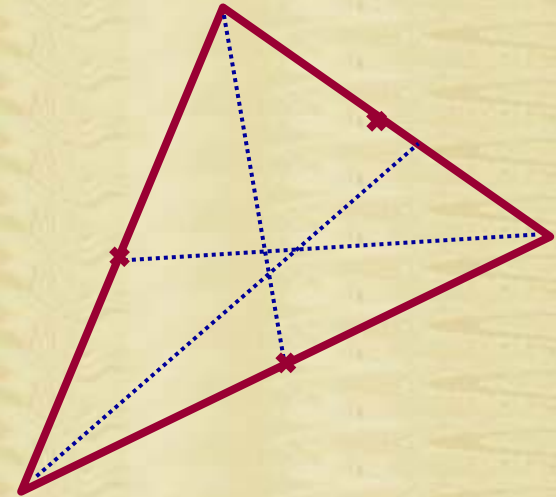


# Algorithmic simplicity may control some of our emotions

**Jean-Louis Dessalles**  
Telecom PARISTECH

[dessalles@telecom-paristech.fr](mailto:dessalles@telecom-paristech.fr)  
[www.dessalles.fr](http://www.dessalles.fr)



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## Lottery loser killed himself for just pounds 27

A man killed himself for pounds 27 after he mistakenly believed he and a friend had lost out on a pounds 2.7m National Lottery jackpot because he had forgotten to renew their ticket, an inquest was told yesterday.

Tim O'Brien, 51, a father of two, shot himself in the head in despair, Liverpool Coroner's Court was told. But it emerged that the tool-room servicer, married for 26 years, had made a tragic error and had only four of the six winning numbers.

Returning a verdict of suicide, the Merseyside coroner, Roy Barter, questioned the need for large jackpot payouts such as last week's pounds 22m and said they could be the source of future social problems.

# Examples

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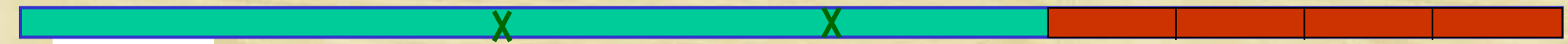
- ✱ Missing (or catching) the train by five seconds
- ✱ Forgetting one's cell phone the very day one is late for an important appointment
- ✱ Having played the winning number, but a week too soon

## Significance

- ✱ Essential source of emotion
- ✱ Elicits feelings such as gratitude or guilt
- ✱ Strengthens supernatural beliefs
- ✱ Influences rational judgment and decision making

"If only ..."

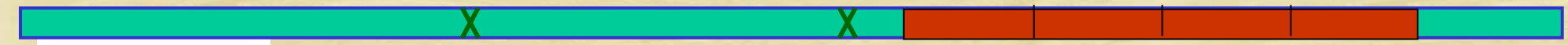
"I almost ..."



Lamia

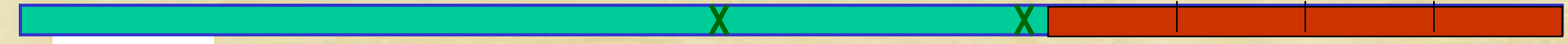
Test 4

€ 1000



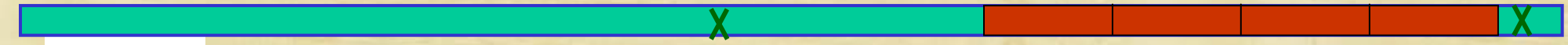
Géraldine

€ 1000



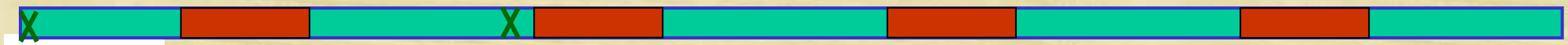
Sylvia

€ 1000



Lucile

€ 1000



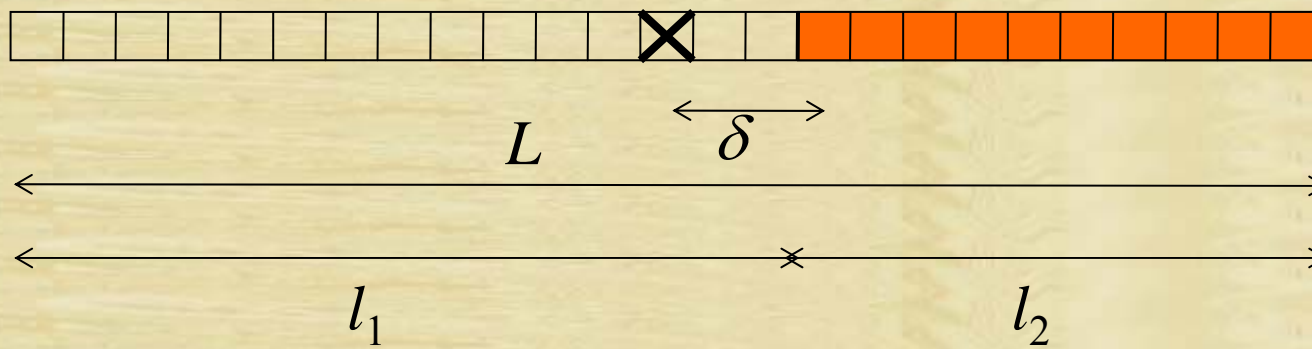
Zia

€ 1000

€ 1000

€ 1000

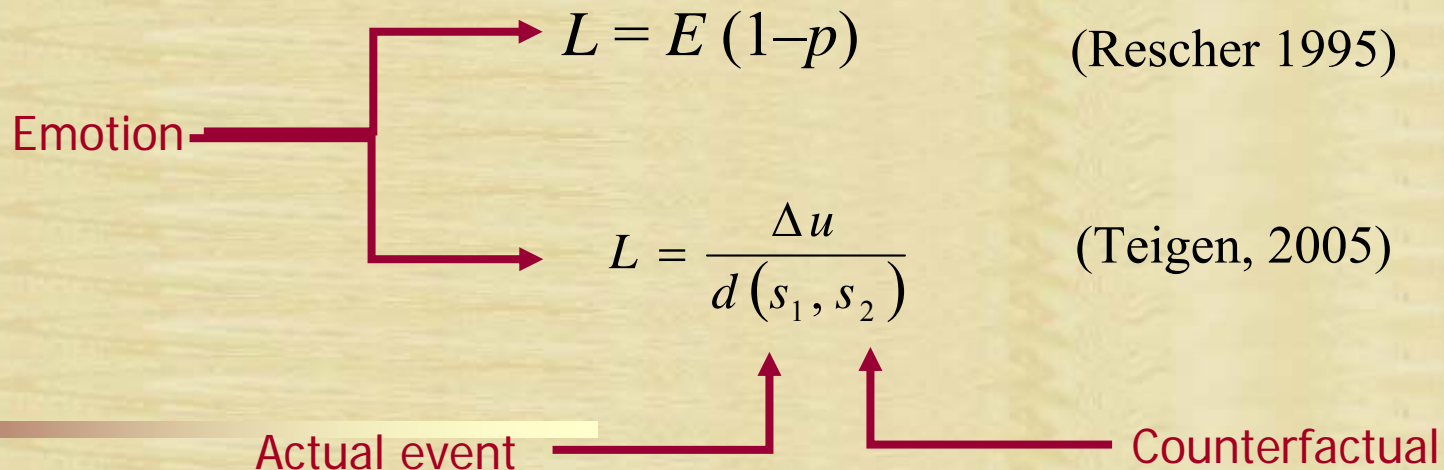
€ 1000



# Relevant parameters

- Low “probability” of the (un)lucky event
- Deviation from norms and expectations
- Mutability of causes, controllability
- “Distance” to counterfactual
- Complexity of the counterfactual

## Previous accounts



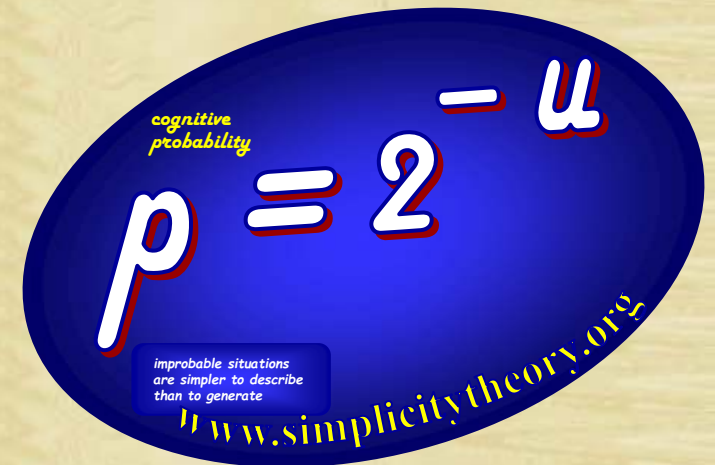
# Simplicity Theory

*Interesting situations are those which are simpler to describe than to generate (this includes emotional situations)*

$$U(s) = C_w(s) - C(s)$$

*The complexity  $C(s)$  of a situation  $s$  is the size of the best summary of  $s$  that is available to the observer.*

[www.simplicitytheory.org](http://www.simplicitytheory.org)



$$p = 2^{-U}$$

# Some of ST's Predictions

- ☀ Representativeness
- ☀ Rarity
- ☀ Distance
- ☀ Recency
- ☀ Departure from norm
- ☀ Coincidences
- ☀ Luck
- ☀ . . .

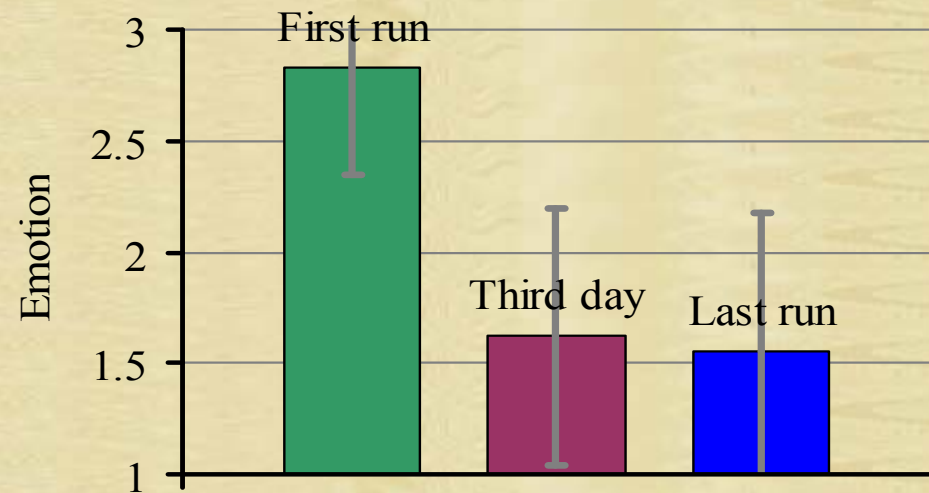


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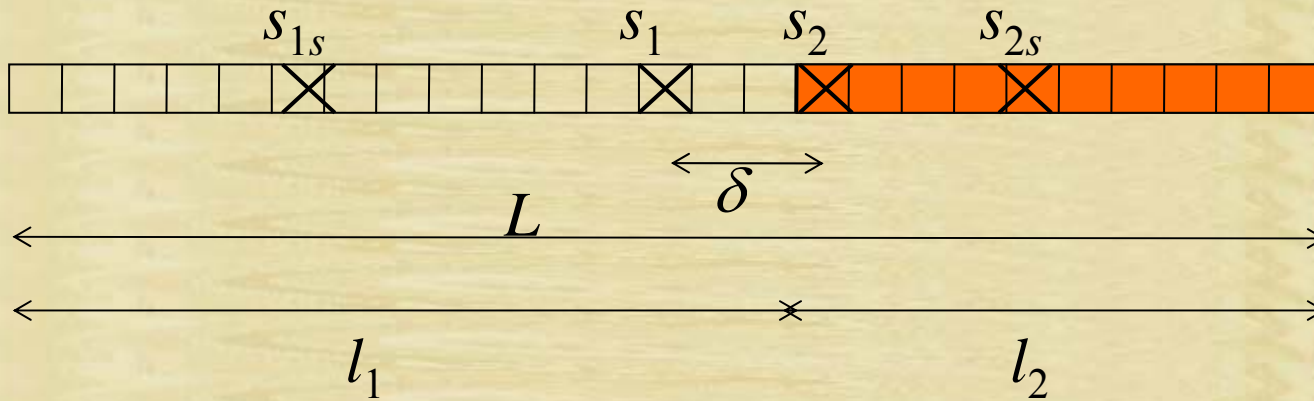
(Un)lucky events are situations that occurred despite of **simple, easily accessible** alternatives.



A young man broke his leg while on a one-week skiing holiday. A's accident occurred the first day, on the very first run; in case of B, it occurred the third day, at 14h30; for C, it occurred the last day of the week, on the very last run.



The ski story (102 participants)



$$U(s) = C_w(s) - C(s)$$

$$U(s_{1s}) = \log(L / l_1)$$

$$U(s_{2s}) = \log(L / l_2)$$

$$C_w(s_2) = C_w(s_1) + C_w(s_2 | s_1) = 1 + \log(\delta)$$

$$C(s_2) \leq C(s_1) + C(s_2 | s_1) = 0$$

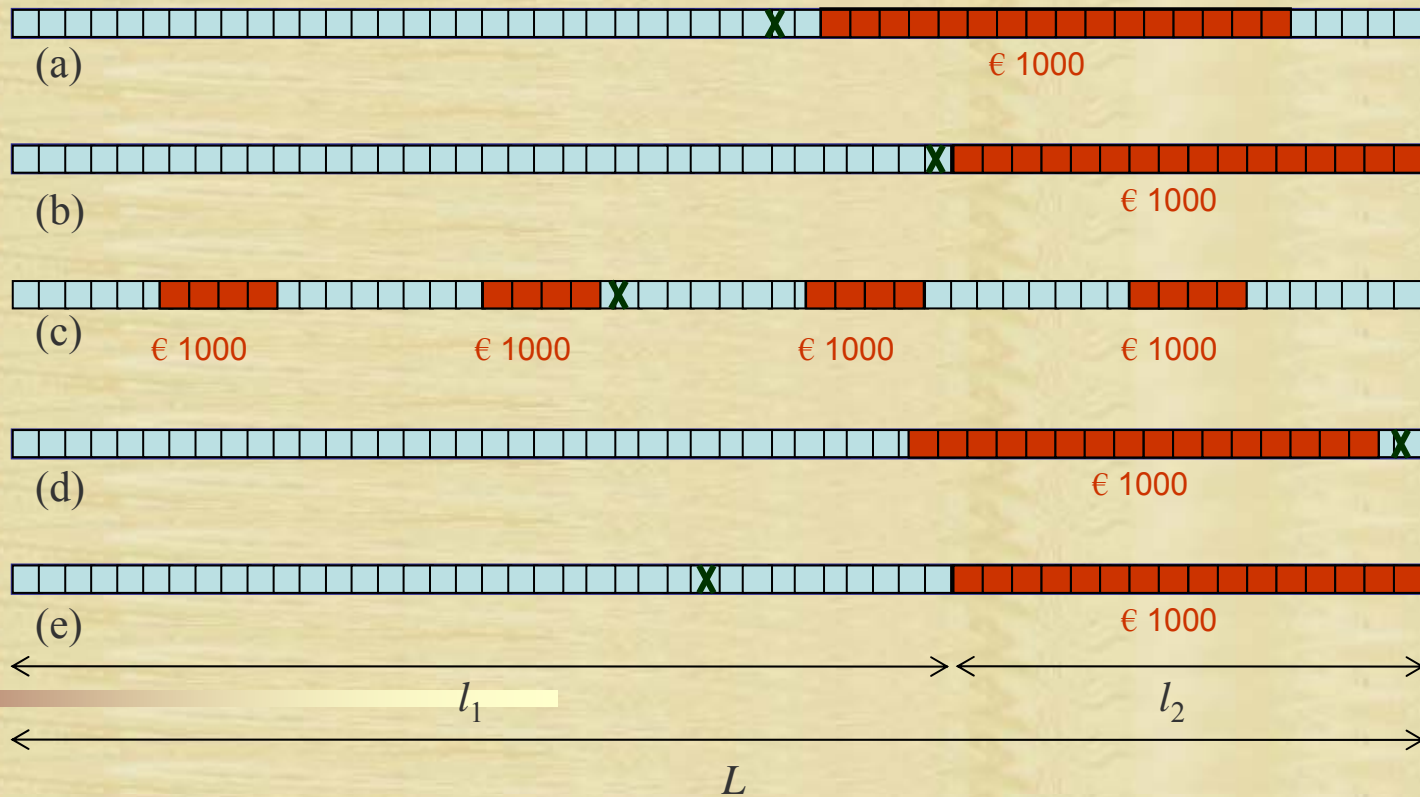
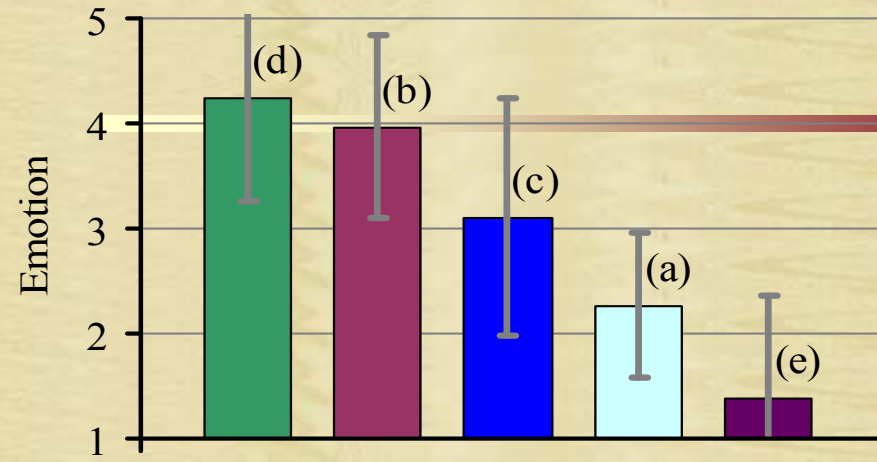
$$U(s_1) \geq U(s_2) - C_w(s_2 | s_1)$$

$$U(s_1) \geq \log(L) - 1 - \log(\delta)$$

$$U(s_1) \geq \log(L / \delta) - 1$$

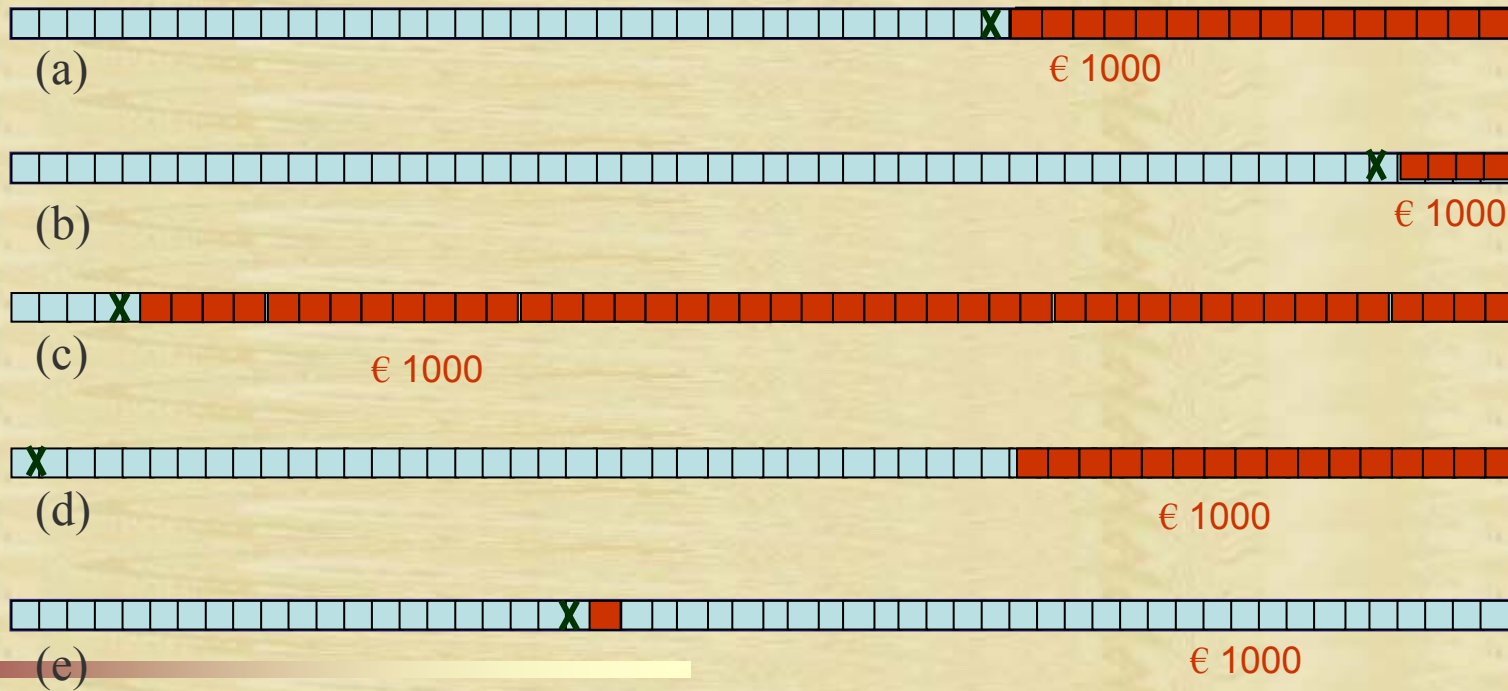
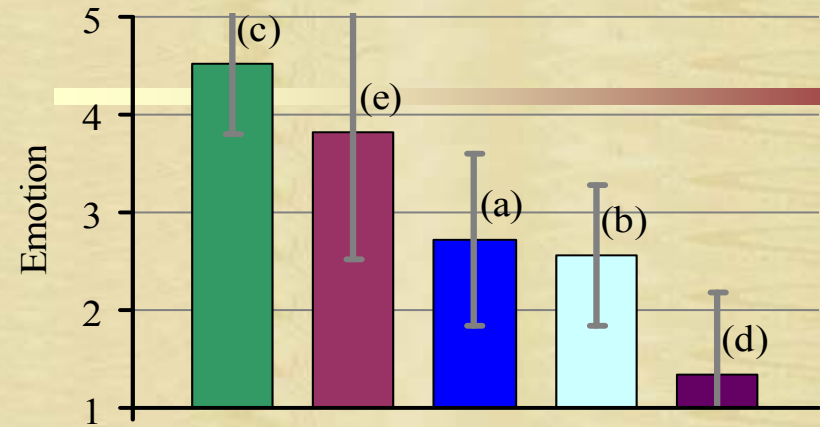
$$U(s_1) \geq U(s_2) - C_w(s_2 / s_1)$$

$$U(s_1) \geq \log(L / \delta) - 1$$



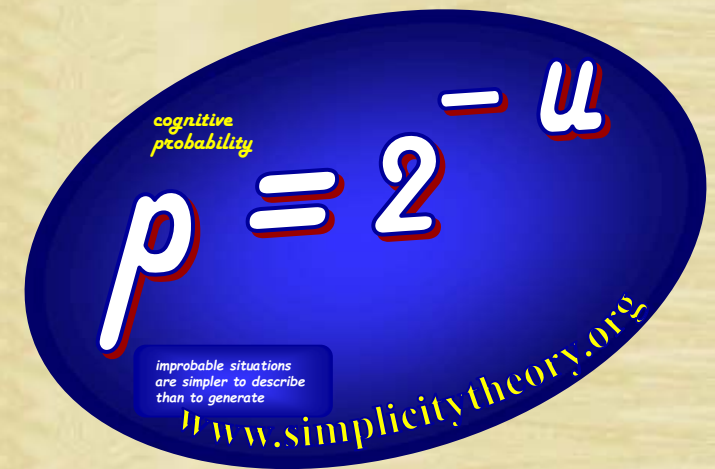
$$U(s_1) \geq U(s_2) - C_w(s_2 / s_1)$$

$$U(s_1) \geq \log(L / \delta) - 1$$



# Conclusions

- ☀ For some aspects, our minds act as compressing machines
- ☀ They react to situations that are *unexpected*, i.e.
  - ◉ Hard to generate
  - ◉ Simple to describe
- ☀ Emotional intensity seems to be *computed*.  
Unexpected, isn't it?



dessalles@telecom-paristech.fr  
www.dessalles.fr

www.simplicitytheory.org