Decision Making Under Uncertainty in Visualisation?

Geoffrey Ellis, University of Konstanz and Alan Dix, University of Birmingham

Visualisation for Decision Making Under Uncertainty

cognitive biases in visualisation

mples of cognitive biases

investigation

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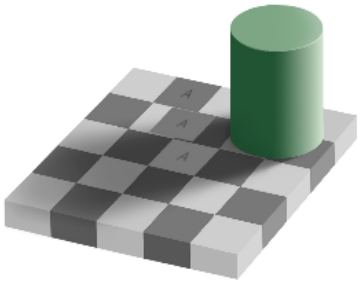
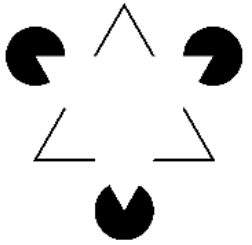
optical illusions



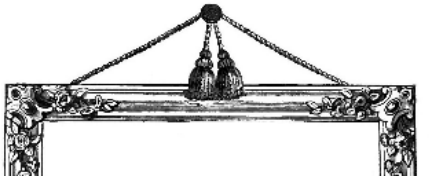
Julian Beever

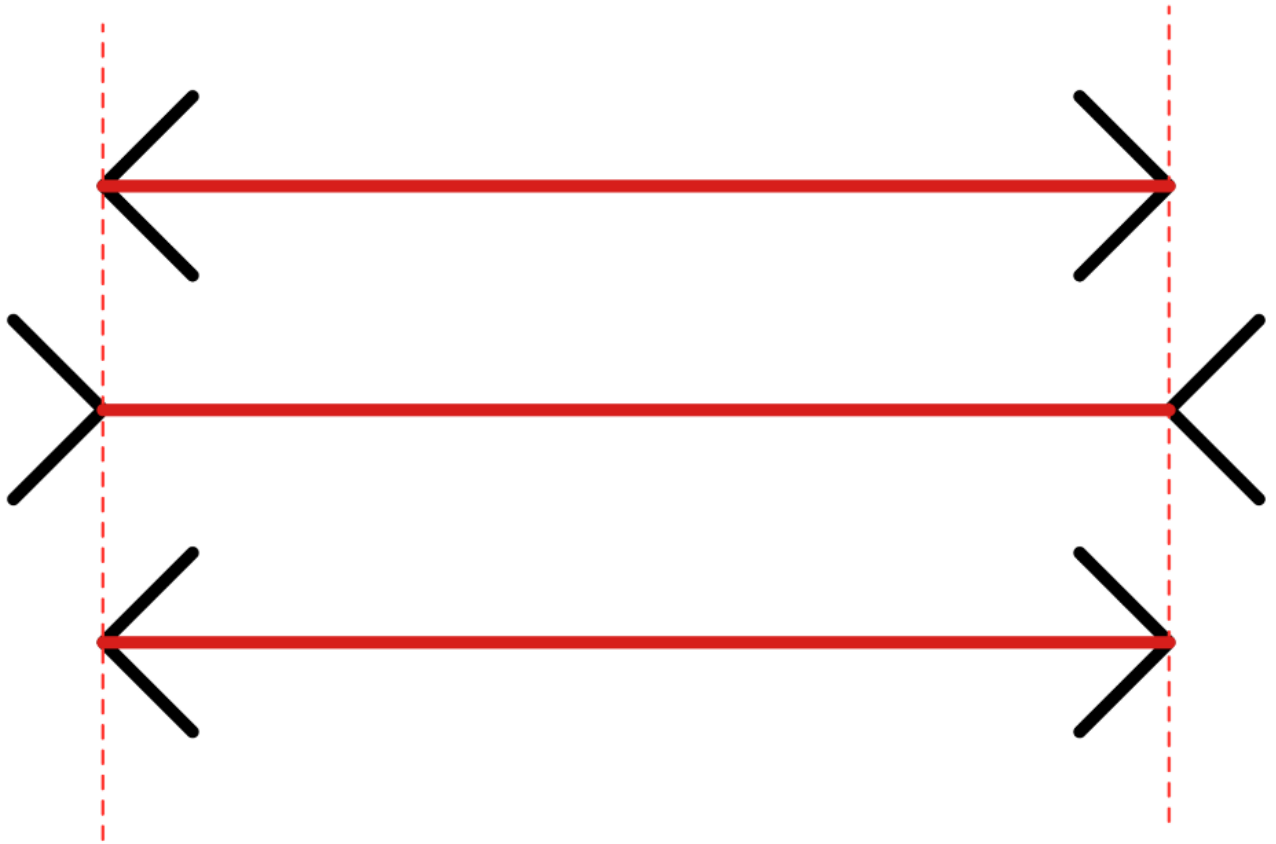
Muller-Lyer illusion

Felice Varini anamorphic interior



Kanizsa triangle





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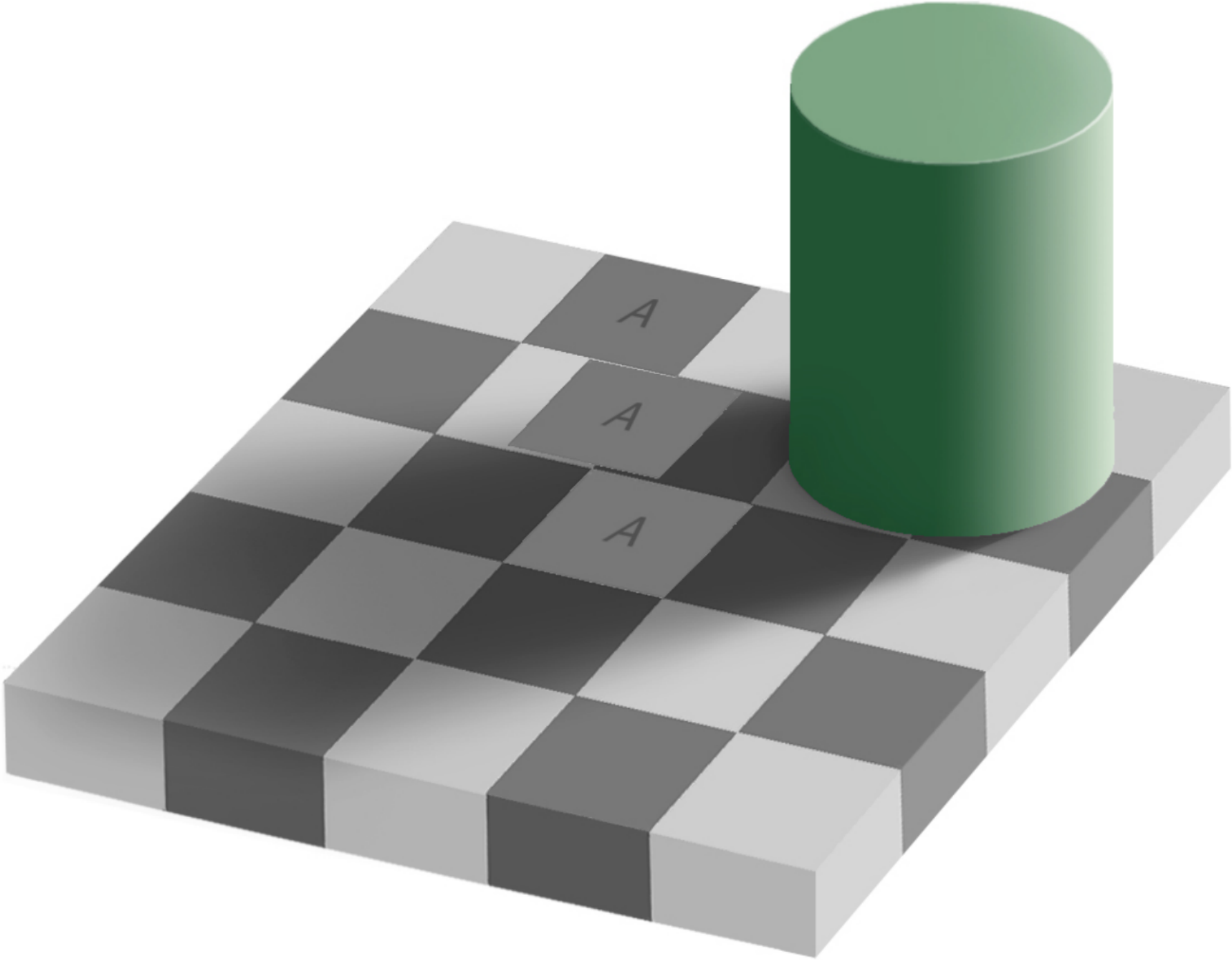
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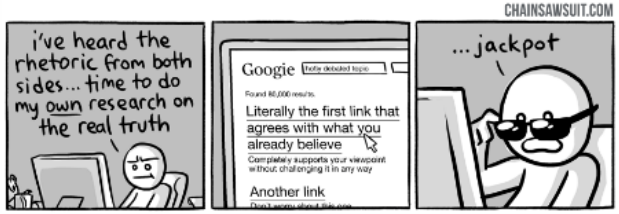
A
A

Felice Varini anamorphic interior

examples of cognitive biases

chance

base rate



confirmation

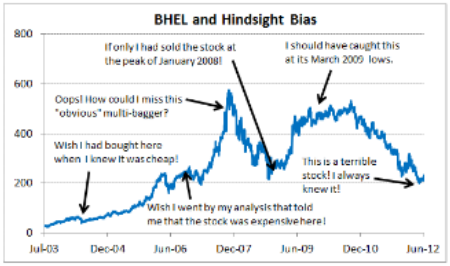
27546653454

32267654617

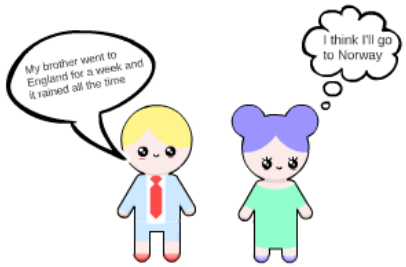
auction price?

salary negotiation

anchoring and adjustment



hindsight



vividness

examples of c

chance

bas

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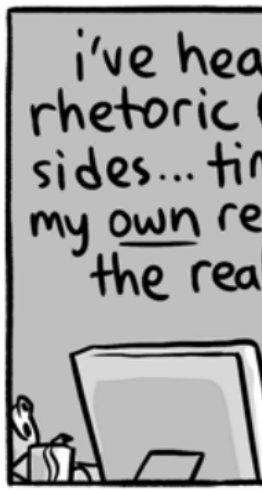
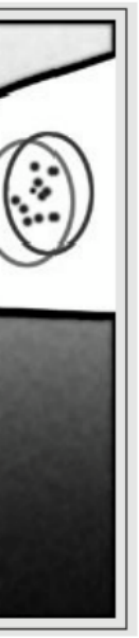
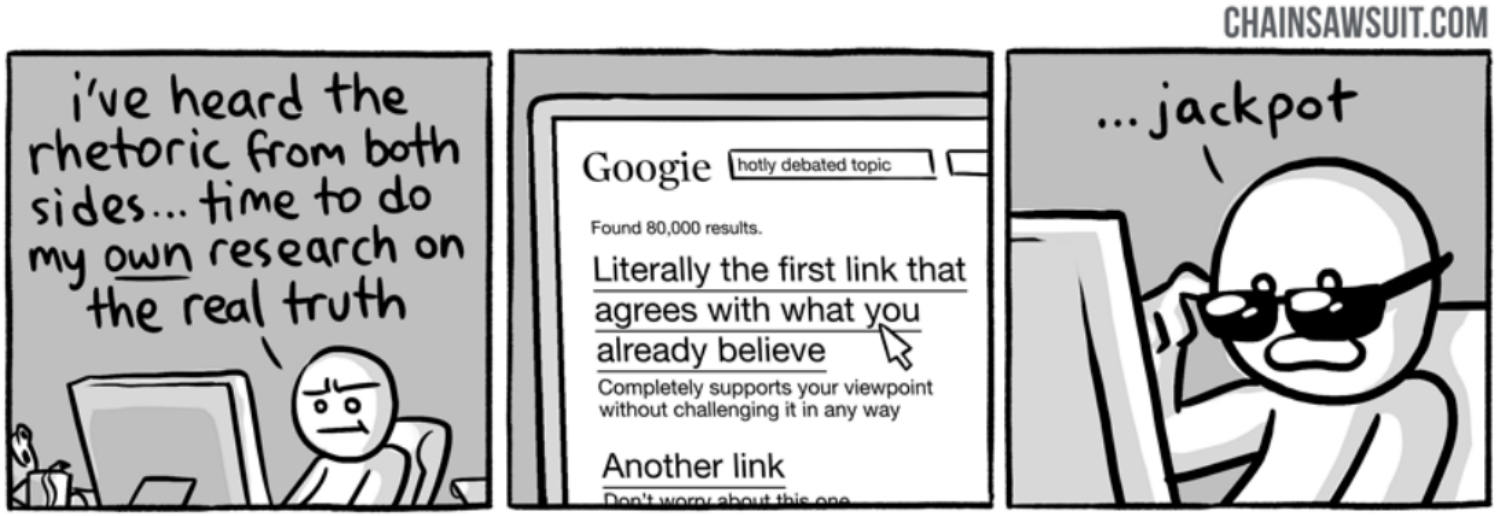


base rate

gnitive biases





confirmation

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800

600

400

200

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auction price?

anchoring and

price?

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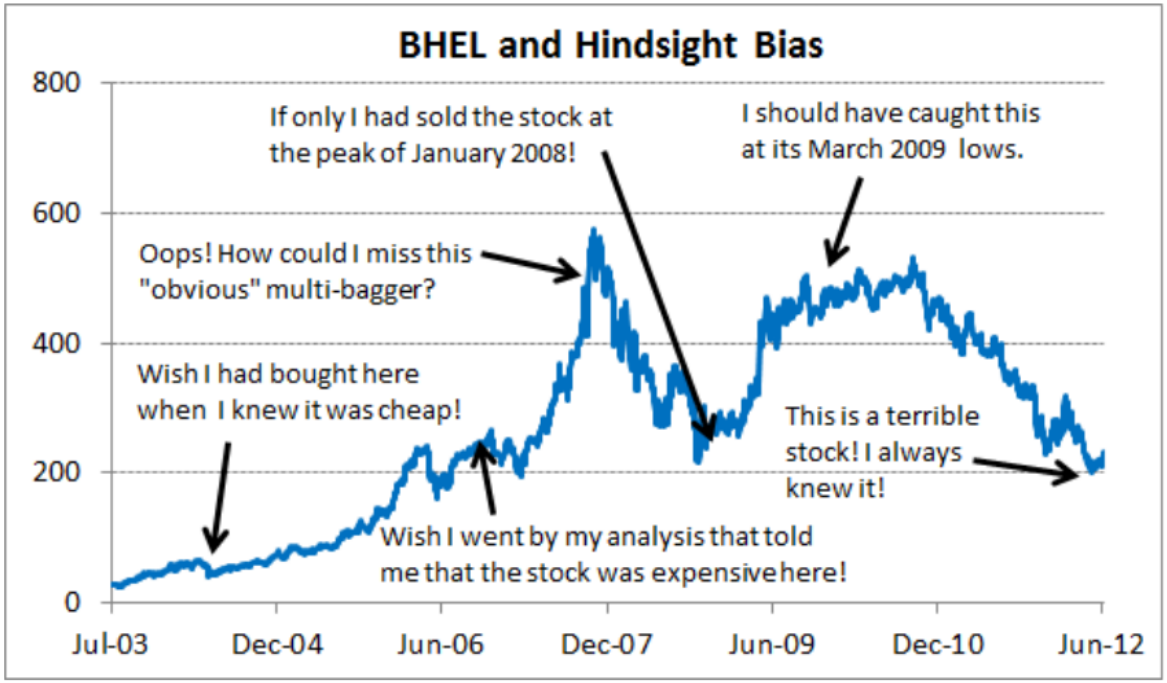
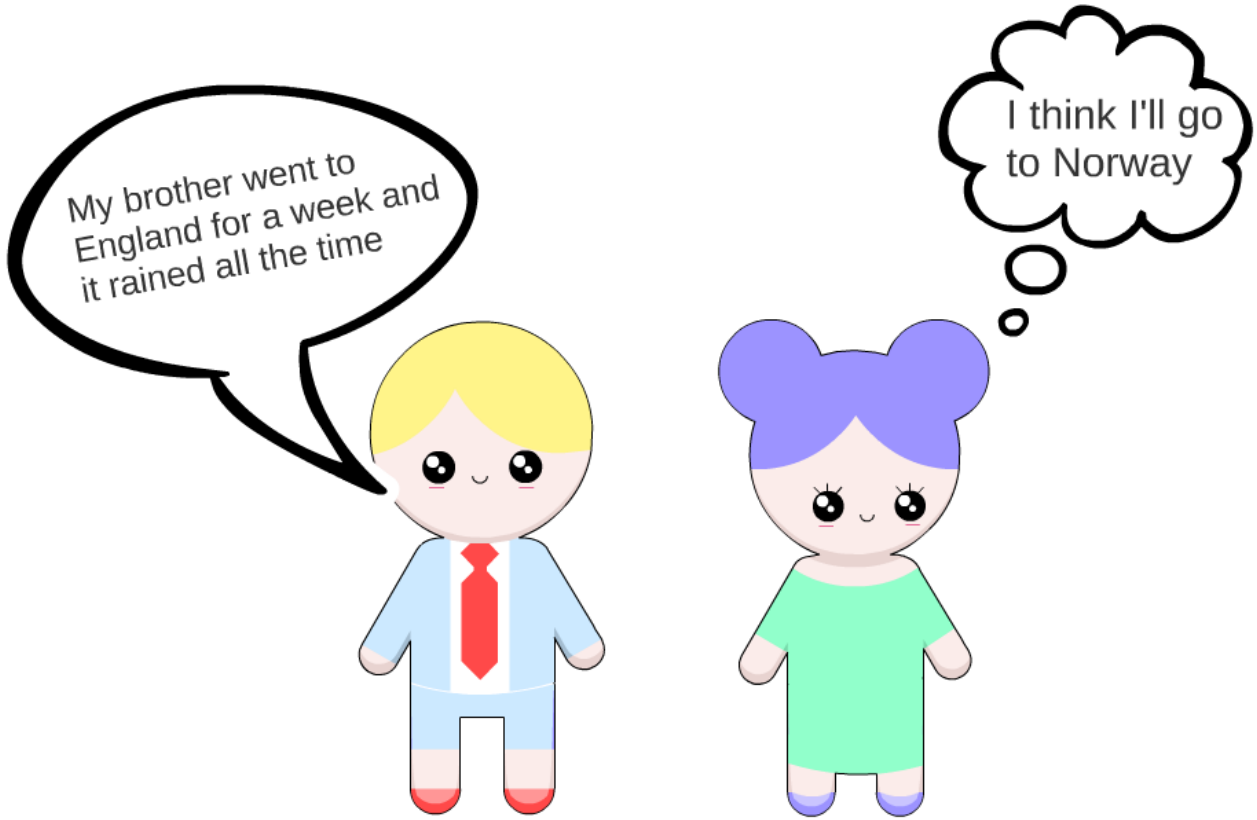


hindsight

My broth
England
it raine


My brother went to England for a week and it rained all the time
I think I'll go to Norway

vividness

Actor-observer
Adjustment
Ambiguity Effect
Anchoring
Anchoring & Adjustment
Anchoring and underadjustment
Anthropic bias
Ascription of Causality
Asymmetric dominance
Attentional
Attenuation
Authority

Asymmetric dominance
Attentional
Attenuation
Authority
Availability Heuristic
Availability in causes of death
Backfire effect
Bandwagon Effect
Base Rate
Base rate neglect
Belief
Belief overkill
Beneffectance
Bias Blind Spot

skip 20 pages of cognitive biases!

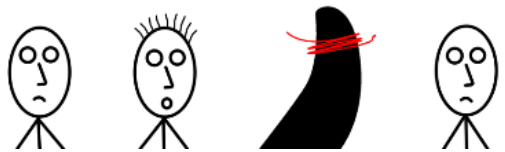
Selective Perception
Selective Search of Evidence
Selectivity
Self-Fulfilling Prophecy
Self-serving
Semmelweis reflex
Similarity
Single mindedness
Social comparison
Source confusion
Source Credibility Bias
Spacing effect
Status quo
Stereotypical

Spacing effect
Status quo
Stereotypical
Stereotyping
Student Syndrome
Subadditivity effect
Subjective validation
Subset
Success
Suffix effect
Suggestibility
Sunk cost effect
Survivorship
System justification

Suggestibility
Sunk cost effect
Survivorship
System justification
Telescoping effect
Test
Testimony
Testing effect
Texas sharpshooter fallacy
Tip of the tongue
Trait ascription
Ultimate attribution error
Unacceptability
Unit

Cognitive biases in action

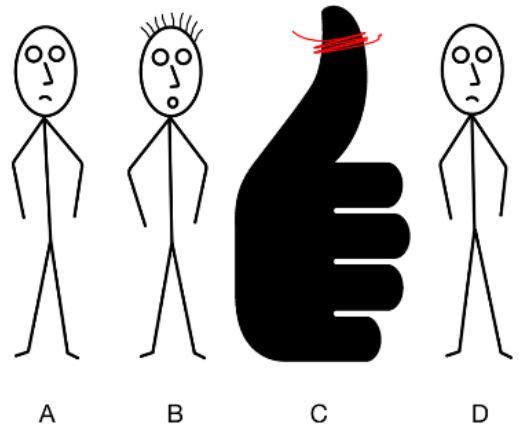
No. 348 The Von Restorff effect



Texas sharpshooter fallacy
Tip of the tongue
Trait ascription
Ultimate attribution error
Unacceptability
Unit
Von Restorff effect
Voter's illusion
Well travelled road effect
Wishful Thinking
Worse-than-average effect
Zeigarnik Effect

Cognitive biases in action

No. 348 The Von Restorff effect



Unfortunately, C has little chance in the police identification parade

why are humans sometimes irrational?

have to make decision fast

aversion to loss

"Thinking" uses up our resources remarkably quickly

irrational?

- have to make decision fast
- aversion to loss 

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- have to make decision fast
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"Thinking" uses up our resources remarkably quickly

investigation

cognitive biases in visualisation

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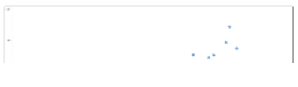
if so, can detect particular cognitive biases, and can we mitigate the effect to improve the decision?

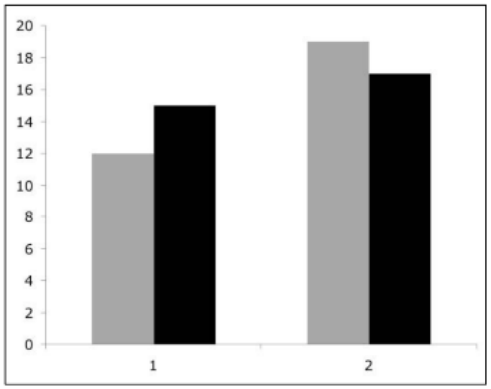
require

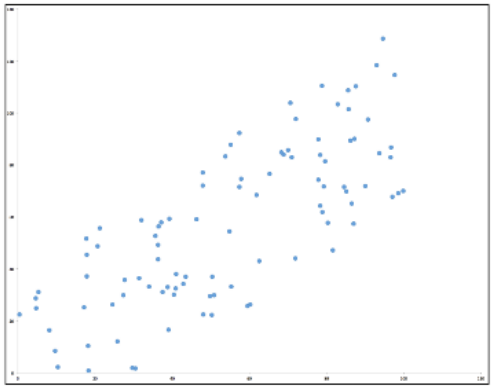
uncertainty



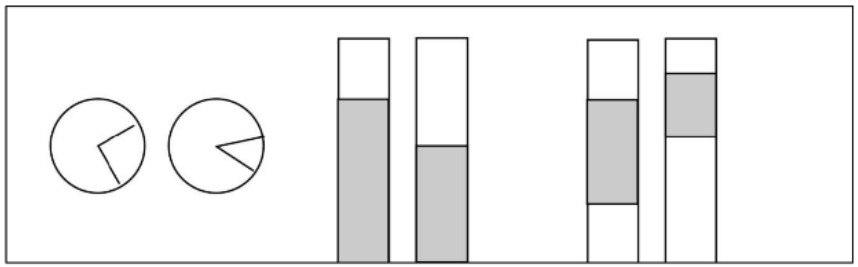
require

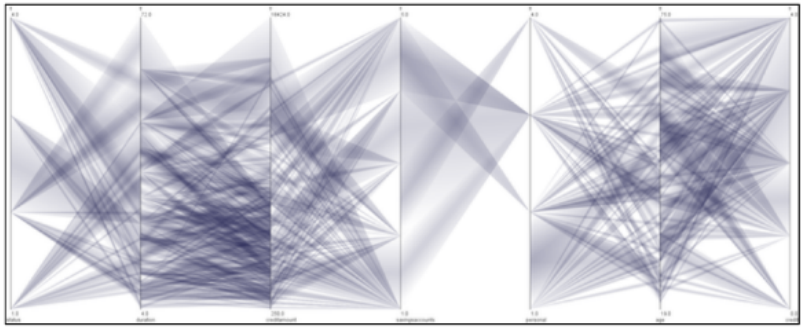
uncertainty
+
decision





clustering illusion





framing

nty

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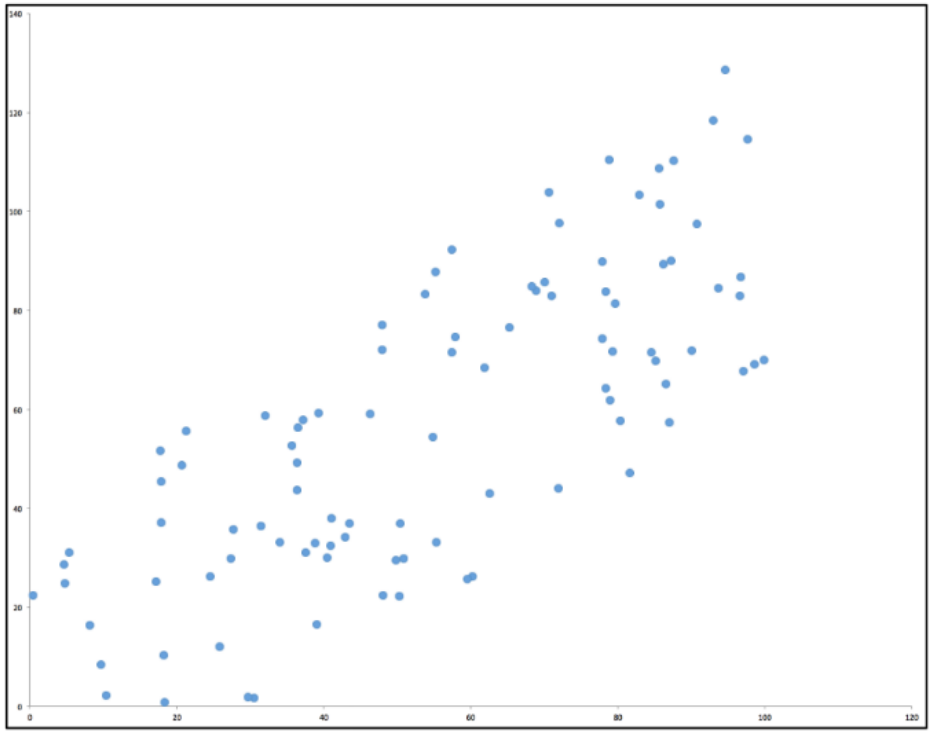
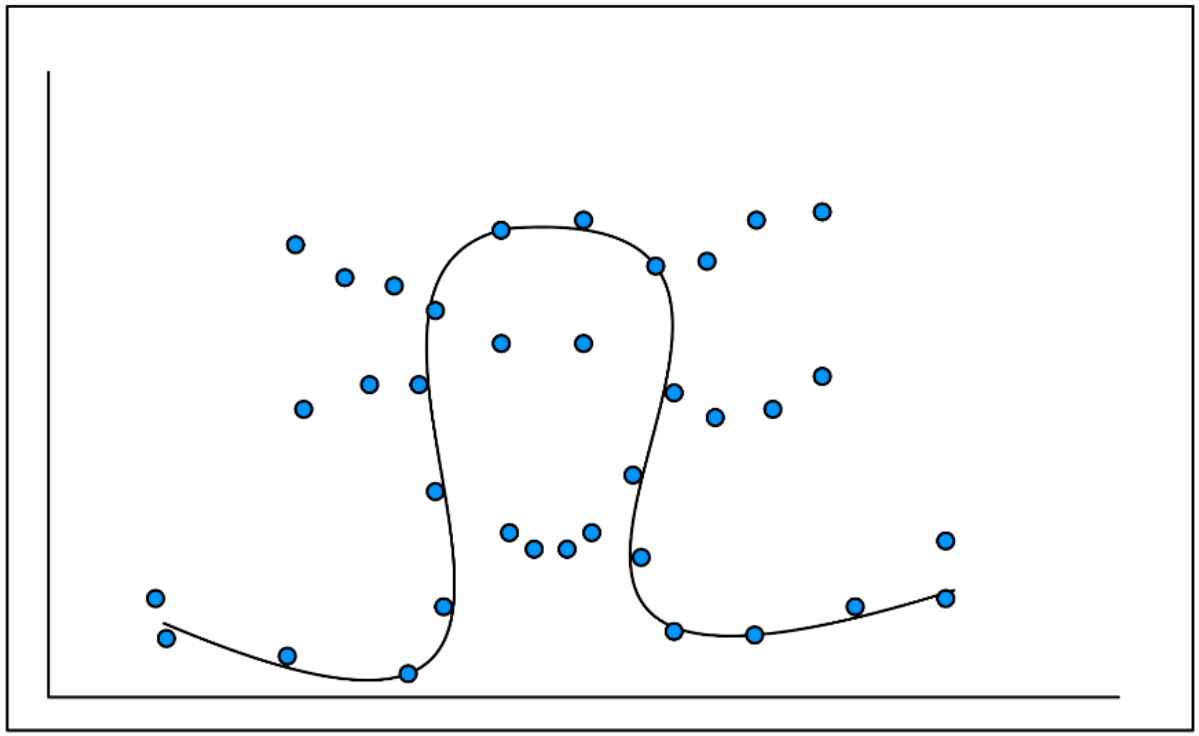
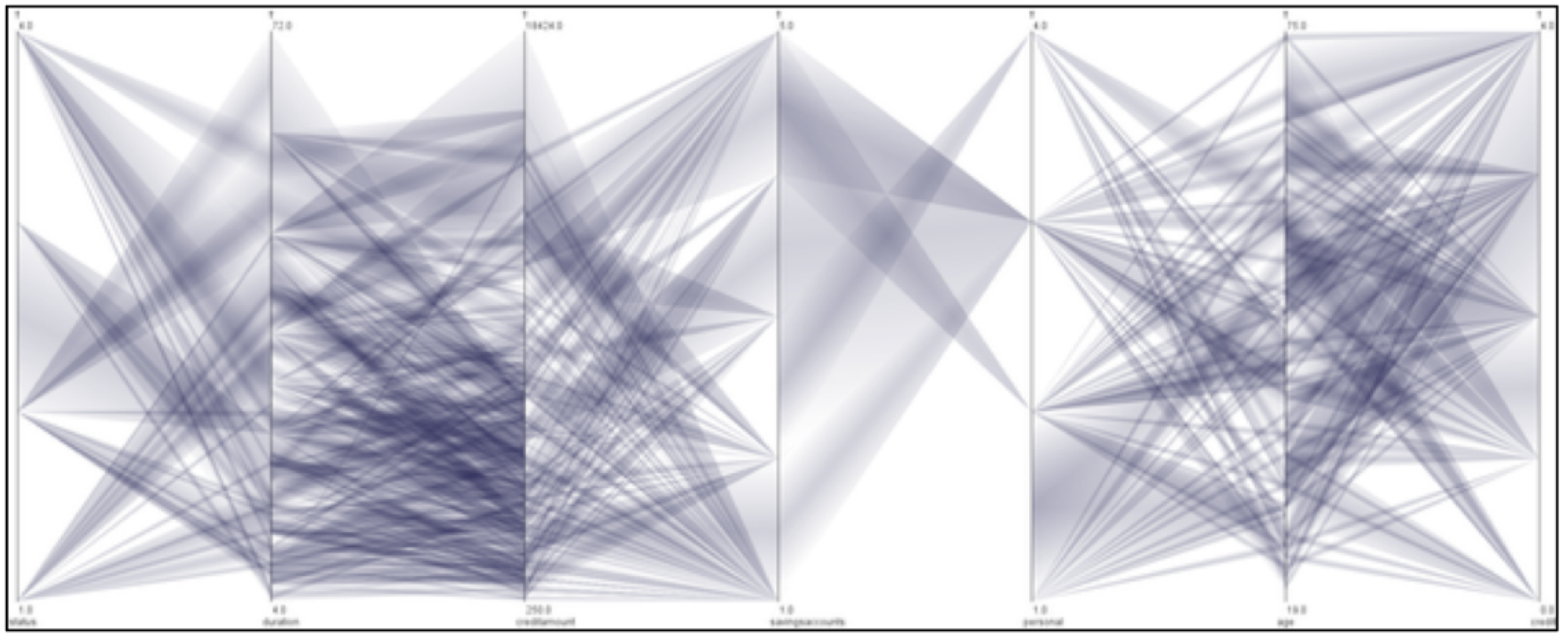


clustering illusion



completeness

clustering illusion

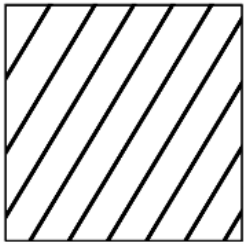


framing

completeness

can we 'anchor' the users?

studies



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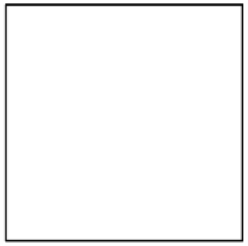

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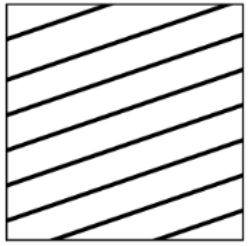

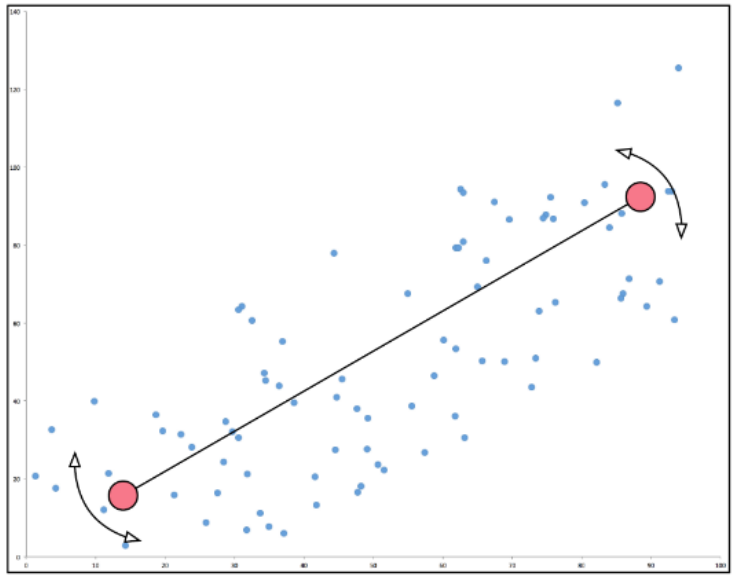

anchoring

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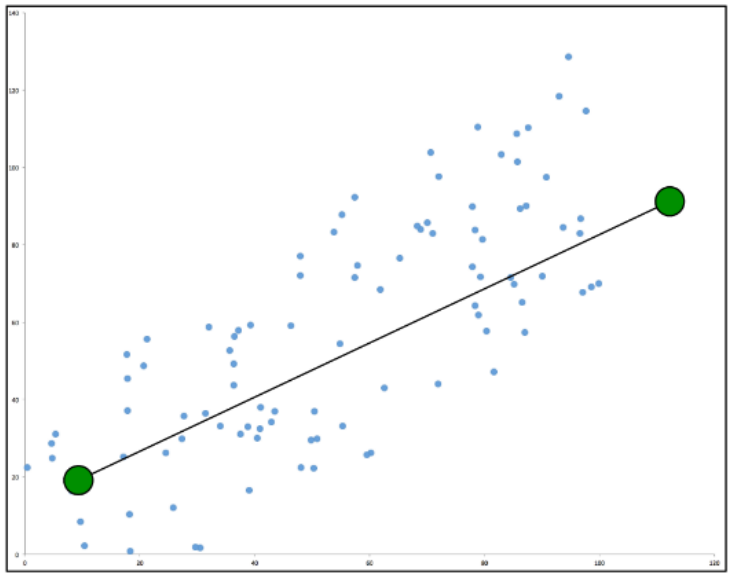

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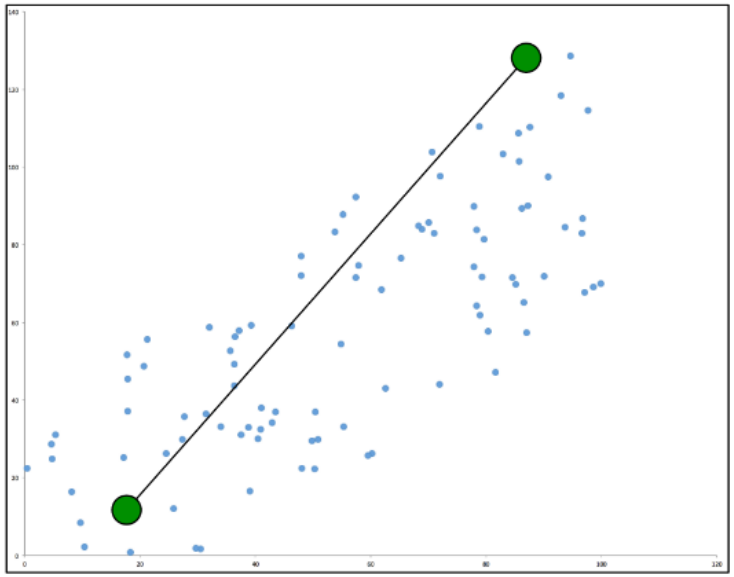

adjustment

VALCRI

VISUAL ANALYTICS FOR SENSE-MAKING IN CRIMINAL INTELLIGENCE ANALYSIS

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