어떻게 나쁜 의사결정을 피할 수 있을까?

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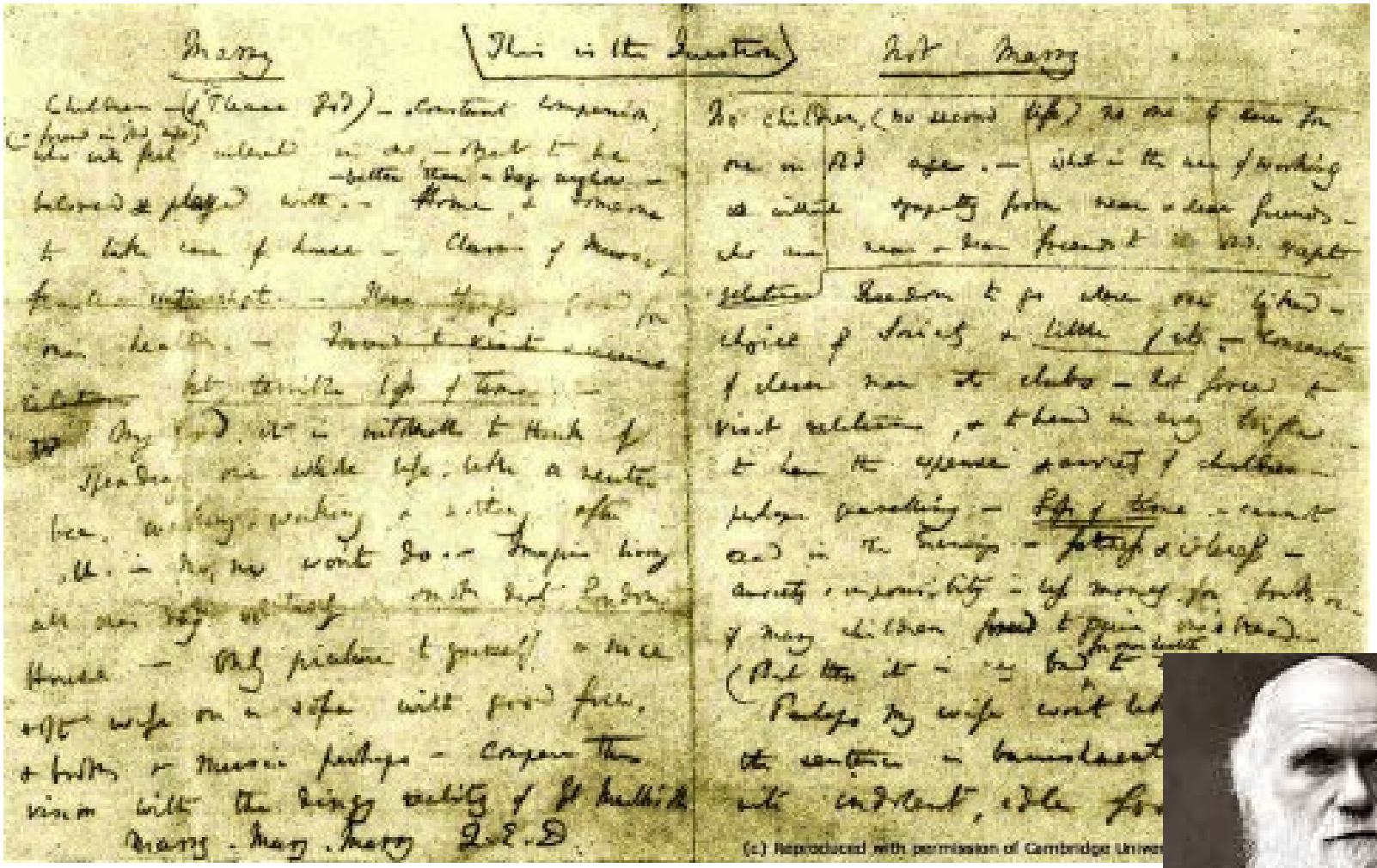
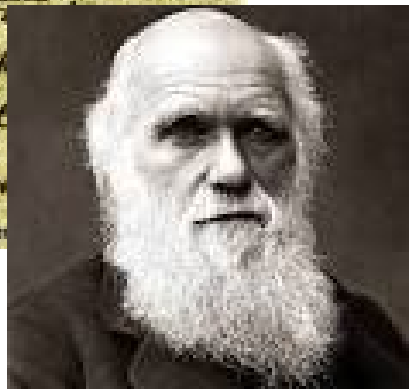
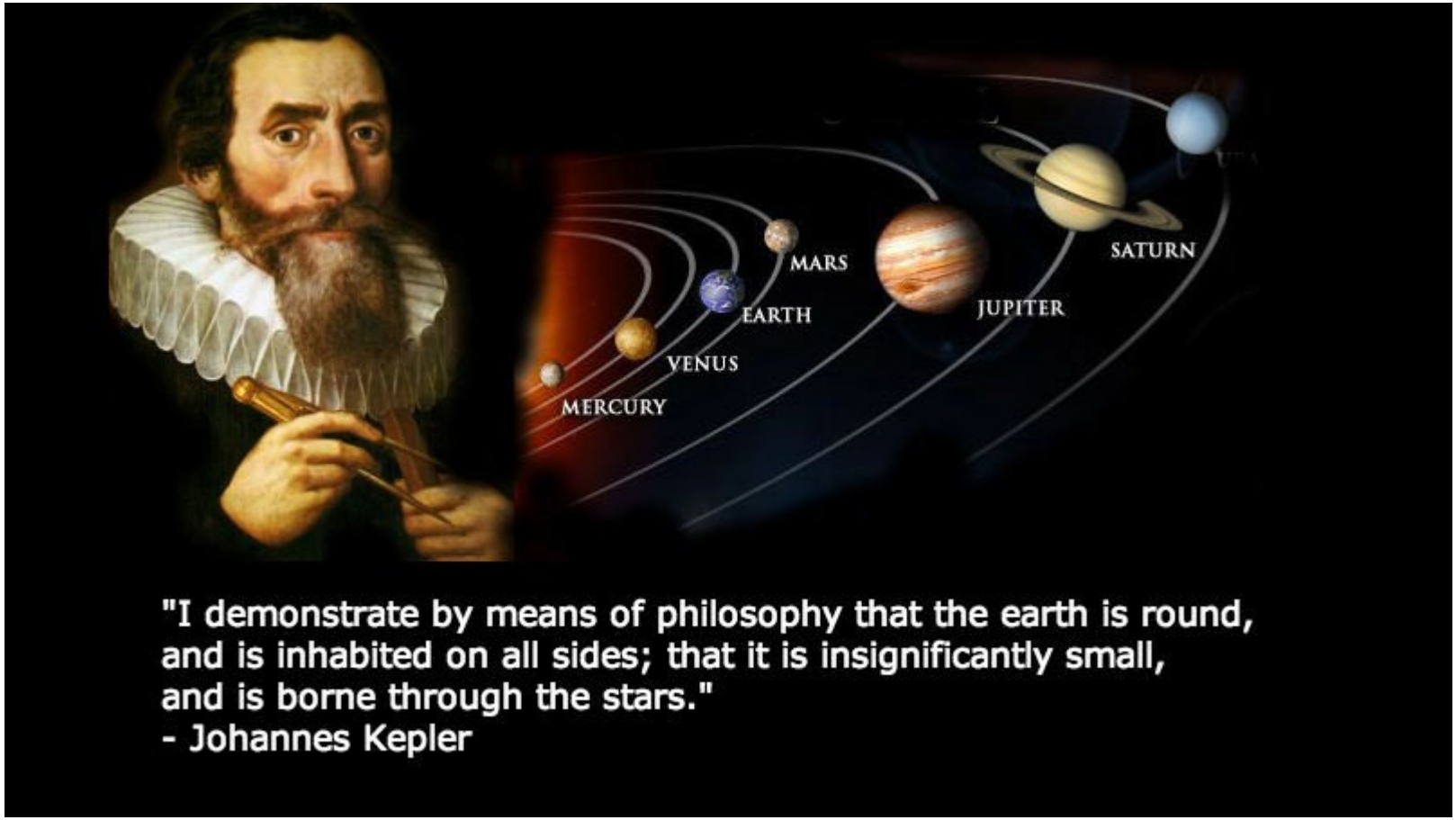
“중요한 일에 대해 나에게 조언을 구한다면, 전제들이 충분치 않기 때문에 나는 당신에게 ‘무엇을’ 결정하라고 충고할 수 없다. 그러나 ‘어떻게’ 결정하라고 말해 줄 수는 있다.”

“In the affair of so much importance to you, wherein you ask my advice, I cannot for want of sufficient premises, advise you *what* to determine, but if you please I will tell you *how*.”

- Benjamin Franklim(1772)


This is the question
Marry
Not Marry
(c) Reproduced with permission of Cambridge Univer




MARS
EARTH
VENUS
MERCURY
JUPITER
SATURN
"I demonstrate by means of philosophy that the earth is round,
and is inhabited on all sides; that it is insignificantly small,
and is borne through the stars."
- Johannes Kepler

- Who is a smarter decision-maker, Darwin or Kepler?

failed

성공하면 인센티브 1천만원

success

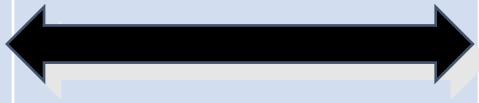
Project A
성공 확률
55%

Project B
성공 확률
45%

1 2 3 4 5 6 7

“의사결정의 질이 오직 결과에만 근거하여 평가되는 경향이 있다. 나는 의사결정 과정 그 자체에 좀 더 중점을 두어야 한다고 믿는다. … 결과에만 근거한 평가가 아니라 의사결정 과정의 질에 근거한 평가가 이루어진다면 국가공무원이나 국회의원들이 보다 효율적으로 일을 할 것이고, 이것이 결국 국민들에게 더 잘 봉사하는 길이라고 믿는다.”

- Robert Rubin 전 미국 재무부장관

Darwin's Approach	Heuristics Decision traps Decision biases	Kepler's approach
Naturalistic Decision-making (Intuition)		Analytic (Rational) Decision-making

Intuition

- When we use intuition?
  - High uncertainty levels
  - Unclear sense of direction
  - Analytical data is of little use
  - Time constraints
- When intuition helps?
  - Prolonged practice,
  - With clear feedback,
  - In a high-validity environment

Analytic (Rational) Decision-making Model

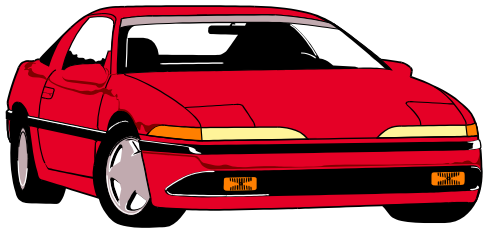
- **A decision-making model that describes how individuals should behave in order to *maximize* value and some outcome**

- **Six steps**
  - 해결해야 할 문제를 정의한다
  - 의사결정을 위한 기준(criteria)을 선정한다
  - 기준에 대해 가중치를 부여한다
  - 선택가능한 대안(alternatives)을 나열한다
  - 각 대안의 기대값을 분석한다
  - 최고기대값을 갖는 대안을 선택한다

Identification of a Problem

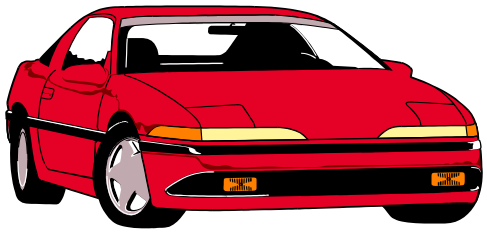
I need to buy a new car.

Identification of Decision Criteria



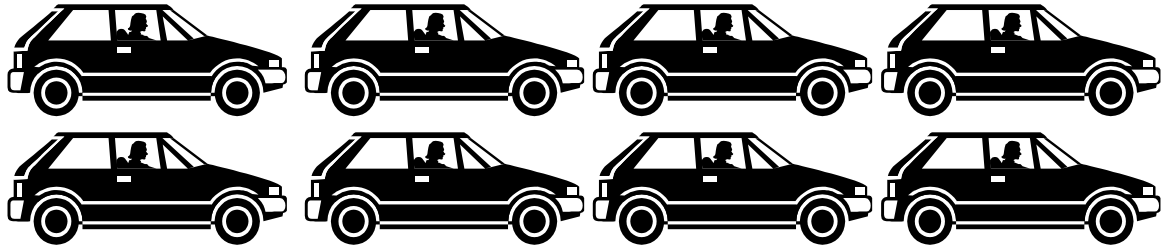
- Price
- Reliability
- Repair Record
- Performance
- Color

Allocation of Weights to Criteria



•Price	10
•Reliability	8
•Repair Record	6
•Performance	4
•Color	2

Development of Alternatives



Analysis of Alternatives

GM

Ford

Hyundai

Toyota

- Price
- Reliability
- Repair Record
- Performance
- Color

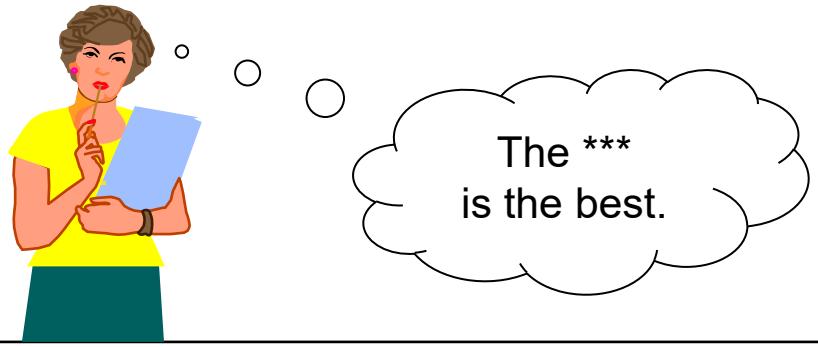
Benz

Audi

Honda

Teslar

Selection of an Alternative



Define problem

- Routine problem vs. non-routine problem
- Framing

Decision criteria

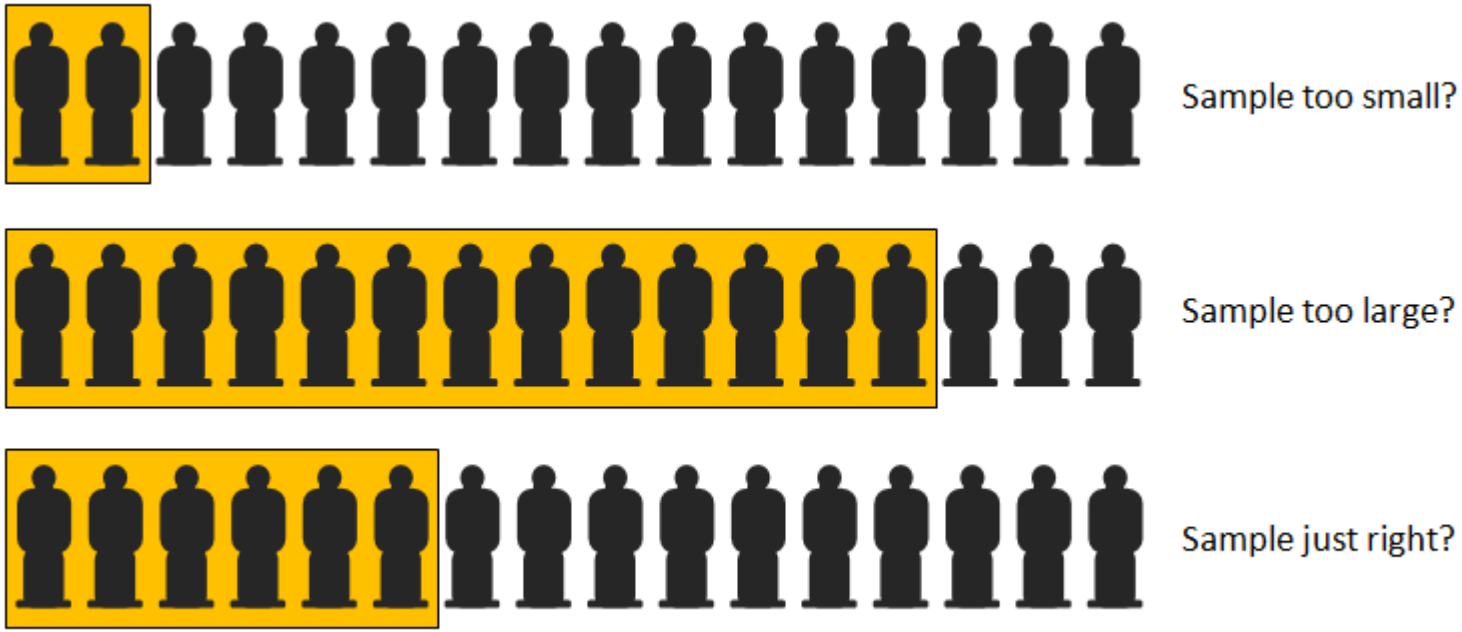
- One or multiple criteria?
- Known vs. unknown criteria
- Miller’s rule of 7
- Benjamin Franklin’s rule
- How to allocate weights?

Weighting criteria

scale rule	Education=10, Work experience=8, Computer skill=2	Edu.	Work Exper.	Com. Skill
the best value =1	(10/10, 8/10, 2/10)	1	0.8	0.2
the best value =1 & the worst value = 0	(10-2/10-2, 8-2/10-2, 2-2/10-2)	1	0.75	0
sum of all values = 1	(10/10+8+2, 8/10+8+2, 2/10+8+2)	0.5	0.4	0.1

Develop alternatives

- Too many alternatives makes people unhappy.
- How many alternatives?

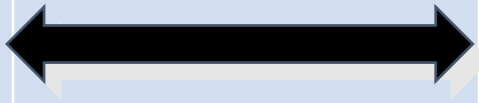


The Marrage Problem (The Secretary Problem)

- There is a single position to fill.
- There are *n* applicants for the position, and the value of *n* is known.
- The applicants, if seen altogether, can be ranked from best to worst unambiguously.
- The applicants are interviewed sequentially in random order, with each order being equally likely.
- Immediately after an interview, the interviewed applicant is either accepted or rejected, and the decision is irrevocable.
- The decision to accept or reject an applicant can be based only on the relative ranks of the applicants interviewed so far.
- The objective of the general solution is to have the highest probability of selecting the best applicant of the whole group. This is the same as maximizing the expected payoff, with payoff defined to be one for the best applicant and zero otherwise.

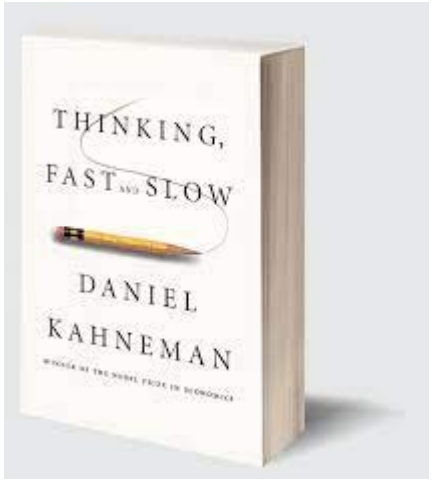
- The probability of selecting the best applicant in the classical secretary problem converges toward $1/e \approx 0.368$
- When interviewing blind for a position, skip the first 36.8% candidates you meet, then select the first candidate you see whose talents exceed the highest you've seen to-date. There is a 36.8% chance that you will end up with the best candidate in the set!
- The sample size for selection should not be too small not too large. The right size is *n*/0.368 (n: number of people to hire)

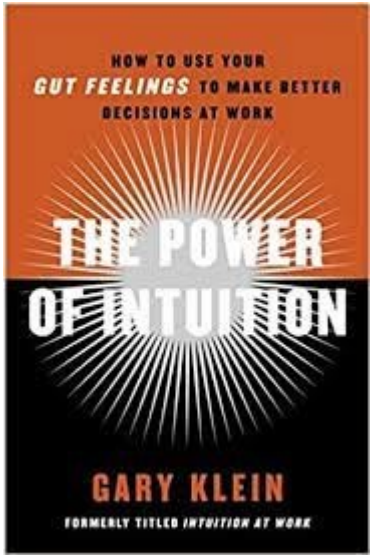
https://datagenetics.com/blog/december32012/index.html

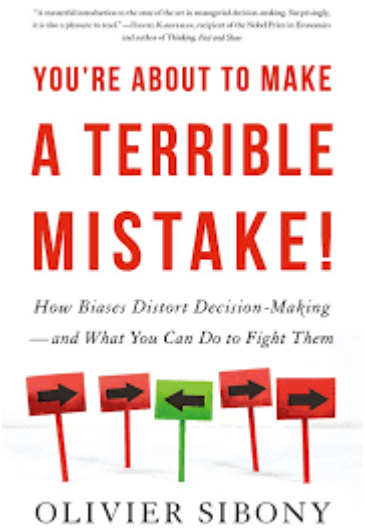
Darwin's Approach	Heuristics Decision traps Decision biases	Kepler's approach
Naturalistic Decision-making (Intuition)		Analytic (Rational) Decision-making

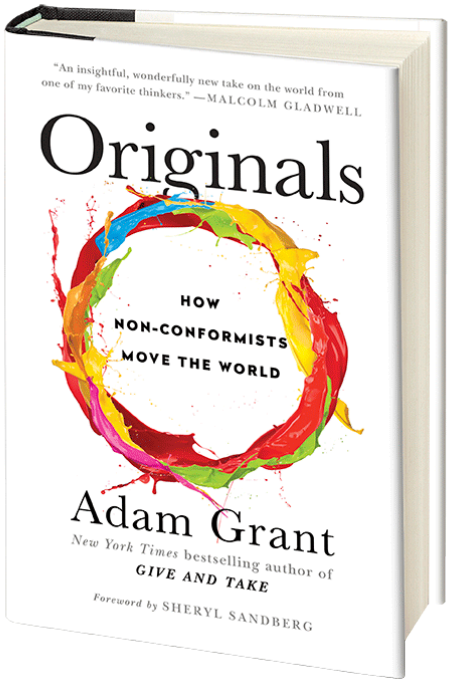
Bounded rationality

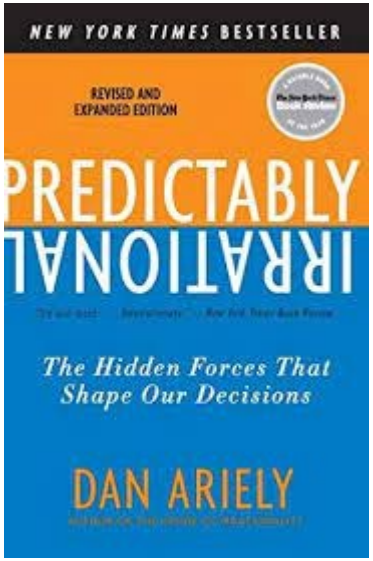
"Due to limited information, limited cognitive ability, and limited time, people seek satisfying, not optimum, solutions."

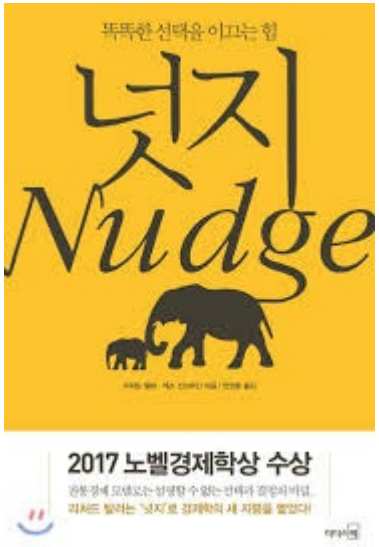

THINKING,
FAST AND SLOW
DANIEL
KAHNEMAN

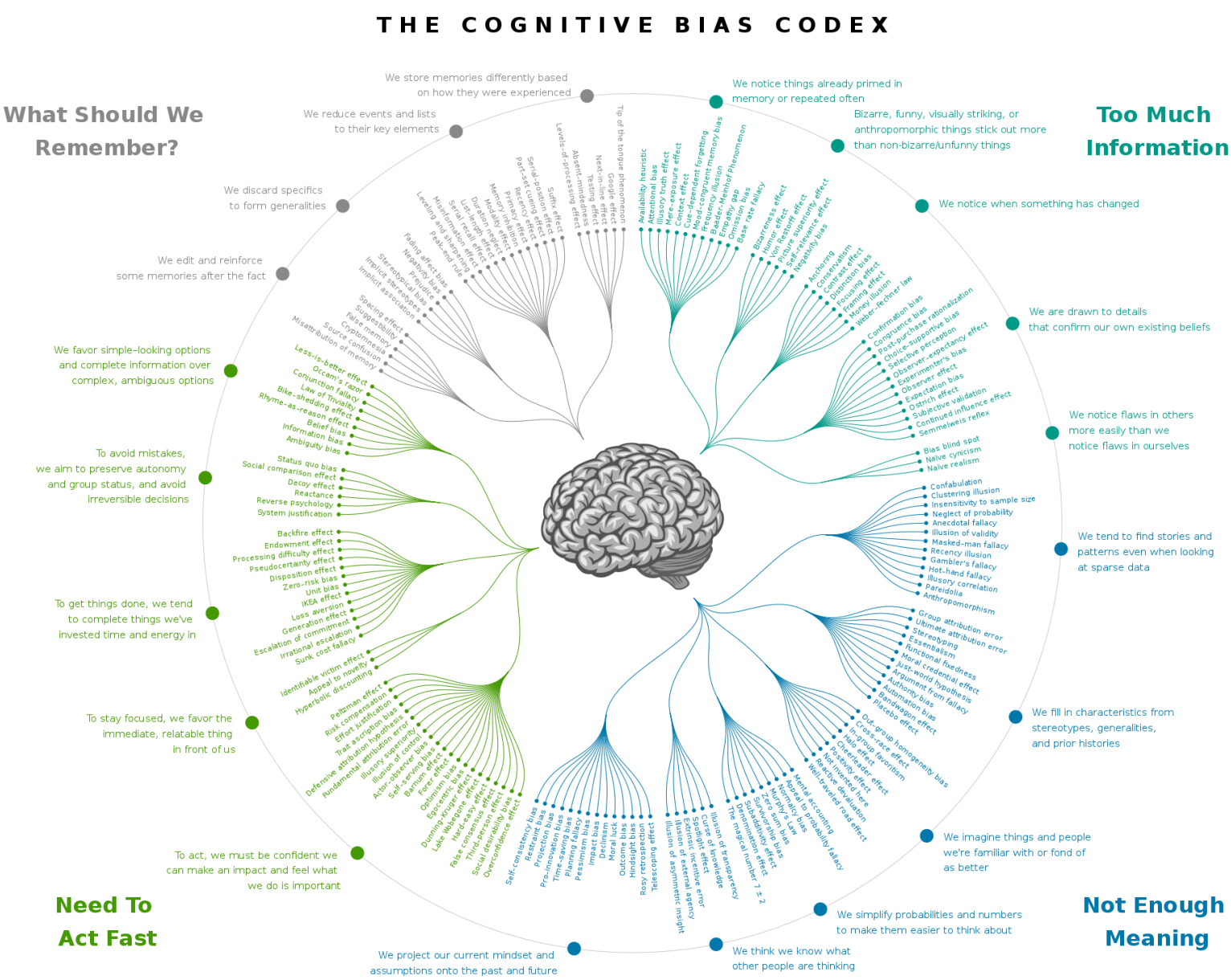

HOW TO USE YOUR
GUT FEELINGS TO MAKE BETTER
DECISIONS AT WORK
THE POWER
OF INTUITION
GARY KLEIN
FORMERLY TITLED INTUITION AT WORK


YOU'RE ABOUT TO MAKE
A TERRIBLE
MISTAKE!
How Biases Distort Decision-Making
—and What You Can Do to Fight Them
OLIVIER SIBONY

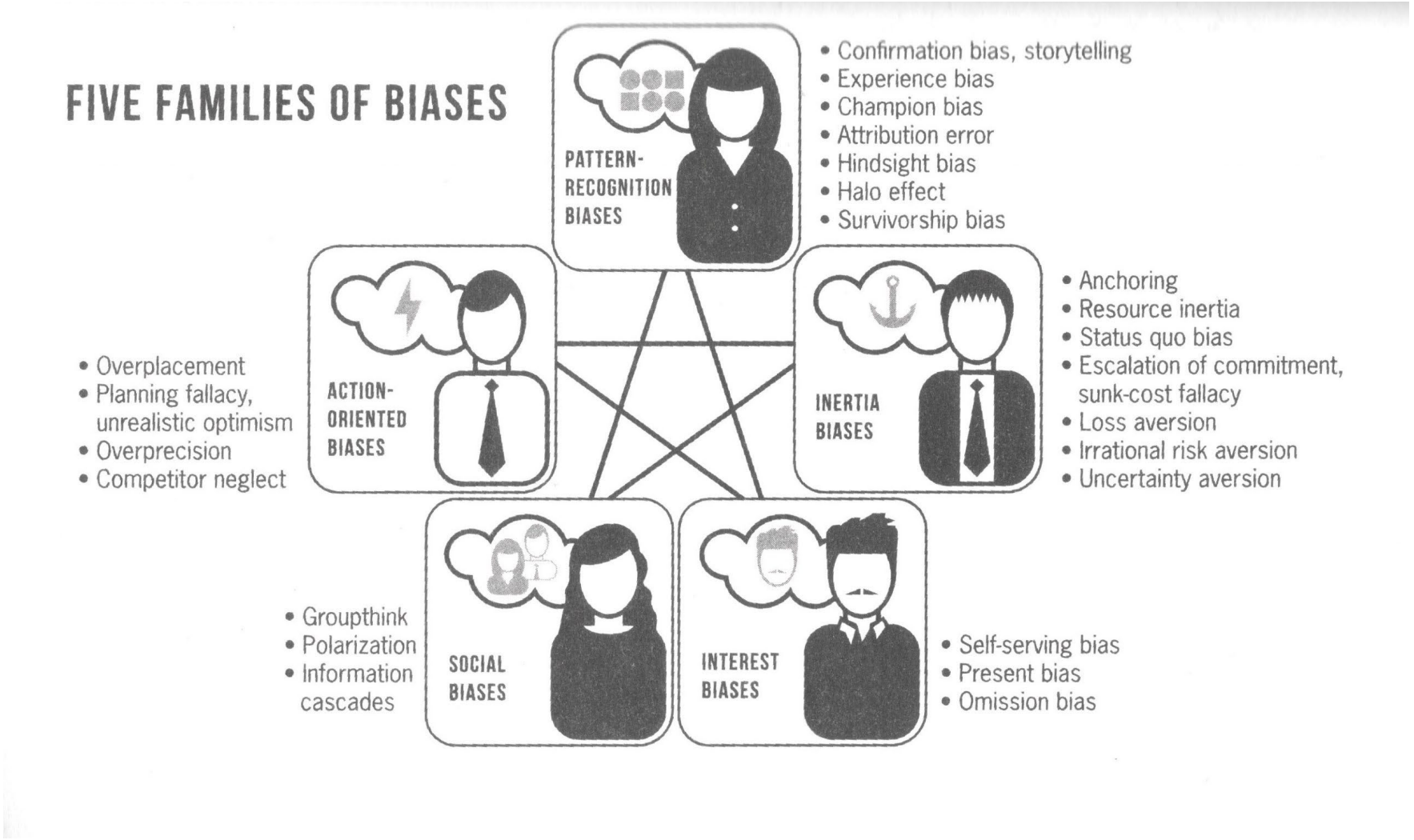

"An insightful, wonderfully new take on the world from one of my favorite thinkers." —MALCOLM GLADWELL
Originals
HOW
NON-CONFORMISTS
MOVE THE WORLD
Adam Grant
New York Times bestselling author of
GIVE AND TAKE
Foreword by SHERYL SANDBERG


NEW YORK TIMES BESTSELLER
REVISED AND
EXPANDED EDITION
PREDICTABLY
IRRATIONAL
The Hidden Forces That
Shape Our Decisions
DAN ARIELY

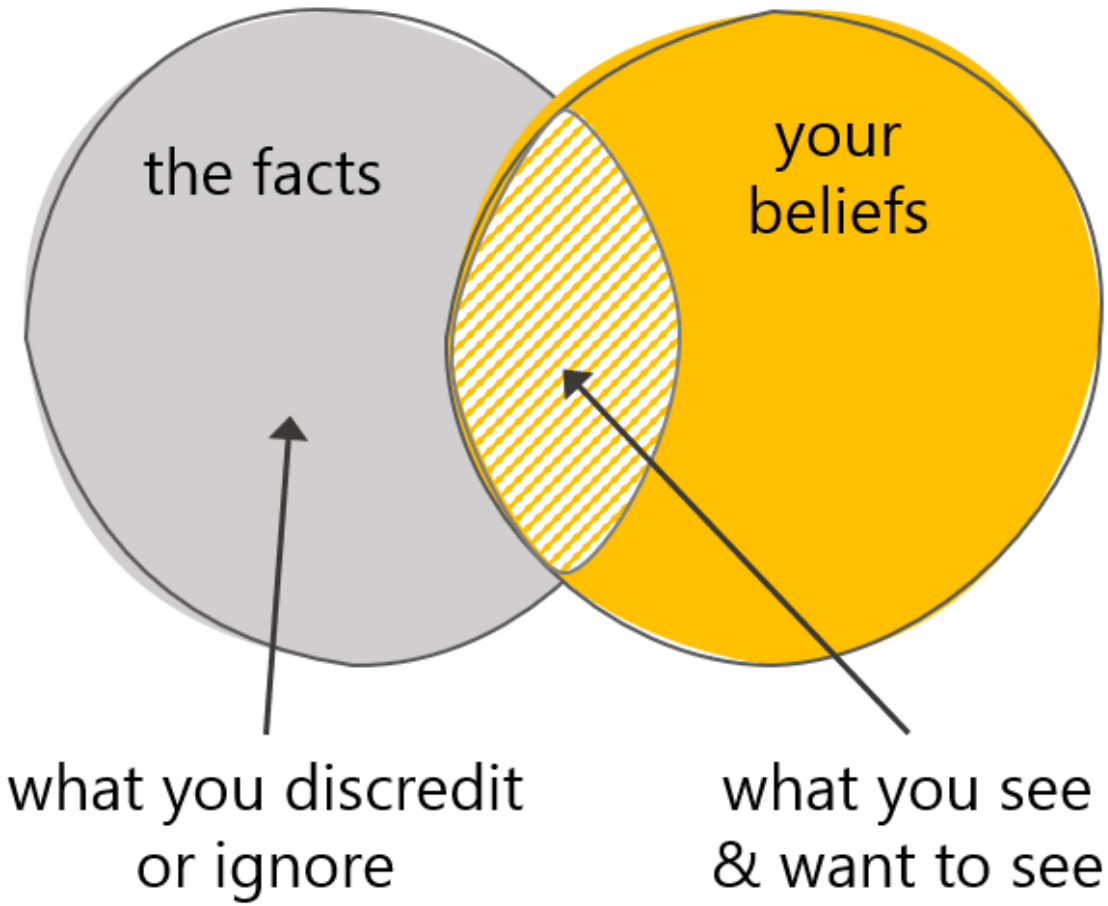

똑똑한 선택을 이끄는 힘
넛지
Nudge
2017 노벨경제학상 수상



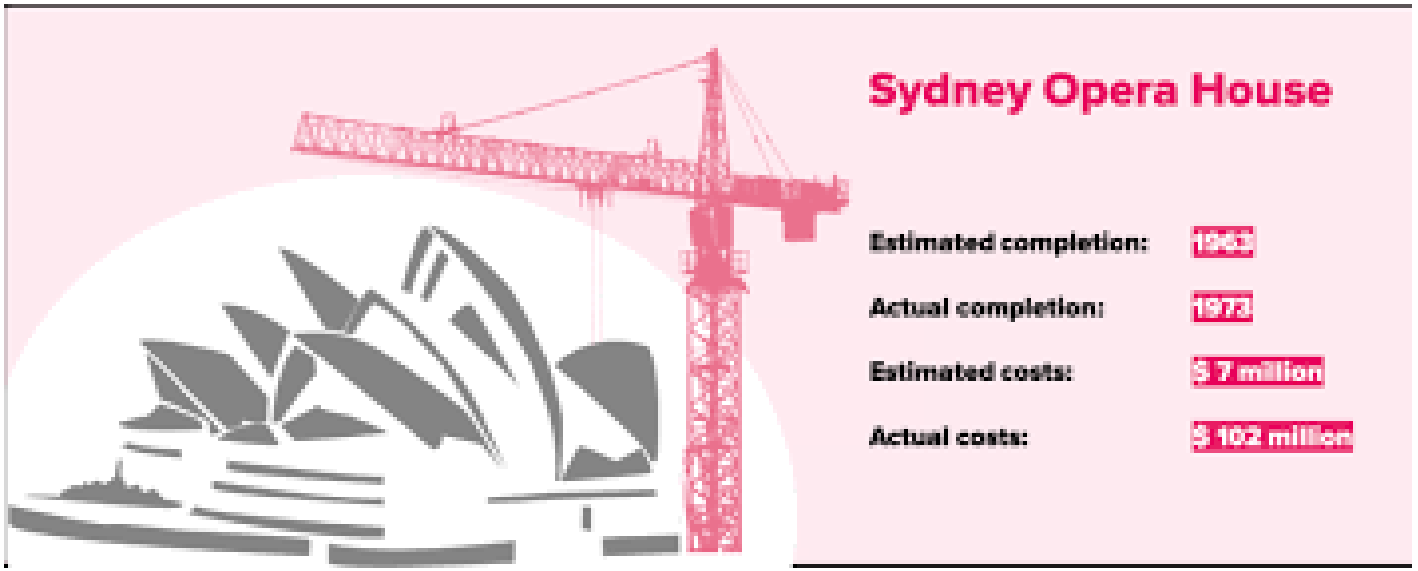
Source: https://en.wikipedia.org/wiki/Cognitive_bias



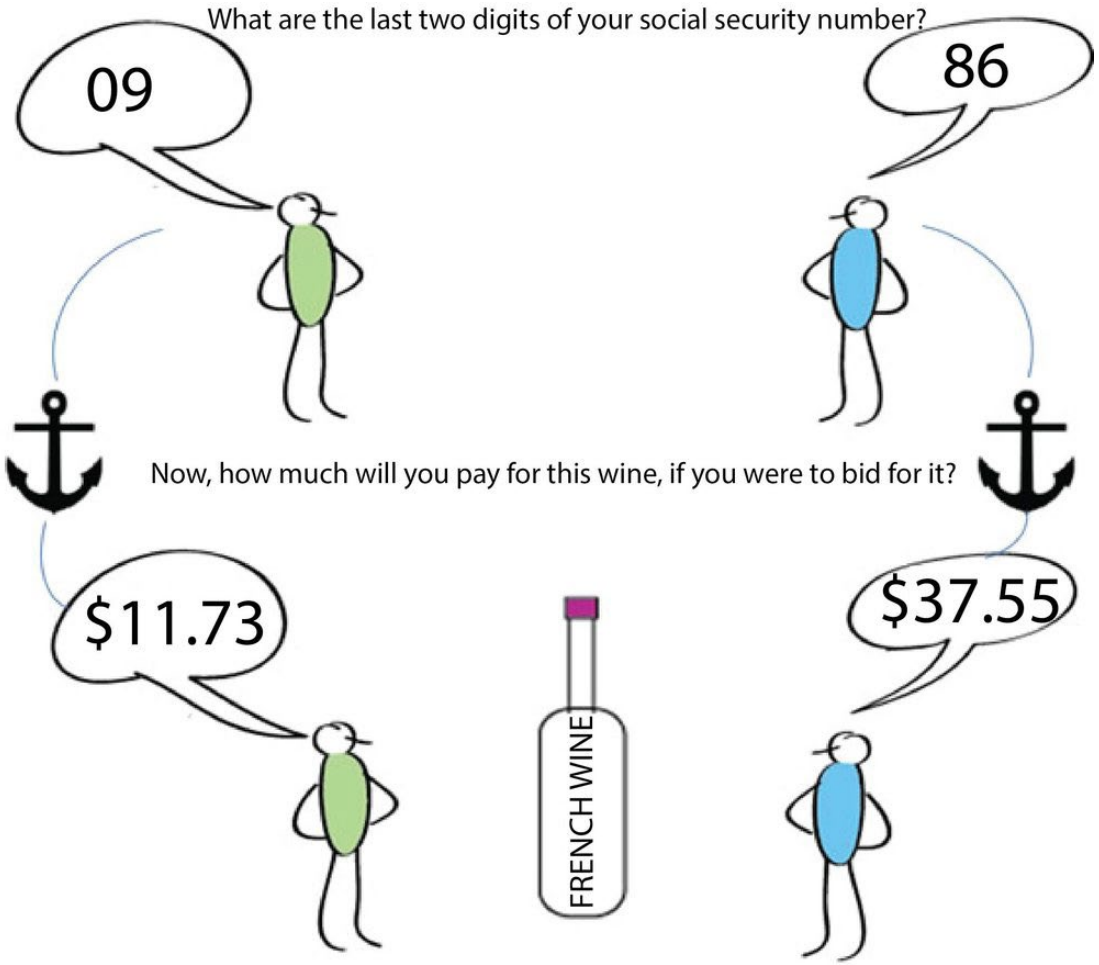
Source: Sibony(2020), You're About to Make a Terrible Mistake: How Biases Distort Decision-Making and What You Can Do to Fight Them


the facts
your beliefs
what you discredit or ignore
what you see & want to see

Planning Fallacy



Anchoring



Source: Dan Ariely, George Loewenstein and Drazen Prelec(2003), *"Coherent Arbitrariness": Stable Demand Curves without Stable Preferences* (2003)

Escalatin of Commitment: Shoreham Nuclear Powerplant

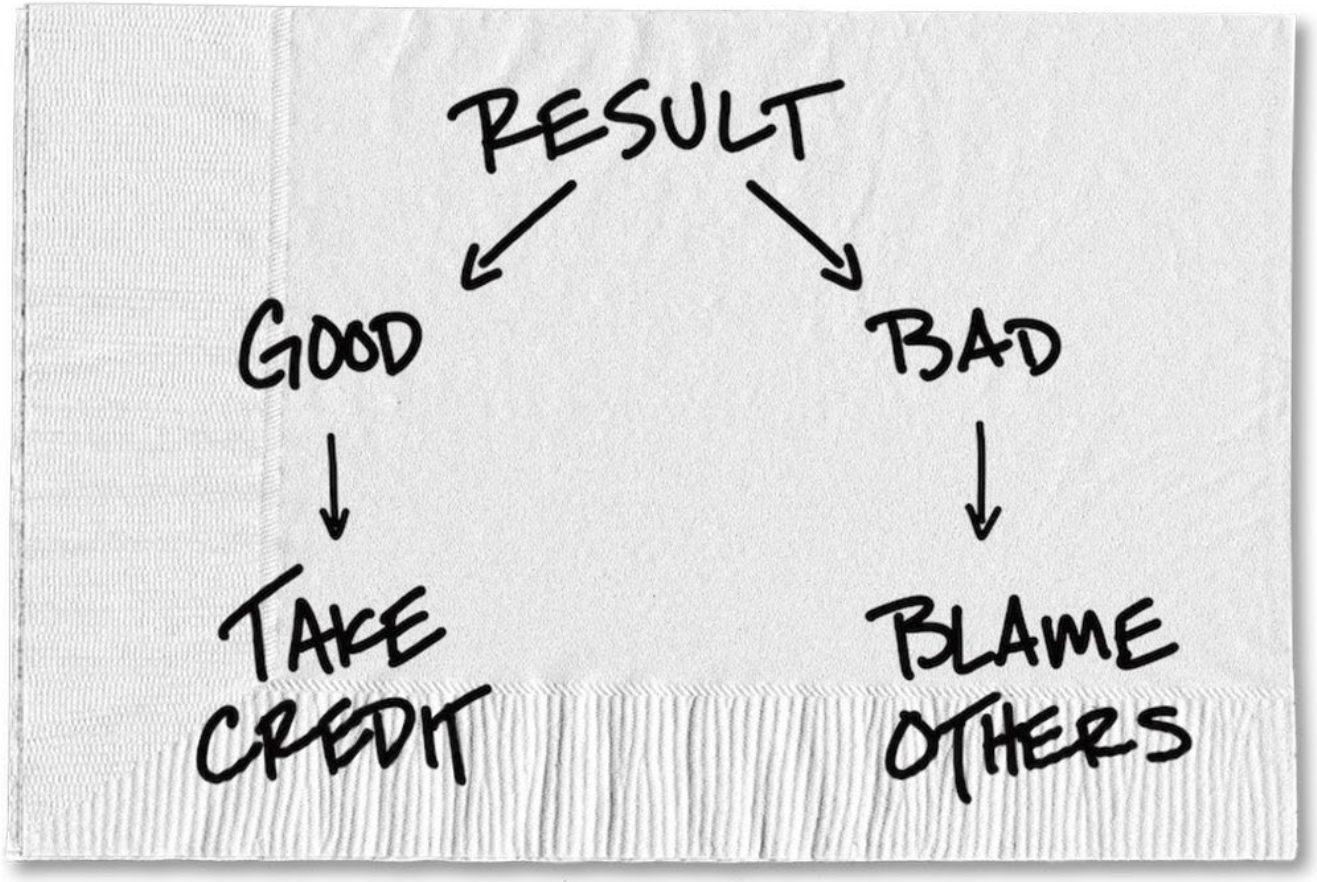
1977

1984

1989

- GE plant in NY, 60 miles from Manhattan
- Designed to produce 540-820 megawatts
- Initial estimated cost: $65 -75 million
- Final cost: $5.5 billion
- After 11 years (’73-’83), never opened!

Self-serving bias



How to overcome cognitive biases?

- Increase self-awareness and personally try to avoid biases. It is not much helpful as
  - it's not easy to aware by ourselves
  - biases are intertwined
  - removing biases is costly
- Utilizing groups and organizations to support individual decision-making
  - But be careful as groups are capable of both the best and the worst!

EXCOMM meets at the White House during the Cuban missile crisis

집단의사결정의 장점

- 다양한 정보와 아이디어 확보
- 구성원의 수용도와 응집력 증가
- 참여자의 교육효과 향상

언제 집단의사결정이 효과적인가?

- 다양한 아이디어의 산출과 평가가 필요한 업무일 때
- 의사결정 결과에 대한 수용과 실천이 필요할 때
- 구성원들이 어느 정도의 전문성과 지식을 보유하고 있을 때
- 서로의 의견을 존중하고 수용하려는 건설적인 분위기일 때
- 시간적 여유가 충분할 때

‘Diversity Trumps Ability’ Theorem

- 능력있는 개인들의 집단보다 다양성이 있는 집단이 더 좋은 성과를 낸다.
- “Diverse groups of problem solvers outperformed the groups of the best individuals at solving problems. The reason: the diverse groups got stuck less often than the smart individuals, who tended to think similarly.”
- 집단능력= 개인능력 평균 + 다양성
- 다양성이 높은 성과를 내기 위한 필요조건:
  - 해결할 문제가 어려워야 한다.
  - 사람들은 기본적으로 어느 정도 능력을 갖추어야 한다.
  - 집단의 규모가 어느 정도 커야 한다.

Source: Scott Page (2007), *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies.* Princeton University Press.

집단의사결정의 단점

- 의사결정 시간 지연
- 책임회피 성향
- 집단사고(Groupthink)

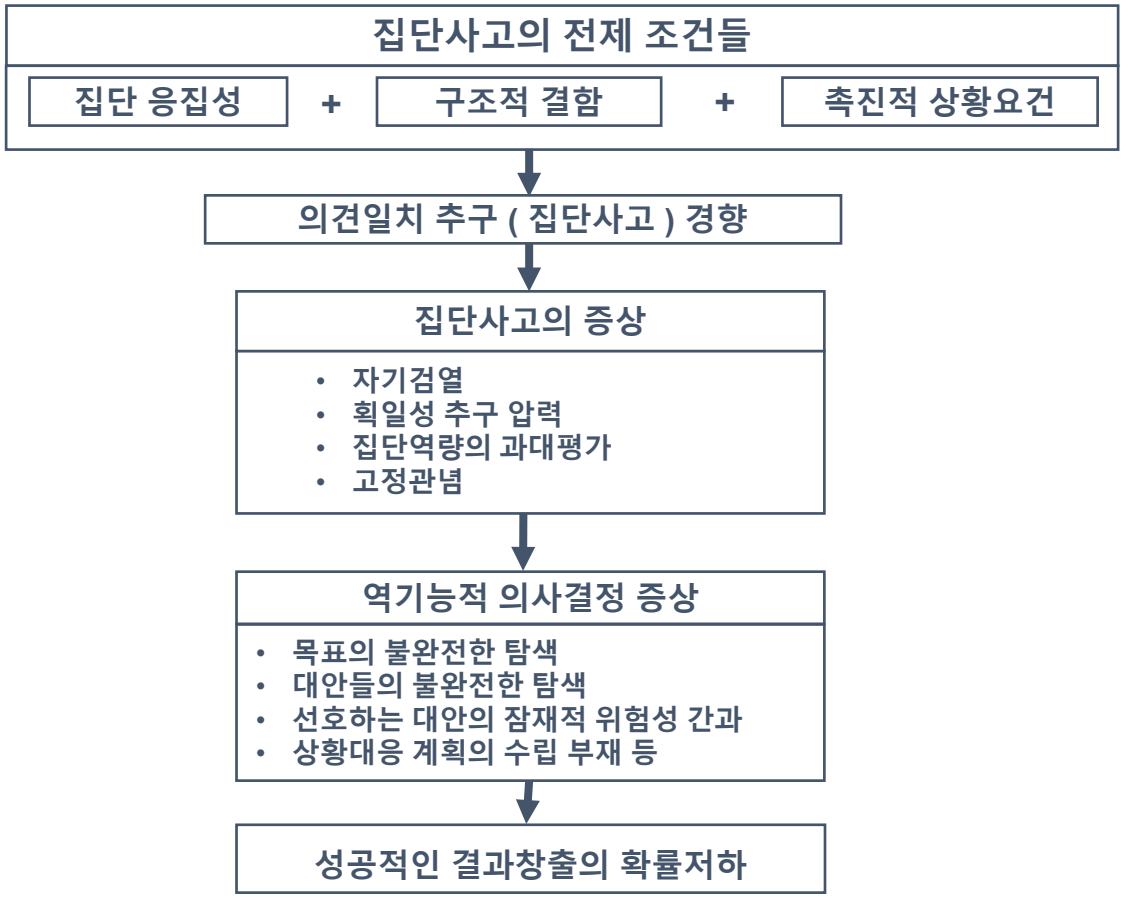
집단사고(集團思考, Groupthink)

- 집단으로 의사결정할 때 더 많은 정보가 있음에도 불구하고 제한된 정보만을 고려하여 최적이 아닌 의사결정을 하는 과정.

- 합리적 의사결정보다 집단유지가 더 중요하게 여겨짐.

- '왜 이를 택해야지?' -> '왜 이를 택하지 않으면 안되지?'

집단사고 모형


집단사고의 전제 조건들
집단 응집성
+
구조적 결함
+
촉진적 상황요건
의견일치 추구 (집단사고) 경향
집단사고의 증상
• 자기검열
• 획일성 추구 압력
• 집단역량의 과대평가
• 고정관념
역기능적 의사결정 증상
• 목표의 불완전한 탐색
• 대안들의 불완전한 탐색
• 선호하는 대안의 잠재적 위험성 간과
• 상황대응 계획의 수립 부재 등
성공적인 결과창출의 확률저하

Challenger:
The Final Flight

집단사고 예방을 위한 리더의 역할

- 이질적인 사람들로 집단을 구성하라.
- 시간에 쫓기지 않도록 시간관리를 잘하라.
- 리더가 선호하는 의견을 먼저 제시하지 마라.
- 회의 방식, 리더 역할 등을 미리 합의하라.
- 동조압력(conformity)을 줄여라.
- 이견제시자를 환대하라.
- 갈등을 무조건 회피하지 말고, 필요하다면 적절한 갈등과 경쟁을 촉진하라.

“Intel CEO Andy Grove, nicknamed "the screamer," could be intensely intimidating. He created a culture at Intel that he described as "**constructive confrontation**." This was a high-stress environment, but very productive. It freed everyone to be as blunt and assertive as he was. The friction of this confrontation helped to drive a very successful company that dominated the intensely competitive chip-making industry.”

Source: Wharton@Work (March, 2008)