Probabilistic Thinking for Product Managers

Martin Stahl

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About me 🏃

- Product Management and digital innovation in scale-ups for over 15 years
- Consulting tech and product organizations
- Systemic Consulting (M.A.), background in Philosophy & Political Science

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What are we talking about?

- We make hundreds of decisions every day.
- Limited data for solution, effort, customer and market behavior.
- Complex stakeholder environment which influence decisions.

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- Fast-paced environment with not much time to reflect.
- Packed backlogs and even more great ideas by somebody.

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Decision-making

Understanding decision-making as a bet with an array of uncertain outcomes (rather than a fixed result).

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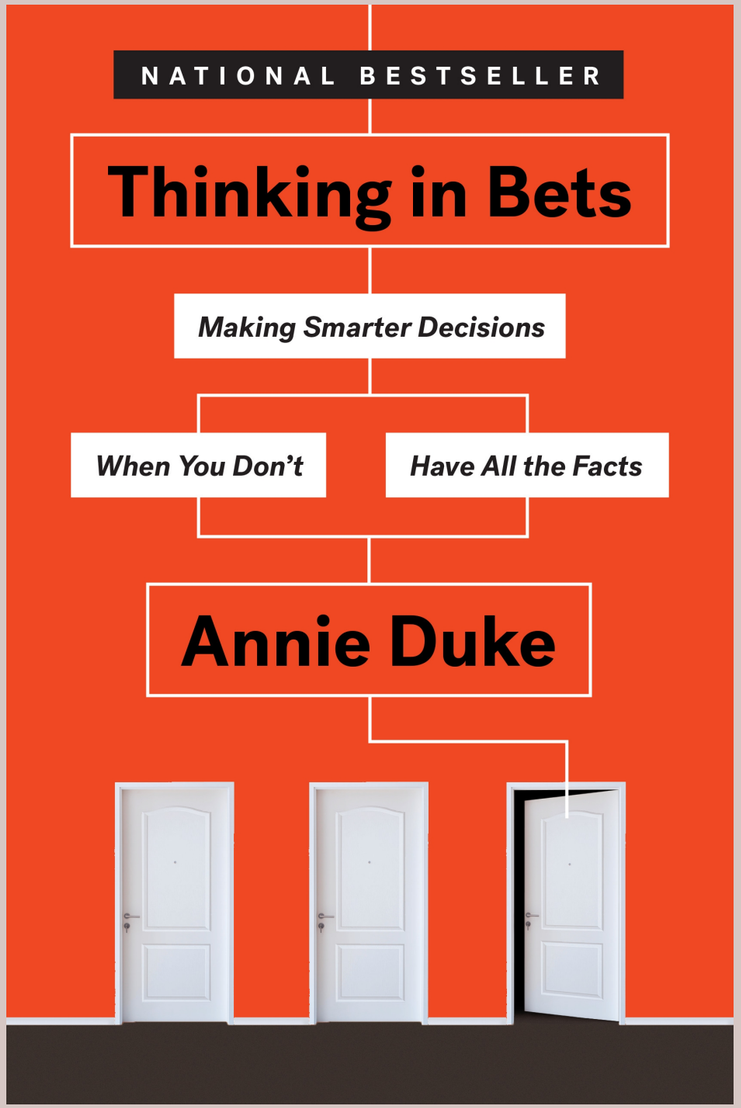
Inspiration 💡

Duke, Annie: Thinking in Bets. Making Smarter Decisions When you Don't Have All the Facts. 2018. Portfolio / Penguin



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Poker? 🃏

> Poker players have to make *multiple decisions* with *significant financial consequences* in a *compressed time frame.* [1]

1. Duke, A., 2018, S. 18

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Deterministic? 

Often we treat the decisions like there's absolute clarity and everything can be decided rationally.

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Well, I am not sure...

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Probabilistic thinking

Probabilistic thinking is a method that takes uncertainties into account and makes decisions on the basis of probabilities.

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What is good decision?

It is the result of a solid decision making process

+ representation of the current state of knowledge, assumptions and hypotheses,

+ having an exit rule.

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What is good decision?

Moving *towards* objectivity, accuracy, and open-mindedness.

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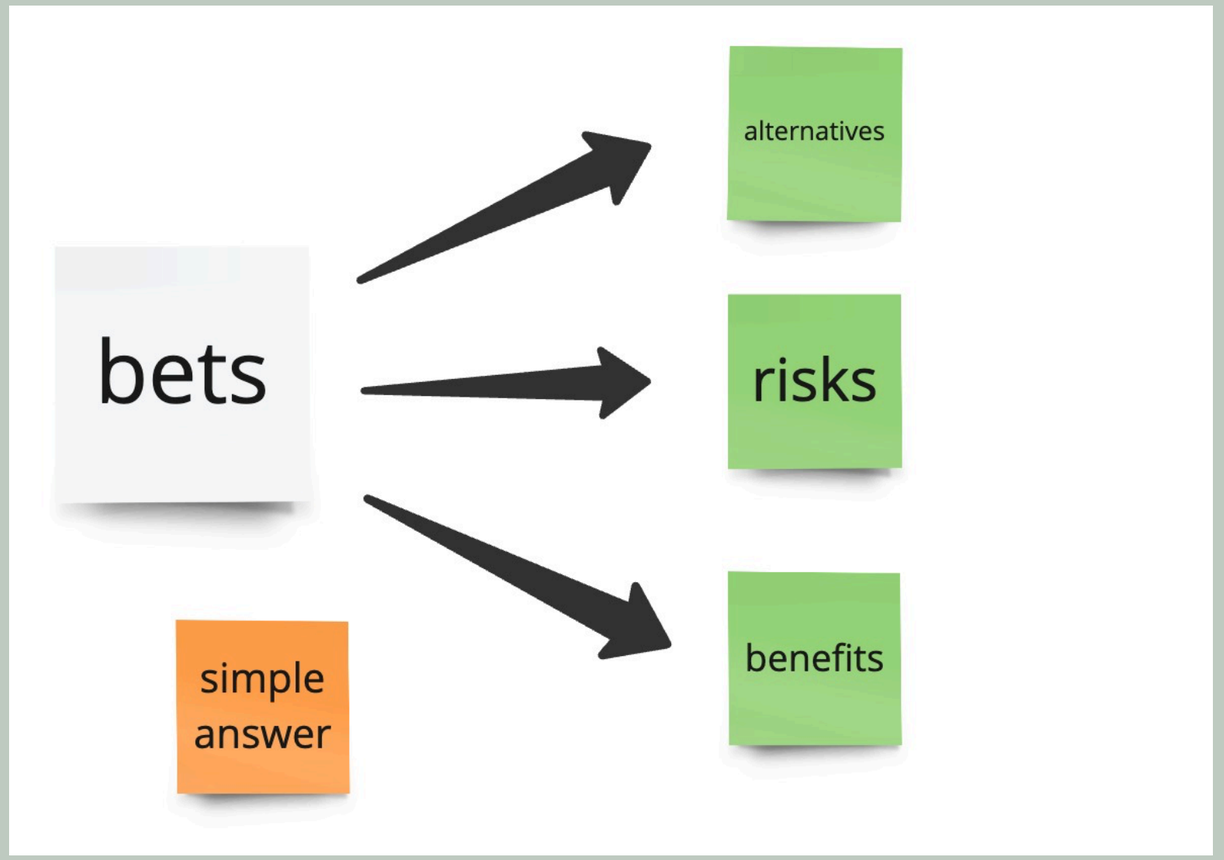
Let's place some bets



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😅 But the hard part is..

- In Poker we bet against the other players.
- In Product, we bet against our future self (your team's, your company's).

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Bad Bet Influencers 🦇

- **Overconfidence Bias**: Why we believe we know more than we do.
- **Confirmation Bias**: Seeking data that confirms, rather than challenges, our views.
- **Hindsight bias** aka creeping determinism: perceive past events as having been more predictable than they were
- **Survivorship Bias**: Learning only from success stories while ignoring failures.
- **Availability Heuristic**: Giving more weight to easily recalled information.
- **Loss Aversion**: The tendency to fear losses more than valuing equivalent gains.

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Biases 💥

The Product Manager's game boss fight are..

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Application in daily work 💥

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Working with scenarios

- Thinking about what will probably happen
- Create future scenarios
- Make it part of the equation: Probability, risk, assumption, belief, choice, effort,..

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Create scenarios

- Working backwards (Future II): identify positive / best outcome and work backwards
- Pre-mortem: identify negative outcome and work backwards to understand options which would lead there.

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Create scenarios

1. Create a list of possible scenarios for a problem.
2. Estimate the probability of each scenario based on available data.
3. Proritize the scenarios (e.g. calculate the expected value of each option (EV = probability × outcome)
4. Update your estimates frequently with new information (Bayesian learning)

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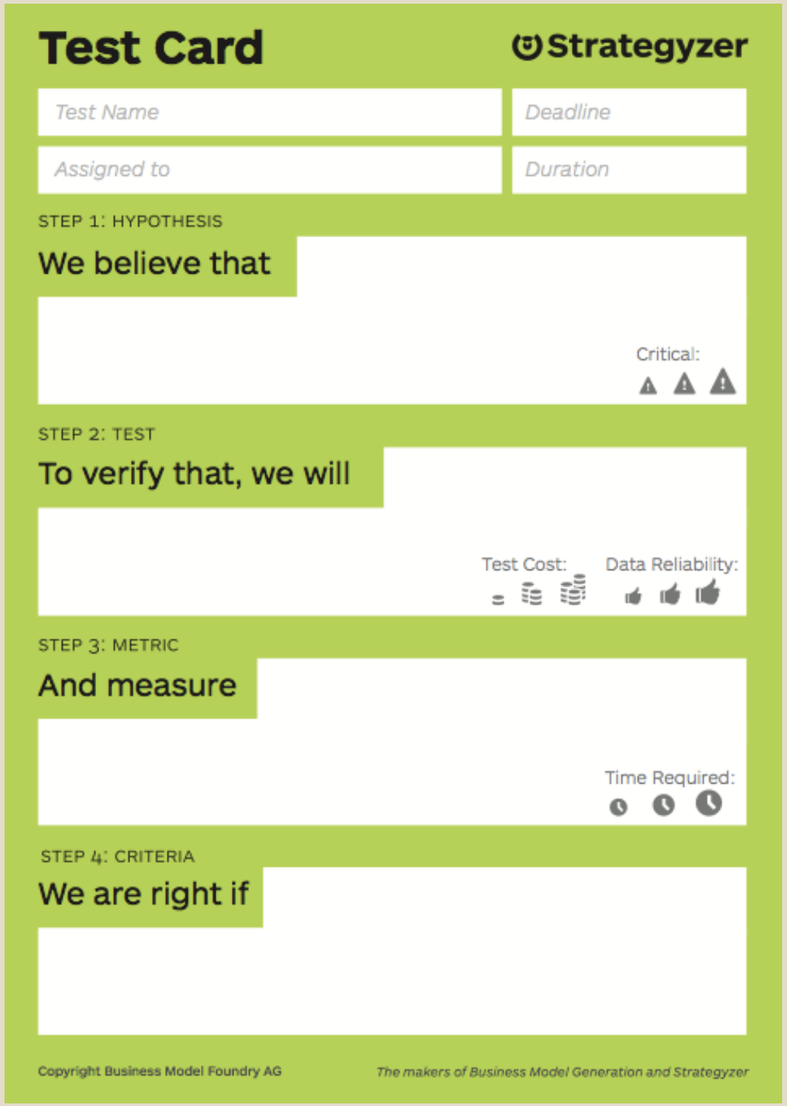
Experiment

Create experiments for low-data scenarios

- Assumptions
- Hypothesis
- Success criteria
- Exit criteria



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The Exit criteria

The exit rule needs to be implemented before the start of the experiment or project. It prevents the **sunk cost fallacy* to kick in.

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The Mt. Everest 2pm rule

Climbers must reach the summit no later than 2 p.m. and begin their descent promptly. No matter what!

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Daily applications

- Data-driven decision making with A/B-Testing, (qualitative) user interviews, data analytics,..
- Scenario Planning and simulations with Decision trees, Causal Loop diagrams
- Risk Mitigation Frameworks

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- Work with probabilities in Stakeholder Communication
- Fail fast, fail smart -> Retrospectives, Learning loops

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Thank you!

Link Martin

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Resources

- Bayesian Statistics The Fun Way
- Books by Annie Duke on decision making
- Causal loop diagrams in Systems thinking
- Decision Tree on wikipedia
- Test Card at Strategyzer
- Sunk Cost Fallacy: Death on Everest (Article)
- Working Backwards. Insights, Stories, and Secrets from inside Amazon

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