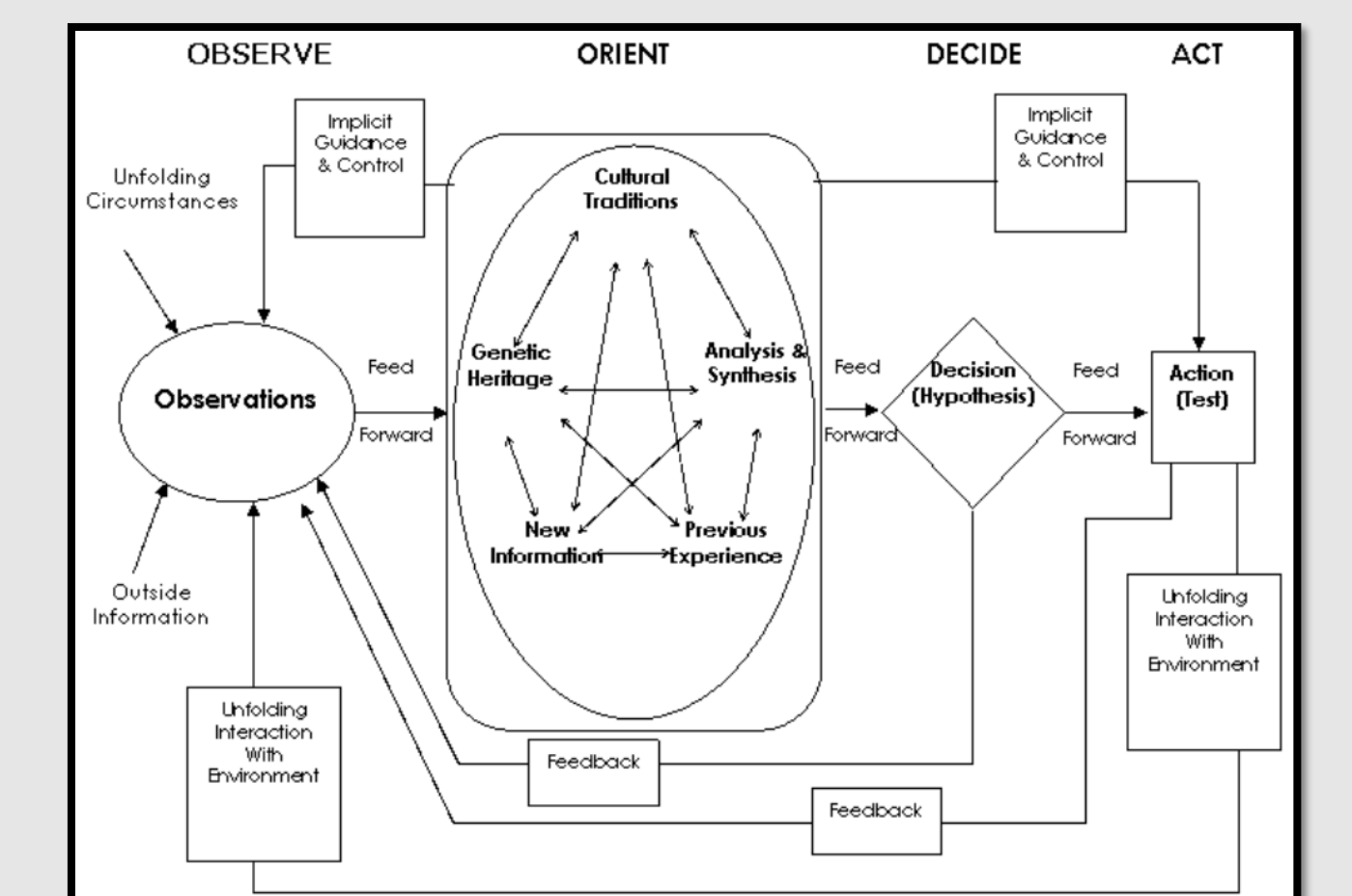
## Section III Selected Topics of Decision Making

**Chap 10:** Signal detection theory:

How to detect the important signal against the distracting background, and take action as appropriate



**Chap 11:** Real-time decision making when speed means everything



**Chap 12:** Multi-attribute utility decisions: Complex and multi-dimensional decisions

**Chap 13:** Decision Making in Conflict

**Chap 14:** Game theory as applied to real world situations

**Chap 15:** Common decision traps and how to avoid them

**Chap 16:** Overcoming indecision by understanding what causes it

**FOMO: Fear of Missing Out**  
**FOBO: Fear of Better Options**  
**FODO: Fear of Doing Anything**

**Chap 17:** Bringing it all together: Making decisions using cognition and probability