What testers can learn from social sciences

@huibschoots

Our brain

People are irrational

Critical Thinking

- Recognise argument

- Analyse argument

- Evaluate argument

- Deductive (top-down) & Inductive (bottom-up) reasoning

Steps for Critical Thinking

Recognize the Argument
- Count the claims
- Look for reasons
- Identify the purpose

Analyze the Argument
- Pay attention to inference indicators
- Identify conclusion and premises
- Determine the issue
- Analyze any subarguments
- Detect fallacies
- Diagram the argument

Evaluate the Argument
- Determine reasoning style
- Identify argument kind
- Use appropriate terminology and tools

Deductive Reasoning

Categorical Arguments
- Translate into standard form
- Check validity using Venn diagram
- Check validity using Rules

Truth-Functional Arguments
- Translate into symbolic form
- Check validity using Forms
- Check validity using Truth Table
- Check validity using Shortcut

Inductive Reasoning

Analogical Arguments
- Present in general form
- Assess the evidence for the analogy
- Check the relevance of the analogy

Inductive Generalizations
- Present in general form
- Assess the sample randomness
- Assess the sample size

Causal Arguments
- Present in general form
- Determine the method
- Assess causal evidence

Critical Thinking

Huh?

What does this mean?

What is the point?

Really?

Are you absolutely certain?

How do you know?

So?

Where does this lead?

So what?

IMPROVE
Quality Services

Creative & critical thinking

System Thinking

What is testing?

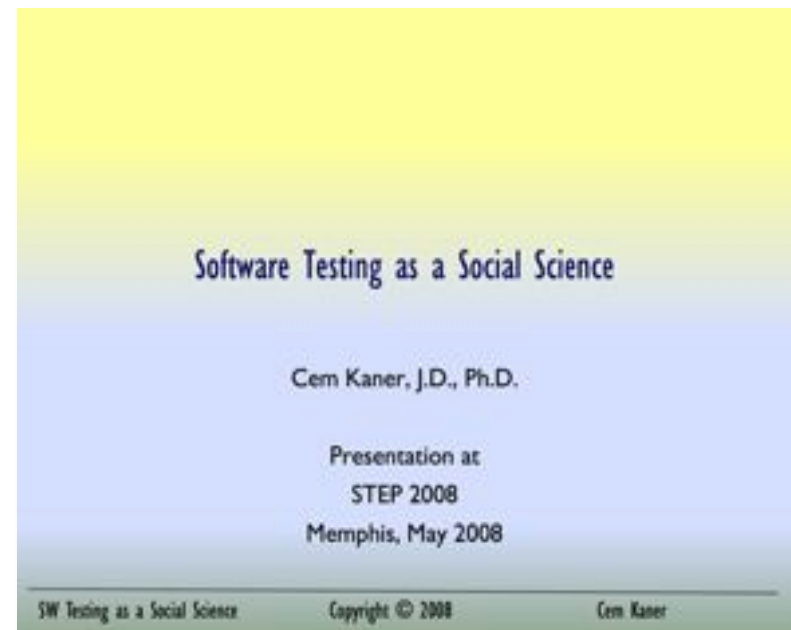Testing gathers information about a product with the intention to inform a decision

(Jerry Weinberg)

Social science

"To test effectively, our theories of error have to be theories about the mistakes people make and when / why they make them"

Software Testing as a Social Science
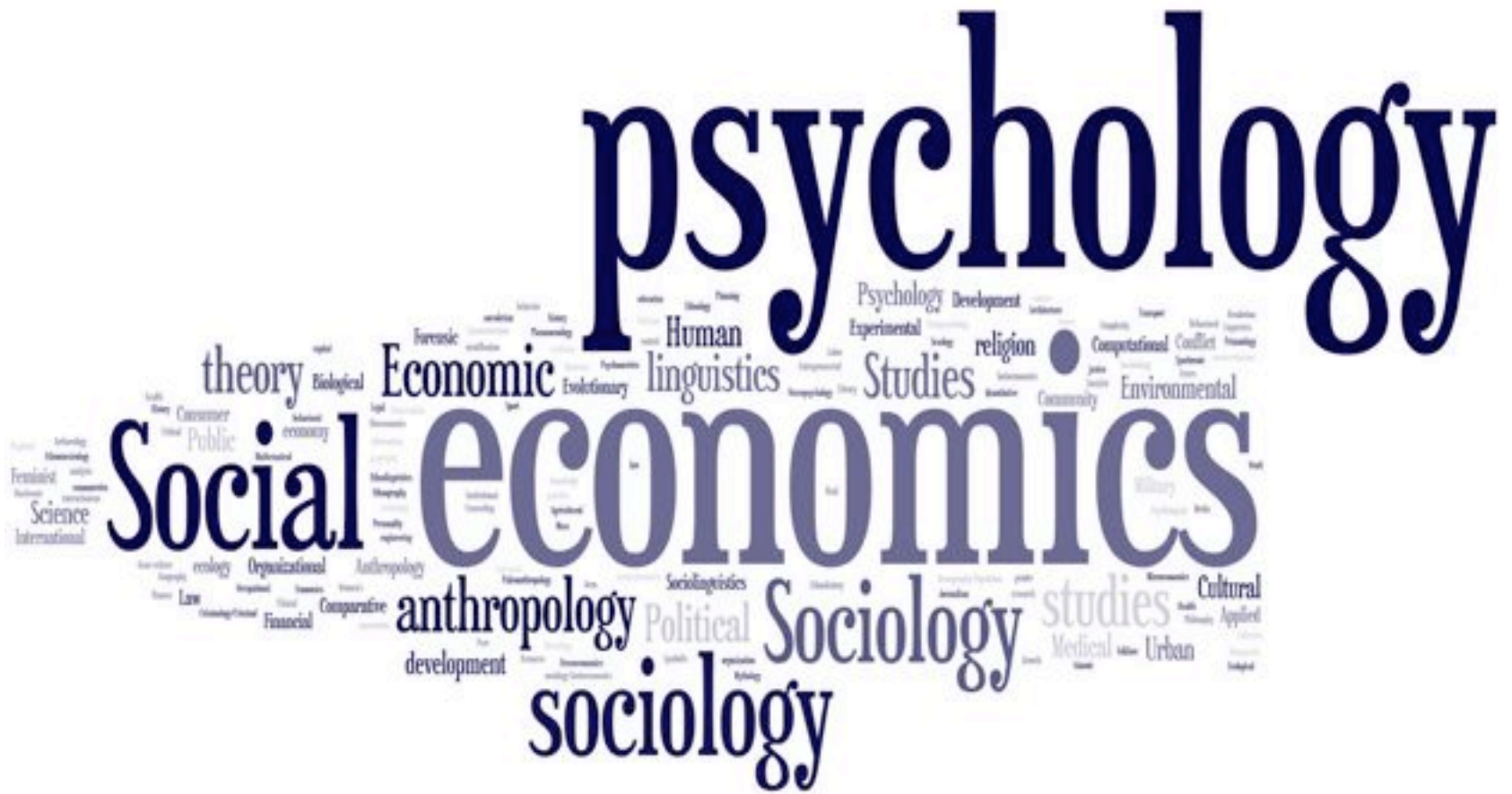
Cem Kaner, J.D., Ph.D.

Presentation at
STEP 2008
Memphis, May 2008

SW Testing as a Social Science   Copyright © 2008   Cem Kaner

IMPROVE
Quality Services

What is Social science?

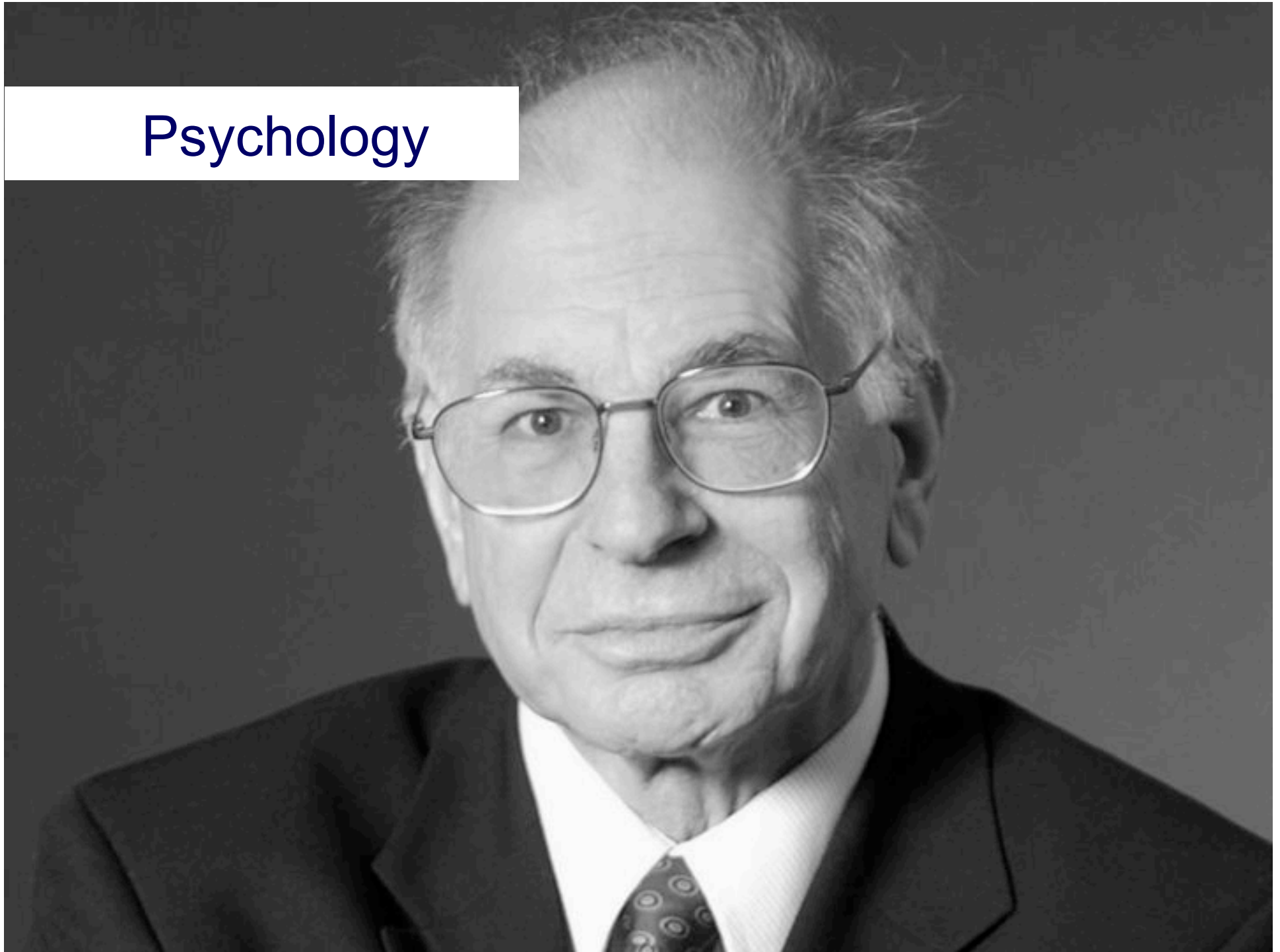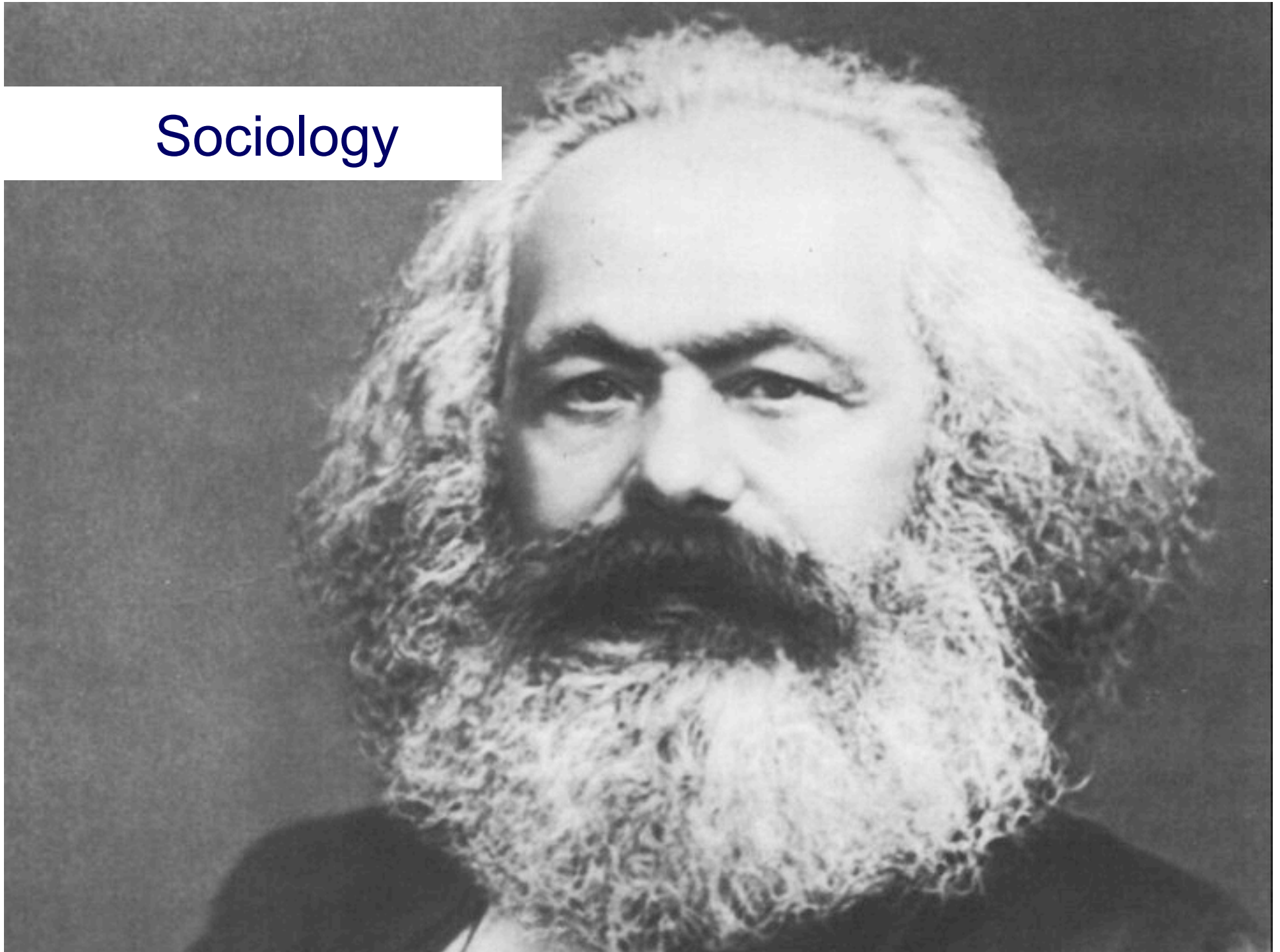PHOTO: HTTP://WWW.FLICKR.COM/PHOTOS/ROBBY_VAN_MOOR/478725670/
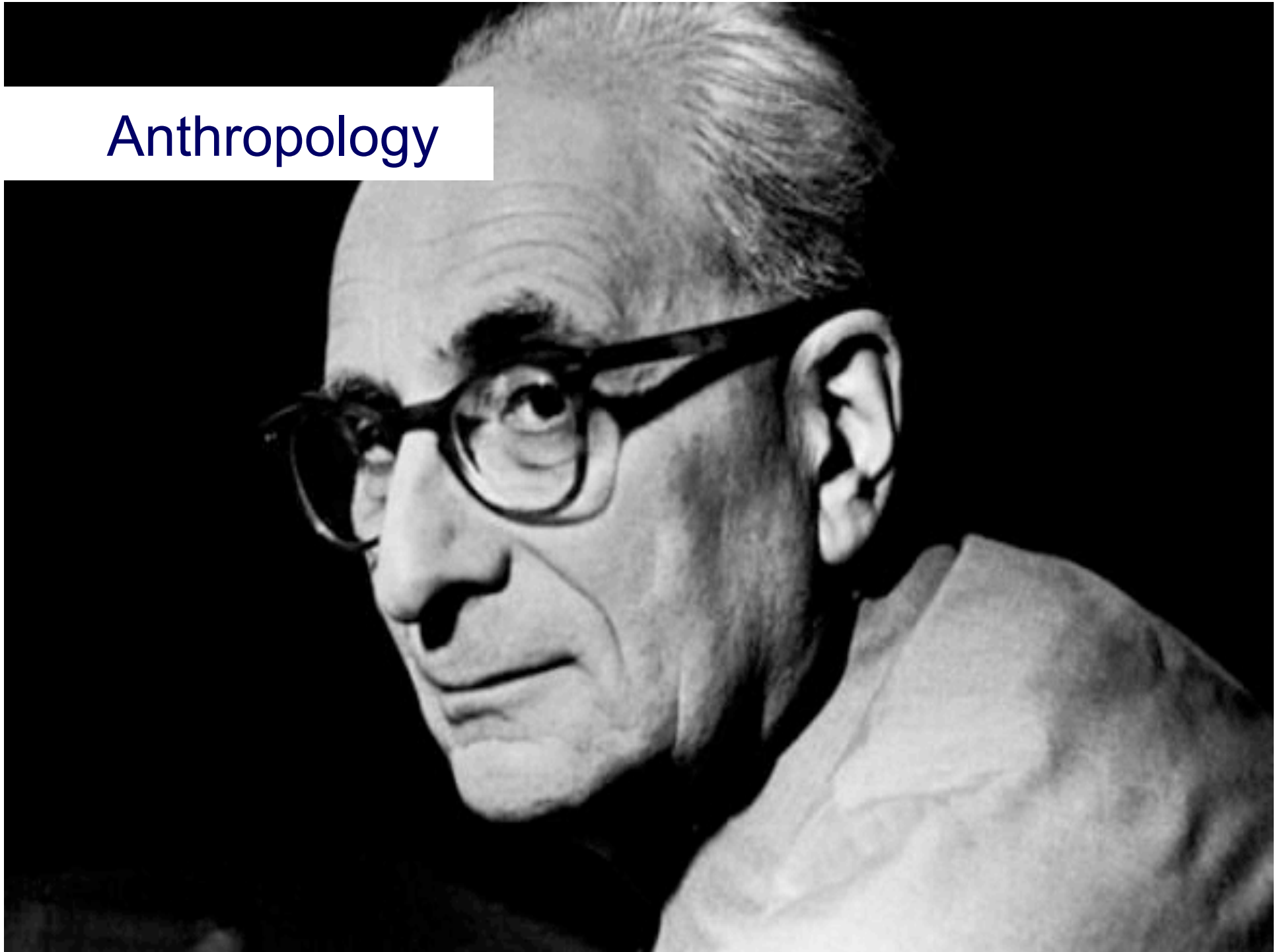
Social science

Psychology

Sociology

Anthropology

Didactic / Pedagogy

Communication studies

Communication studies

HOLLIS   The philosophy of social science   CAMBRIDGE

Zimbardo
Leippe   THE PSYCHOLOGY OF ATTITUDE CHANGE AND SOCIAL INFLUENCE

Aronson   *The Social Animal*   Seventh Edition

Aronson   READINGS ABOUT *The Social Animal*   Seventh Edition   FREEMAN

ITP   LIPPA   INTRODUCTION TO SOCIAL PSYCHOLOGY   SECOND EDITION

Science & research
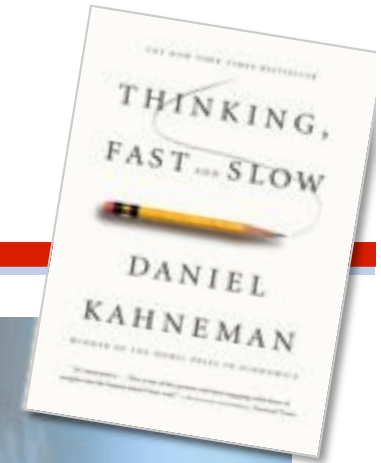
Quantitative Research

Qualitative Research

About your opinion...

- What did I find out?
  - Not prove yourself right
  - Prove yourself wrong

- First collect data, then judge / have an opinion

IMPROVE
Quality Services

Thinking Fast & Slow

Biases & Fallacies

You are not so smart

- ## Cognitive biases
  Predicable patterns of thought that lead to incorrect conclusions.

- ## Logical fallacies
  Is when you reach a conclusion without knowing all the facts.

- ## Heuristics
  Mental shortcuts to reach a solution used too fast.
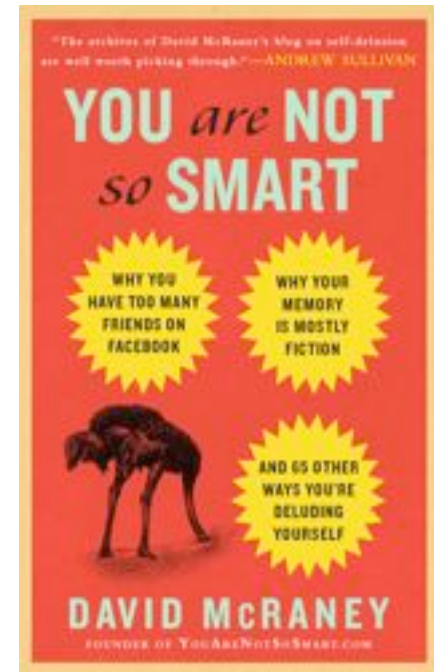
Dunning-Kruger Effect
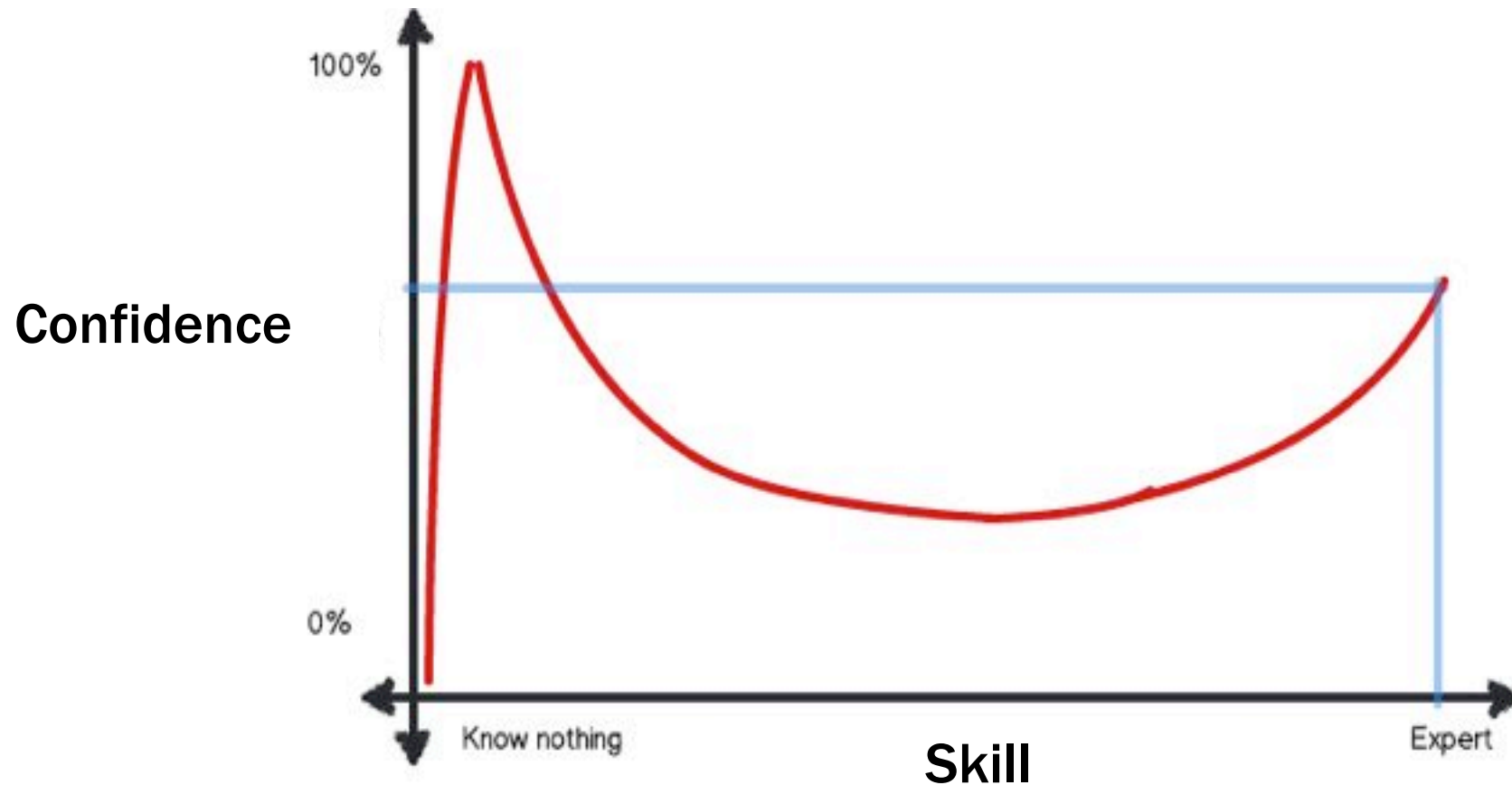
Effect in which incompetent people fail to realise they are incompetent because they lack the skills to distinguish between competence and incompetence.

IMPROVE
Quality Services

Dunning-Kruger Effect

IMPROVE
Quality Services

Confirmation Bias

You tend to look for information that confirms your beliefs and ignore the information that challenges them.

- Biased search

- Biased interpretation

- Biased memory

Movie Perception Test

Source: http://www.youtube.com/watch?v=6JONMYxaZ_s

IMPROVE
Quality Services

Software

Quality

Numbers & counting

Testing is about…

Skills

Experiments

Communication

People

Thinking

Learning

Decision making

Collaboration

IMPROVE
Quality Services

Summary

- Be aware of what you do in testing
- Learn from what people do in social sciences
- Do quantitative AND qualitative research
- Think critically
- Be aware of biases and fallacies
- Accept and deal with ambiguity, situational specific results and partial answers

IMPROVE
Quality Services

Acknowledgements

Special thanks to:

John Stevenson
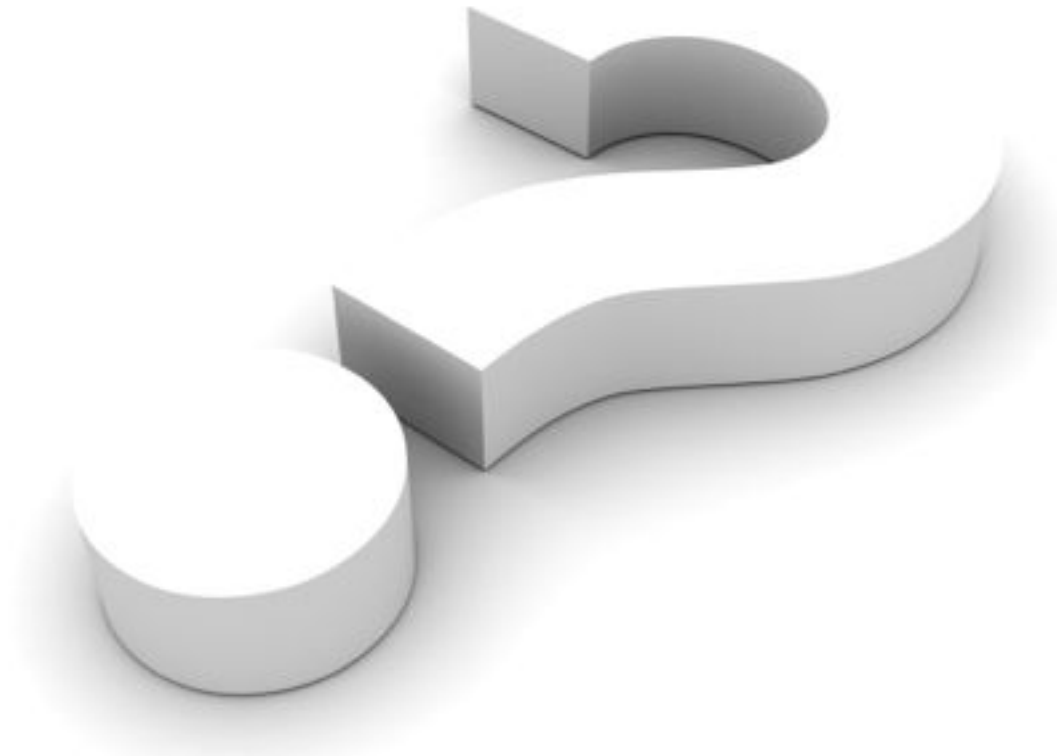
http://www.steveo1967.blogspot.com/

Many of the ideas in this presentation were inspired by colleagues including Cem Kaner, Michael Bolton, James Bach, Rikard Edgren and Jerry Weinberg.
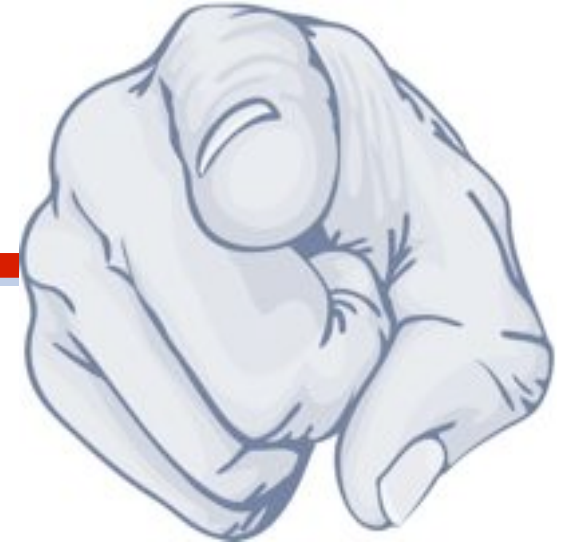
Questions?

IMPROVE
Quality Services

Your turn!
Read & think critical about it!

- Thinking fast & slow - Daniel Kahneman
- You're not so smart - David McRaney
- Predictably Irrational - Dan Ariely
- The invisible Gorilla - Christopher Chabris and Daniel Simons
- Qualitative Data Analysis: a user-friendly guide for social scientists - Ian Dey
- Critical Thinking: a user's manual - Debra Jackson
- http://steveo1967.blogspot.com/2011/01/are-testers-ethnographic-researchers.html
- http://steveo1967.blogspot.com/2011/01/what-you-believe-might-not-be-true-part.htm
- http://steveo1967.blogspot.com/2010/07/danger-confirmation-bias.html
- http://steveo1967.blogspot.com/2013/03/creative-and-critical-thinking-and.html
- http://usersknow.blogspot.ca/2013/02/combining-qualitative-quantitative.html
- Research Methods: Participant observation (www.sociology.org.uk)
- Qualitative Evaluation checklist - Michael Quinn Patton (www.wmich.edu/evalctr/checklists)
- Critical & creative thinking (http://www.engin.umich.edu/~cre/probsolv/index.htm)
- Software Testing a Social Science - Cem Kaner
- Testing Through The Qualitative Lens - Michael Bolton
- Curing Our Binary Disease - Rikard Edgren
- The Irrational Tester: Avoiding the Pitfalls – James Lyndsay

IMPROVE
Quality Services

Contacts

Huib Schoots

hsc@Improveqs.nl

@huibschoots

www.huibschoots.nl/blog

Laan van Diepenvoorde 1
5582 LA Waalre
The Netherlands
Tel: +31 40 2021803