

# Wissenschaftstheorie & Einführung in das wissenschaftliche Arbeiten

Überblick / Organisation

Motivation zum wissenschaftlichen Arbeiten

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Dr. Blazej Baczkowski (Błażej Bączkowski)

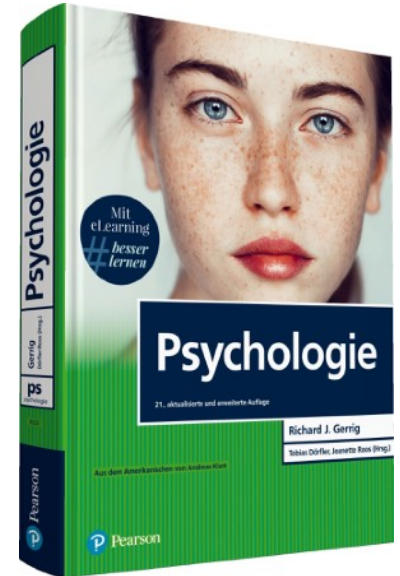
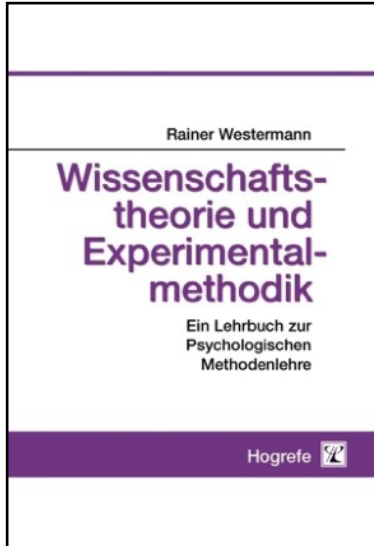
# What is this lecture series about?

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- What is (scientific) psychology?
- What are important concepts in psychological research?
- How do we acquire scientific knowledge?
- What is logical reasoning?
- What is scientific literature?
- ...and other problems related to the way we study psychology.

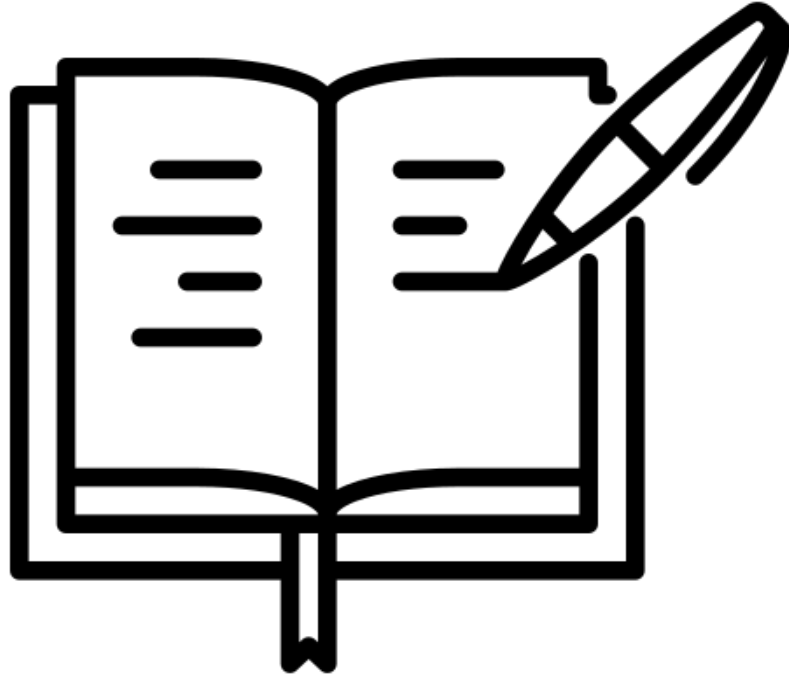
# Lectures are usually just introductions...

Ergänzende Literatur (aber nicht klausurrelevant)



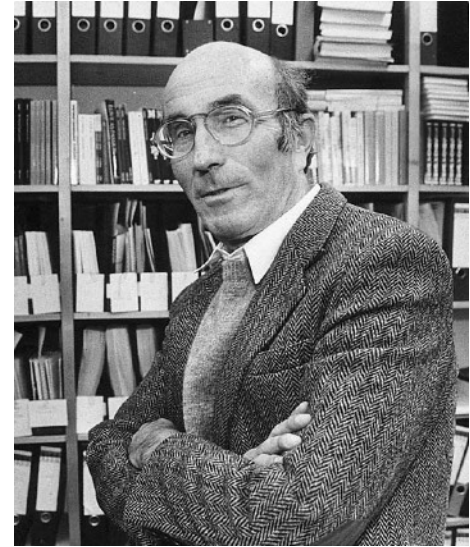
# How to take notes?

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# Taking notes like a pro...

- a highly productive german sociologist
- 50 (70?) books and over 600 (400?) article
- unique way of taking notes:
  - build a comprehensive web of knowledge
  - quickly retrieve the right memory
  - find new connections among topics
  - develop unique ideas and arguments



Niklas Luhmann (1927-1998)

# Luhmann's Zettelkasten method



medium.com/  
@davidbolear

# Bibliographiezettel (I) — references

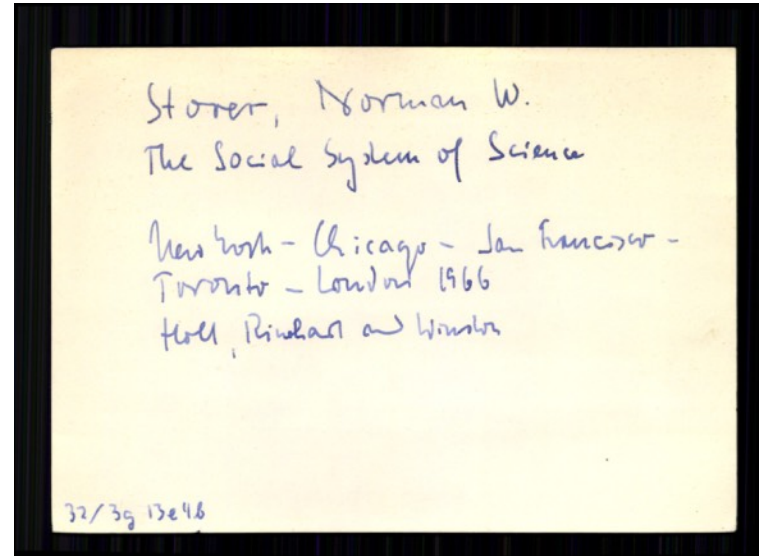
<Reference>

Author:

Title:

Year:

Publisher:



[niklas-luhmann-archiv.de](http://niklas-luhmann-archiv.de)

# Bibliographiezettel (II) — reactions to the text

Page #: Reaction

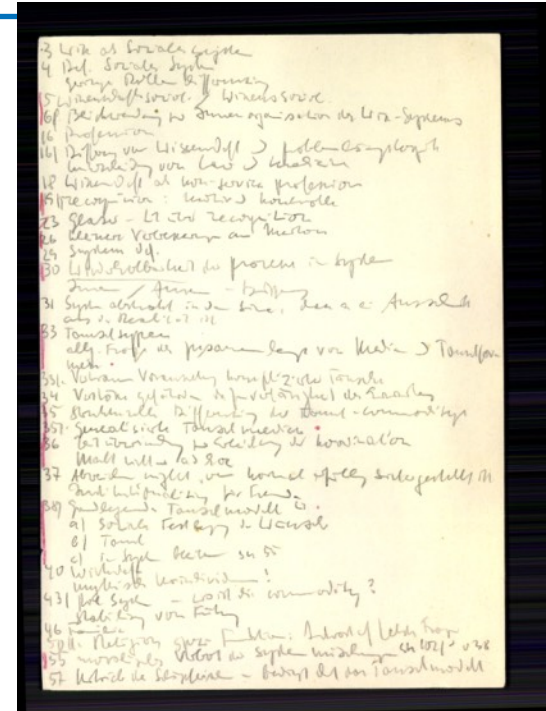
Page #: Reaction

Page #: Reaction

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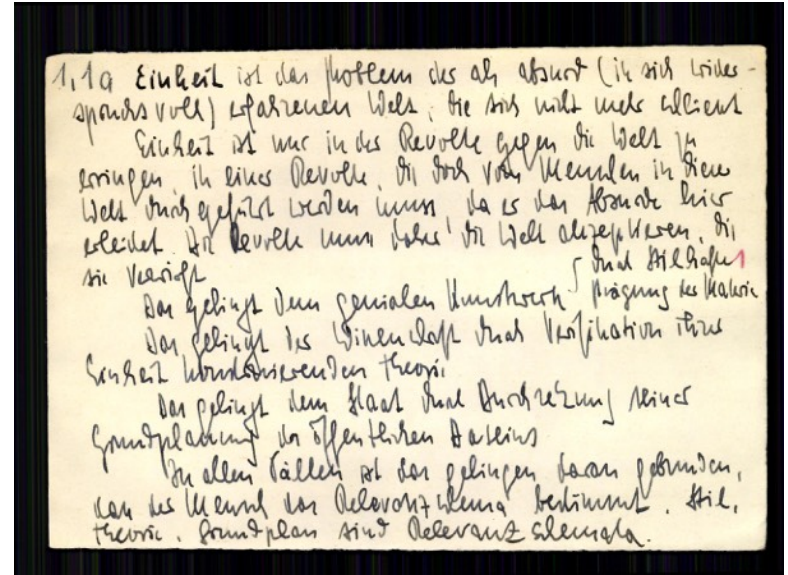
[niklas-luhmann-archiv.de](http://niklas-luhmann-archiv.de)



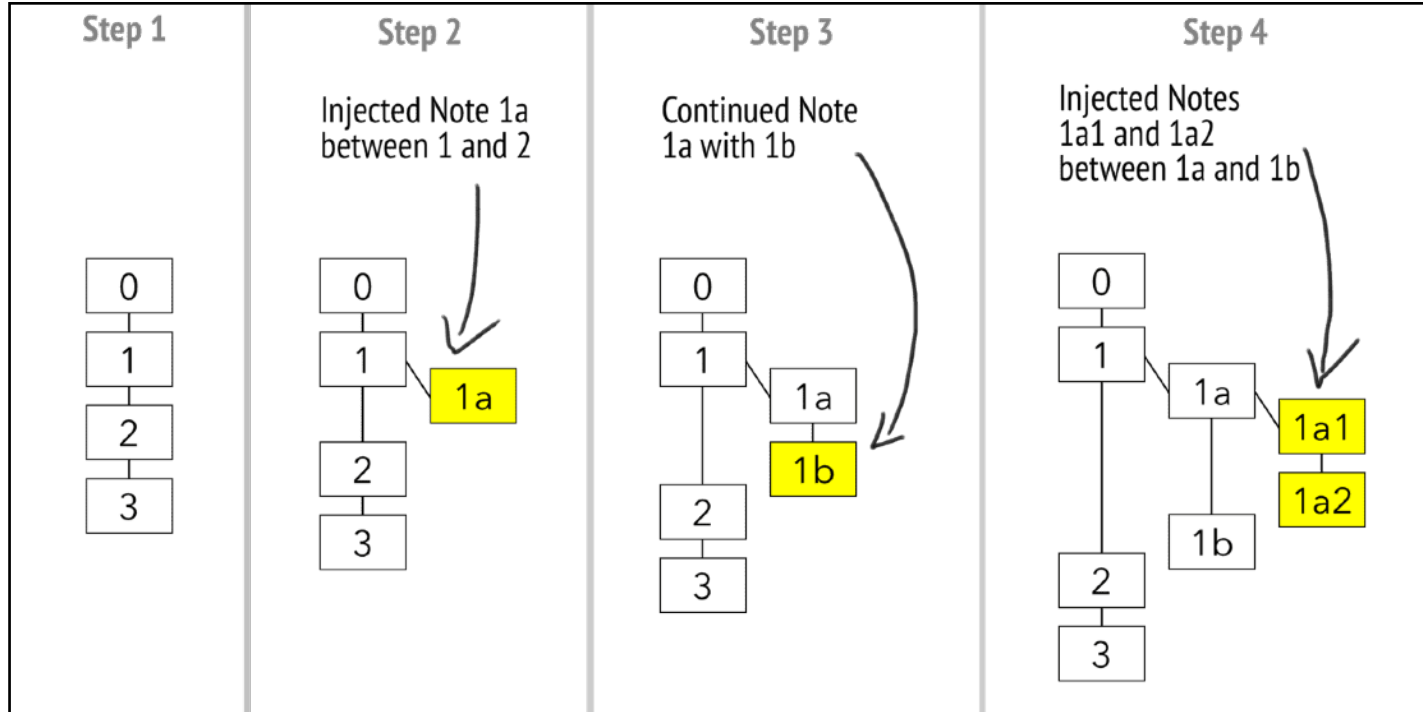
# Notizzettel — atomic thoughts in own words

<id card>

body of the atomic note  
written in own words; <id link>



# Ordnungsprinzip und Nummerierungsprinzip



## Schlagwortregisterzettel — the entry point

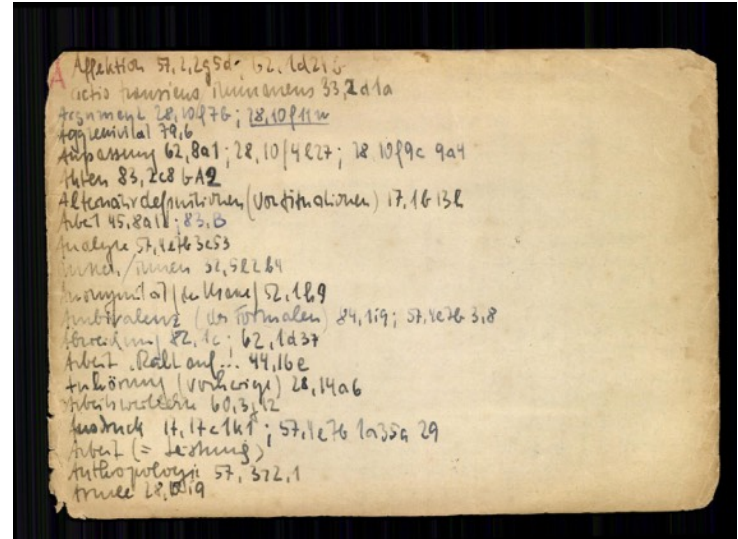
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keyword#2: id1, id2d, id5, id9a

keyword#3: id1, id2d, id5, id9a

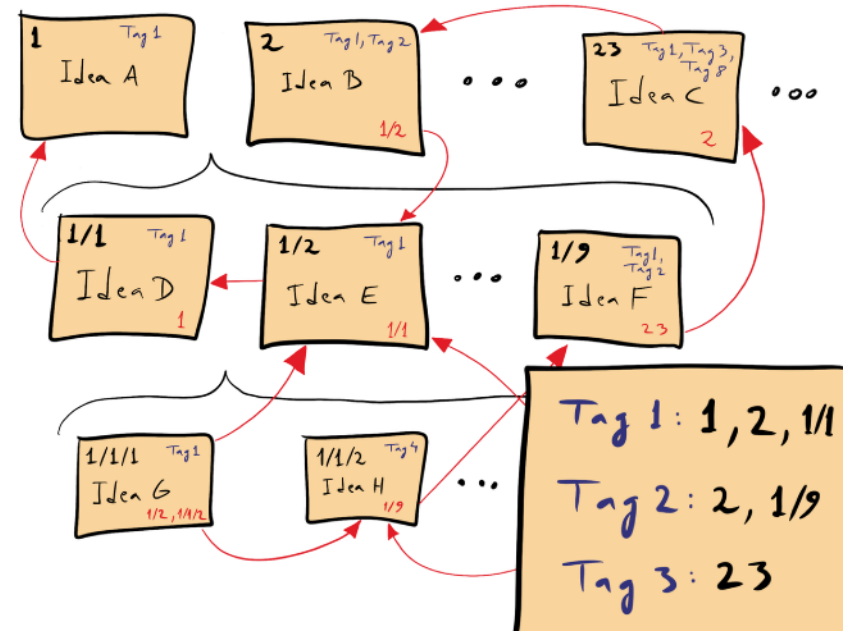
keyword#4: id1, id2d, id5, id9a

keyword#5: id1, id2d, id5, id9a



# Emphasise connection instead of collection


- the structure is:
  - non-hierarchical (every piece of information of equal value)
  - fluid (grows over time organically)
- new knowledge is built on top of old knowledge
- it is efficient because of the process:
  - Read -> Write -> Review -> Relate

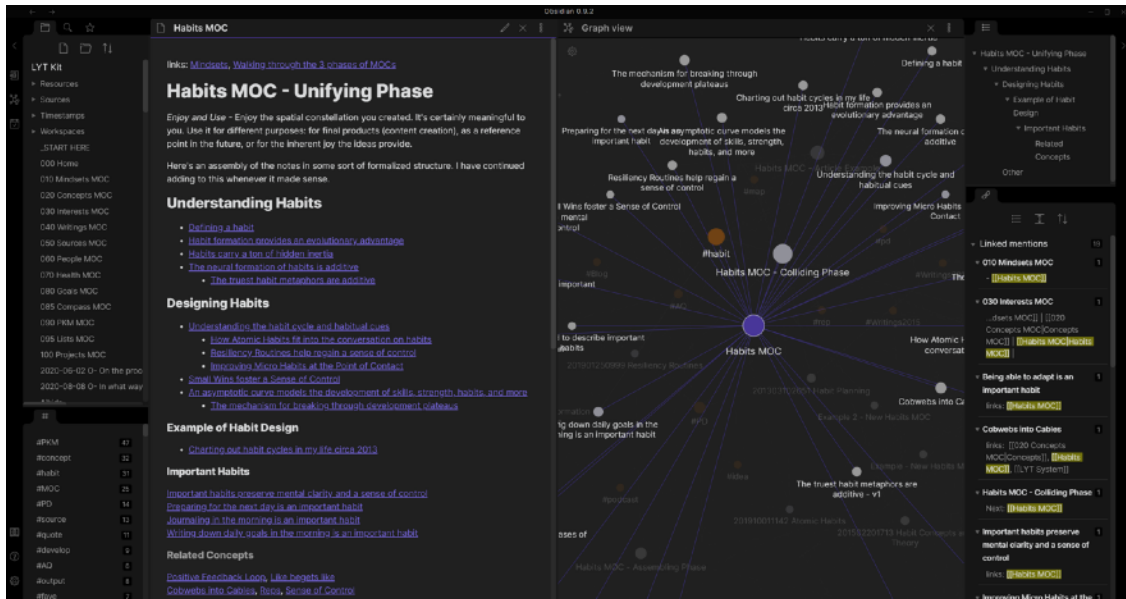


# Example: note-taking app



# OBSIDIAN

- local folder and plain text (.md) 
- text files are easily linked
- super extensible with plugins



<https://obsidian.md/>

# Klausur-irrelevant (but life-relevant)

- <https://niklas-luhmann-archiv.de/nachlass/zettelkasten>
- <https://www.youtube.com/watch?v=Q2zY7I2zoQ>
- <https://www.youtube.com/watch?v=iewws30JGsM>
- <https://www.youtube.com/watch?v=yqKspwjXu18>
- <https://www.norberthires.blog/zettelkasten-method/>
- and the whole universe of note-taking...

„Ohne zu schreiben, kann man nicht denken;  
jedenfalls nicht in anspruchsvoller, anschußfähiger  
Weise.“ — Niklas Luhmann





# Images of the world (Weltbilder)

# Psychology is concerned with the following questions...

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- What is the human mind?
- How do we think, learn, and remember?
- Where do our feelings come from?
- Why do we behave the way we do?
- How do we become who (or what) we are?
- How can we judge which behaviors are normal, which are abnormal, which are harmful, and how can we treat mental disorders?

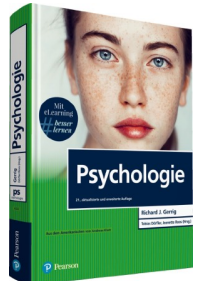


# Psychologie — das heisst was...

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*Gegenstand der Psychologie sind Verhalten, Erleben und Bewußtsein des Menschen, deren Entwicklung über die Lebensspanne und deren innere (im Individuum angesiedelte) und äußere (in der Umwelt lokalisierte) Bedingungen und Ursachen.*

Philip Zimbardo (1988) *Psychologie*



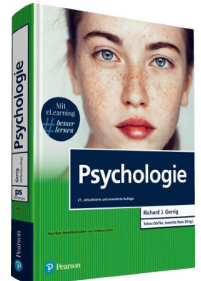
# Psychologie — das heisst was...

(häufig verkürzend als Wissenschaft vom Verhalten)

(aber auch des Tieres)

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Philip Zimbardo (1988) *Psychologie*



# Psychologie — das heisst was...

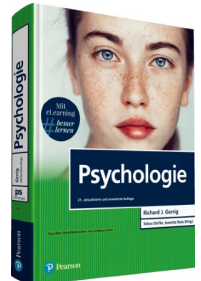
(häufig verkürzend als Wissenschaft vom Verhalten)

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*Ziele der Psychologie als Wissenschaft sind die Beschreibung, Erklärung und Vorhersage des Verhaltens (einschließlich Erleben und Bewußtsein).*

Philip Zimbardo (1988) *Psychologie*



# Psychologie — das heisst was...

(häufig verkürzend als Wissenschaft vom Verhalten)

(aber auch des Tieres)

**Gegenstand** der Psychologie sind **Verhalten, Erleben und Bewußtsein des Menschen**, deren Entwicklung **über die Lebensspanne** und deren innere **(im Individuum angesiedelte)** und äußere **(in der Umwelt lokalisierte)** Bedingungen und Ursachen.

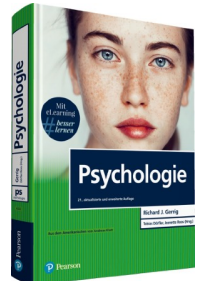
gesammelte Daten (objektive Beobachtung)

die Kausalmechanismen (Ursache-Wirkung-Beziehungen)

**Ziele** der Psychologie **als Wissenschaft** sind die **Beschreibung, Erklärung und Vorhersage** des Verhaltens (einschließlich Erleben und Bewußtsein).

Informationen aus der Vergangenheit werden auf zukünftige Situationen angewandt (Prognose)

Philip Zimbardo (1988) *Psychologie*



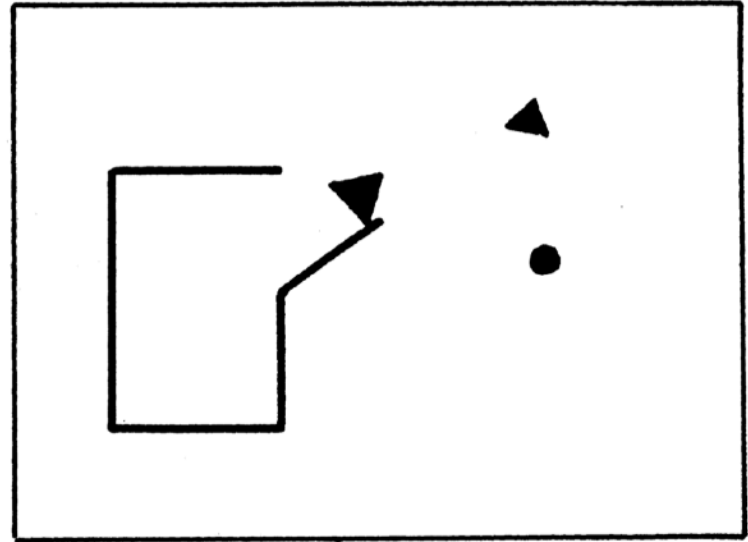
# We are all psychologists...

Heider & Simmel (1944). An Experimental Study of Apparent Behaviour. The American Journal of Psychology, Vol. 57, No. 2;  
<https://www.jstor.org/stable/1416950>

Replications:

<https://doi.org/10.1007/s11612-006-0021-0>

<https://doi.org/10.5406/amerjpsyc.133.3.0295>



# “That nasty big triangle!”

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1. "What kind of a person is the big triangle?"
2. “Why did the circle go into the house?”
3. “What did the circle do when it was in the house with the big triangle? Why?”
4. “Why did the big triangle break the house?”

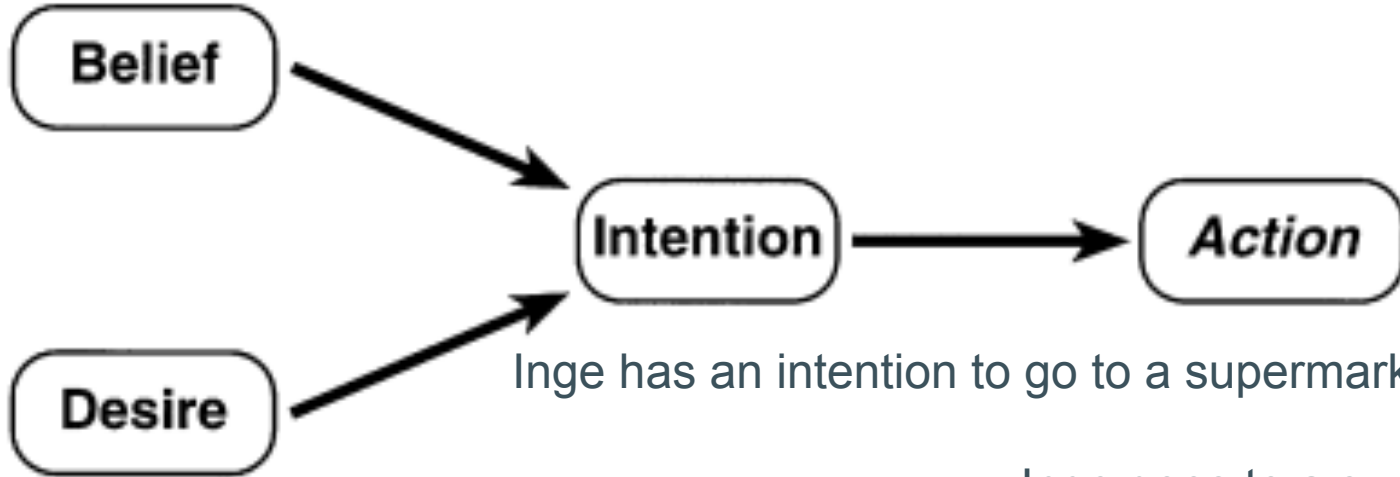
# We are all psychologists...

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- Recognizing the motives and intentions of others
- Understanding the character and temperament of others
- Matching one's own behavior to others
- Predicting the behavior of others

## Alltagspsychologie (folk psychology / common sense psychology) — our everyday way of understanding others behaviour in mentalistic terms

Inge thinks that food makes her not-hungry.



Inge has an intention to go to a supermarket.

Inge feels that she is hungry.

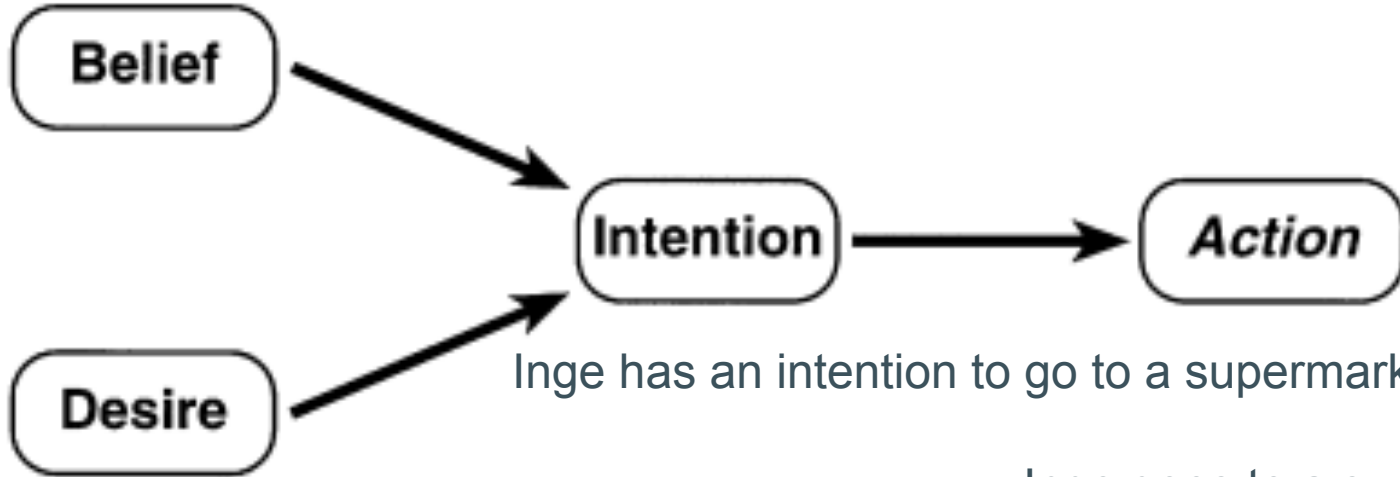
Inge goes to a supermarket.



# Alltagspsychologie (folk psychology / common sense psychology)

— our everyday way of understanding others behaviour in mentalistic terms

Inge thinks that food makes her not-hungry.



Inge feels that she is hungry.

Inge has an intention to go to a supermarket.

Inge goes to a supermarket.

# Is folk psychology a type of a theory (a theory of mind)?

## Does the chimpanzee have a theory of mind?

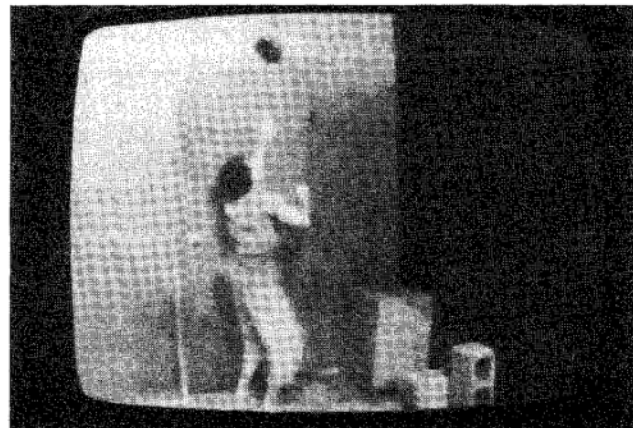
**David Premack**

*Department of Psychology,  
University of Pennsylvania,  
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**Guy Woodruff**

*University of Pennsylvania Primate Facility,  
Honey Brook, Penna. 19344*

**Abstract:** An individual has a theory of mind if he imputes mental states to himself and others. A system of inferences of this kind is properly viewed as a theory because such states are not directly observable, and the system can be used to make predictions about the behavior of others. As to the mental states the chimpanzee may infer, consider those inferred by our own species, for example, *purpose* or *intention*, as well as *knowledge*, *belief*, *thinking*, *doubt*, *guessing*, *pretending*, *liking*, and so forth. To determine whether or not the chimpanzee infers states of this kind, we showed an adult chimpanzee a series of videotaped scenes of a human actor struggling with a variety of problems. Some problems were simple, involving inaccessible food – bananas vertically or horizontally out of reach, behind a box, and so forth – as in the original Köhler problems; others were more complex, involving an actor unable to extricate himself from a locked cage, shivering because of a malfunctioning heater, or unable to play a phonograph because it was unplugged. With each videotape the chimpanzee was given several photographs, one a solution to the problem, such as a stick for the inaccessible bananas, a key for the locked up actor, a lit wick for the malfunctioning heater. The chimpanzee's consistent choice of the correct photographs can be understood by assuming that the animal recognized the videotape as representing a problem, understood the actor's purpose, and chose alternatives compatible with that purpose.



# Folk psychology as a theory similar in form to scientific theories (I)

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1. Theories are abstract and go beyond observations (folk psychology posits such entities as internal mental states and extrapolate observable behaviour)
2. Theories describe the observations in a structured way with causes and laws (folk psychology describes mental states as cause of behaviour in a law-like fashion)
3. Theories allow to make predictions (folk psychology allows to predict the behaviour of others based on the imputed mental states)
4. Theories are idealised; they emphasise one aspect over the other (folk psychology makes the role of intention salient)

# Folk psychology as a theory similar in form to scientific theories (II)

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- When we understand others using intentional mental states, we apply a kind of theory to their behaviour
  - Opponent: (Simulation theory) We engage in attributing mental states to others but not in a principled way (there is no “theory”)
  - Response: a skilled musician does not consult music theory but it still constrains what a musician does
- Common-sense theory of mind is learned and follows the same pattern as the development of scientific theories (Alison Gopnik)
  - propose a theory -> derive prediction -> observe data -> adjust the theory
  - Opponent:
    - the same pattern does not stipulate the same kind (folk psychology is tacit but scientific theories are explicit)
    - the picture of scientific change seems to apply to a scientific community rather than to individual scientists

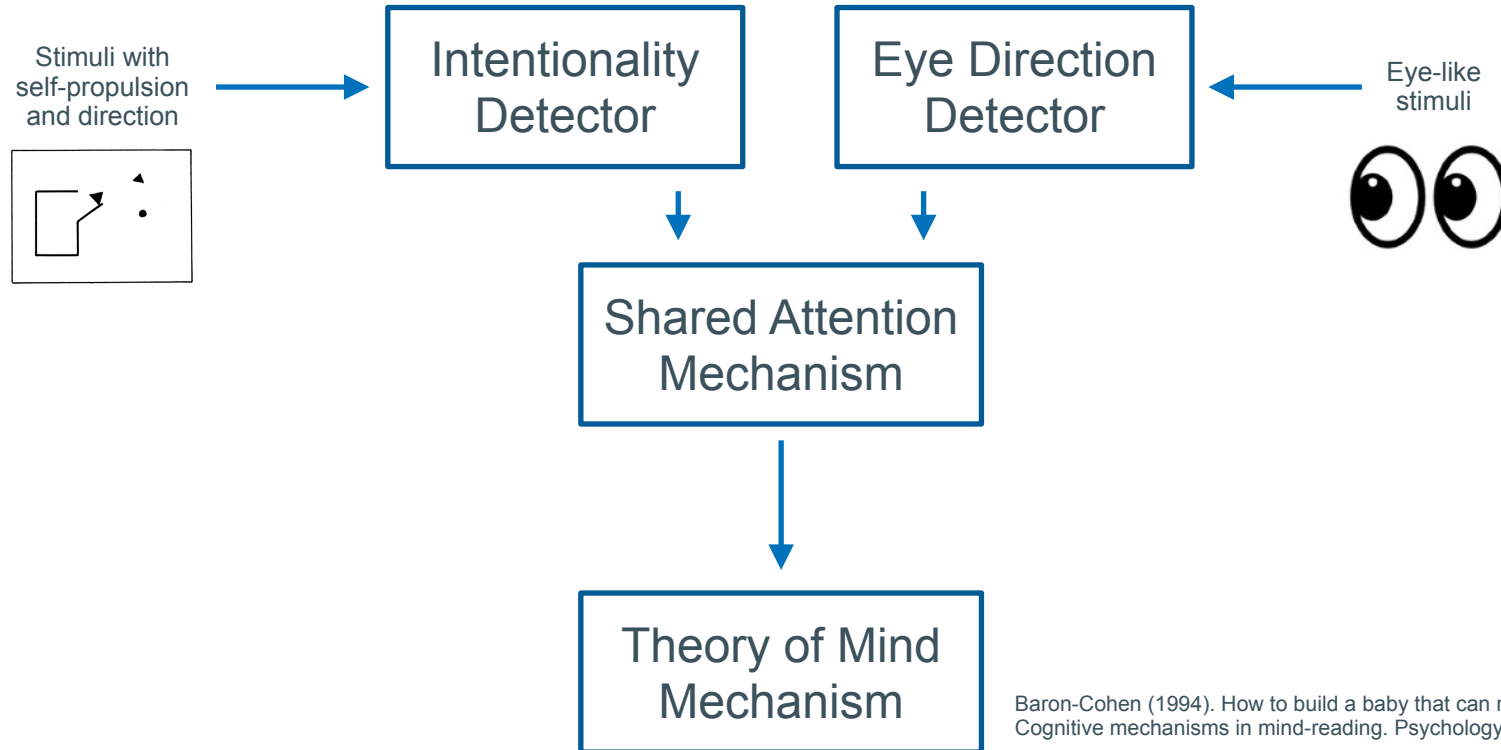
# But there is something fundamentally different...

Terms:	inaccurate and inconsistent
Data:	unrepresentative
Explanations:	mostly incomplete
Systematic review:	missing or not possible

- Often, everyday psychological explanations are contradictory the result afterwards!
  - Bestätigungsfehler (confirmation bias)
  - Rückschaufehler (hindsight bias)



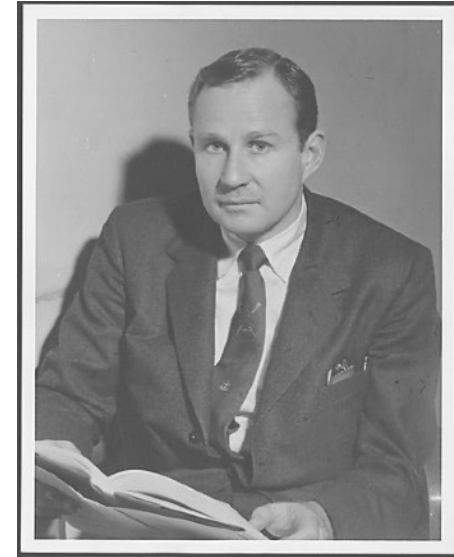
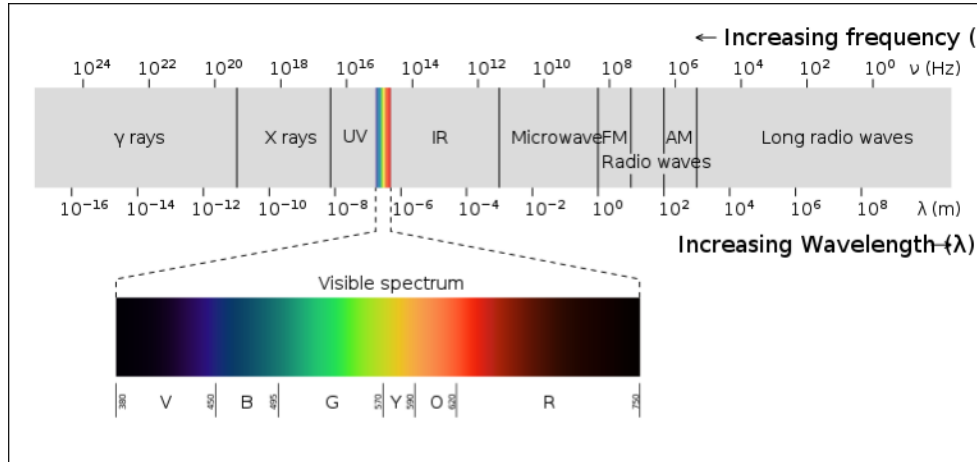
# Scientific view on how children attribute mental states to others



Baron-Cohen (1994). How to build a baby that can read mind?  
Cognitive mechanisms in mind-reading. Psychology of Cognition.

# Sellars' two images of the world

das wissenschaftliche Weltbild (scientific / theoretical image)  
- the world described by best scientific theories

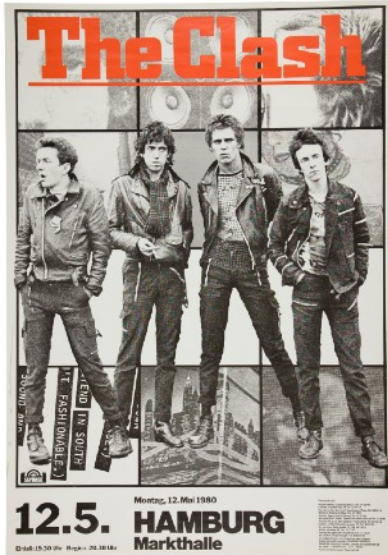


Wilfrid Sellars (1912-1989)

das manifeste Weltbild (manifest image)  
- the world described by our common sense

# The clash: the two images create a conflict

Response

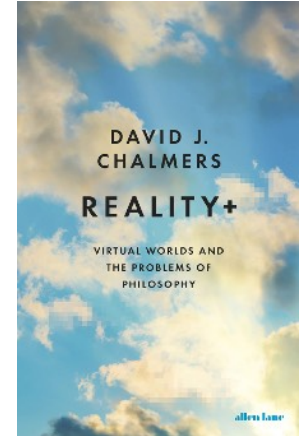


Imaged by Heritage Auctions, HA.com



Imaged by Heritage Auctions, HA.com

- Elimination
- Identification
- Autonomy
- Reconstruction





# Elimination

## — abandon the manifest image

The manifest image does not exist (Paul and Patricia Churchland)

- there are no such things as thoughts (they are myths like the gods Homer invoked to explain the outcome of battles); there are brain states

Response:

- self-defeat: the scientific image cannot replace the manifest image without rejecting its own foundation
- illusions cannot be realised: if there is “no color” in the brain, how can there be an illusion of color?



# Autonomy

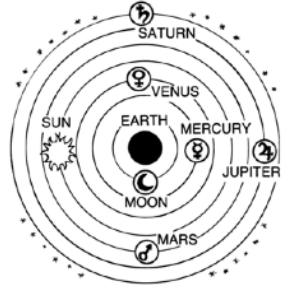
## — retain both images but treat them as independent

The manifest image and scientific image are “non-overlapping magisteria” (Jay Gould)

- Copernican Revolution overturned the view of celestial bodies revolving around the Earth but according to our everyday experience it is true that the Earth is stationary (motion is relative to a reference frame)
- folk psychology is a kind of narrative practice — it is a way by which humans come to understand actions of others and learn about mental attitudes together with their relations

Response:

- What has been overturned is the idea of absolute motion (this does not seem to be the center of the manifest image). The images are inherently contradictory — manifest image plays a strong role in the description of “what is out there”, and therefore it must be false.



Ptolemaic system



Copernican system

# Identification

## — aspects of a manifest image are identical to a scientific image

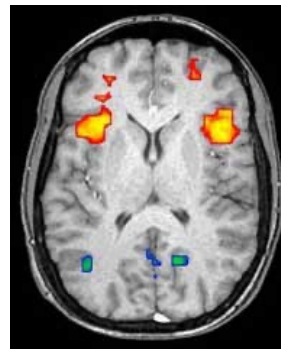
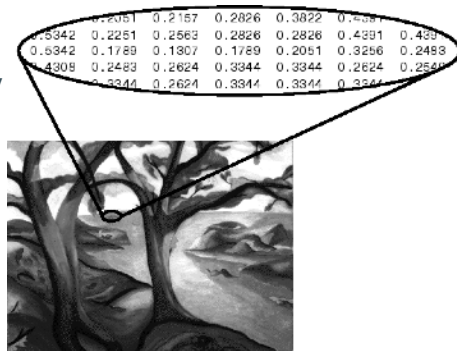
What scientific image describes is realised by what is meant by manifest image.

Consider “water” that is identical to “H<sub>2</sub>O” (Saul Kripke / Hilary Putnam on meaning)

- water is transparent, tasteless liquid; falls from the clouds and fills lakes (stereotype)
- water has a microstructure that causes the properties associated with the stereotype (extension)

### Response

- Identification is possible if we make idealisation: water can also be D<sub>2</sub>O (“heavy water”) or T<sub>2</sub>O (“tritiated water”; radioactive) because of hydrogen isotopes (deuterium and tritium). Some information seems to be lost.



# Reconstruction

— re-make a manifest image to make compatible with a scientific image

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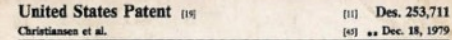
Manifest and scientific image are not compatible, but then we re-make the manifest image.

- “ice” and “water” are different because of “solidity” but “solidity” is not “pure matter” but “something that resists penetration”
- color is the property of an object to produce sensations (“red” causes the sensation of “redness”). we take on a functionalist stance — manifest image does not depict the intrinsic properties but a functional role.
- Folk psychology does not offer a theory of human behaviour but it is there to smooth social interactions (it is a set of useful heuristics)

Response

- but this seems like a change of the subject / topic...?

- What are the scientific images of mind and behaviour?



# Schlüsselwörter

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- Gegenstand der Psychologie (Zimbardo)
- Ziele der Psychologie (Zimbardo)
- Alltagspsychologie (folk psychology)
- Unterschied zwischen Alltagspsychologie und wissenschaftlicher Psychologie (Begriffe, Daten, Erklärungen, Systematische Überprüfung)
- Belief-Desire-Intention Modell (Bratman)
- Propositionale Einstellung (propositional attitude)
- Bestätigungsfehler (confirmation bias)
- Rückschaufehler (hindsight bias)
- Sellars' das wissenschaftliche Weltbild (scientific image) und das manifeste Weltbild (manifest image)
- Lösungen für den Konflikt zwischen wissenschaftliches und manifestes Weltbild (Eliminierung, Autonomie, Identifikation, Rekonstruktion)
- eliminativismus / Eliminativer Materialismus (eliminativism)

# Ergänzende Literatur / Quellenmaterial

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- <https://plato.stanford.edu/entries/folkpsych-theory/>
- <https://plato.stanford.edu/entries/sellars/>
- [https://www.youtube.com/watch?v=Gu8lq67yl\\_8](https://www.youtube.com/watch?v=Gu8lq67yl_8) (science vs common sense)
- <https://www.youtube.com/watch?v=pq5ap3D0raQ> (Folk psychology: the theory theory)