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Chapter 1

Empirical evidence

Empirical evidence, also known as **sense experience**, is the knowledge or source of knowledge acquired by means of the senses, particularly by observation and experimentation.[1] The term comes from the Greek word for experience, ἐμπειρία (*empeiría*). After Immanuel Kant, it is common in philosophy to call the knowledge thus gained a posteriori *knowledge* (in contrast to *a priori* knowledge).

1.1 Meaning

Empirical evidence is information that justifies a belief in the truth or falsity of a claim. In the empiricist view, one can claim to have knowledge only when one has a true belief based on empirical evidence. This stands in contrast to the rationalist view under which reason or reflection alone is considered evidence for the truth or falsity of some propositions.[2] Empirical evidence is information acquired by observation or experimentation. This data is recorded and analyzed by scientists. This is the primary source of empirical evidence. Secondary sources describe, discuss, interpret, comment upon, analyze, evaluate, summarize, and process primary sources. Secondary source materials can be articles in newspapers or popular magazines, book or movie reviews, or articles found in scholarly journals that discuss or evaluate someone else's original research.[2]

Empirical evidence may be synonymous with the outcome of an experiment. In this regard, an empirical result is a unified confirmation. In this context, the term *semi-empirical* is used for qualifying theoretical methods that use, in part, basic axioms or postulated scientific laws and experimental results. Such methods are opposed to theoretical *ab initio* methods, which are purely deductive and based on first principles.

In science, empirical evidence is required for a hypothesis to gain acceptance in the scientific community. Normally, this validation is achieved by the scientific method of forming a hypothesis, experimental design, peer review, adversarial review, reproduction of results, conference presentation, and journal publication. This requires rigorous communication of hypothesis (usually expressed in mathematics), experimental constraints and controls (expressed necessarily in terms of standard experimental apparatus), and a common understanding of measurement.

Statements and arguments depending on empirical evidence are often referred to as *a posteriori* ("following experience") as distinguished from *a priori* (preceding it). *A priori* knowledge or justification is independent of experience (for example "All bachelors are unmarried"), whereas *a posteriori* knowledge or justification is dependent on experience or empirical evidence (for example "Some bachelors are very happy"). The notion that the distinction between *a posteriori* and *a priori* is tantamount to the distinction between empirical and non-empirical knowledge comes from Kant's *Critique of Pure Reason*.[3]

The standard positivist view of empirically acquired information has been that observation, experience, and experiment serve as neutral arbiters between competing theories. However, since the 1960s, a persistent critique most associated with Thomas Kuhn,[4] has argued that these methods are influenced by prior beliefs and experiences. Consequently, it cannot be expected that two scientists when observing, experiencing, or experimenting on the same event will make the same theory-neutral observations. The role of observation as a theory-neutral arbiter may not be possible. Theory-dependence of observation means that, even if there were agreed methods of inference and interpretation, scientists may still disagree on the nature of empirical data.[5]

1.2 See also

- Anecdotal evidence

- Empirical distribution function

- Empirical formula

- Empirical measure

- Empirical research (more on the scientific usage)

- Experiential knowledge

- Phenomenology (philosophy)

- Scientific evidence

- Scientific method

- Theory

1.3 Footnotes

[1] Pickett 2006, p. 585

[2] Feldman 2001, p. 293

[3] Craig 2005, p. 1

[4] Kuhn 1970

[5] Bird 2013

1.4 References

- Bird, Alexander (2013). Zalta, Edward N., ed. "Thomas Kuhn". *Stanford Encyclopedia of Philosophy*. Section 4.2 Perception, Observational Incommensurability, and World-Change. Retrieved 25 January 2012.

- Craig, Edward (2005). "a posteriori". *The Shorter Routledge Encyclopedia of Philosophy*. Routledge. ISBN 9780415324953.

- Feldman, Richard (2001) [1999]. "Evidence". In Audi, Robert. *The Cambridge Dictionary of Philosophy* (2nd ed.). Cambridge, UK: Cambridge University Press. pp. 293–294. ISBN 978-0521637220.

- Kuhn, Thomas S. (1970) [1962]. *The Structure of Scientific Revolutions* (2nd ed.). Chicago: University of Chicago Press. ISBN 978-0226458045.

- Pickett, Joseph P., ed. (2011). "Empirical". *The American Heritage Dictionary of the English Language* (5th ed.). Houghton Mifflin. ISBN 978-0-547-04101-8.

1.5 External links

- The dictionary definition of empirical at Wiktionary

- The dictionary definition of evidence at Wiktionary

- "A Priori and A Posteriori". *Internet Encyclopedia of Philosophy*.

Chapter 2

Critical thinking

Critical thinking is described by Richard Paul as a movement in two waves (1994).[1] The "first wave" of critical thinking is often referred to as a 'critical analysis' that is clear, rational thinking involving critique. Its details vary amongst those who define it. According to Barry K. Beyer (1995), critical thinking means making clear, reasoned judgments. During the process of critical thinking, ideas should be reasoned, well thought out, and judged.[2] The National Council for Excellence in Critical Thinking[3] defines critical thinking as the "intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action."[4]

2.1 Etymology

In the term **critical thinking**, the word *critical*, (Grk. κριτικός = *kritikos* = "critic") derives from the word **critic** and implies a critique; it identifies the intellectual capacity and the means "of judging", "of judgement", "for judging", and of being "able to discern".[5]

2.2 Definitions

Traditionally, critical thinking has been variously defined as:

- "the process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information to reach an answer or conclusion"[6]

- "disciplined thinking that is clear, rational, open-minded, and informed by evidence"[6]

- "reasonable, reflective thinking focused on deciding what to believe or do"[7]

- "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual,

methodological, criteriological, or contextual considerations upon which that judgment is based"[8]

- "includes a commitment to using reason in the formulation of our beliefs"[9]

- the skill and propensity to engage in an activity with reflective scepticism (McPeck, 1981)

- disciplined, self-directed thinking which exemplifies the perfection of thinking appropriate to a particular mode or domain of thinking (Paul, 1989, p. 214)

- thinking about one's thinking in a manner designed to organize and clarify, raise the efficiency of, and recognize errors and biases in one's own thinking. Critical thinking is not 'hard' thinking nor is it directed at solving problems (other than 'improving' one's own thinking). Critical thinking is inward-directed with the intent of maximizing the rationality of the thinker. One does not use critical thinking to solve problems—one uses critical thinking to improve one's process of thinking.[10]

- "an appraisal based on careful analytical evaluation"[11]

Contemporary critical thinking scholars have expanded these traditional definitions to include qualities, concepts, and processes such as creativity, imagination, discovery, reflection, empathy, connecting knowing, feminist theory, subjectivity, ambiguity, and inconclusiveness. Some definitions of critical thinking exclude these subjective practices.[12]

2.3 Logic and rationality

Main article: Logic and rationality

The ability to reason logically is a fundamental skill of rational agents, hence the study of the form of correct argumentation is relevant to the study of critical thinking.

"First wave" logical thinking consisted of understanding the connections between two concepts or points in

thought. It followed a philosophy where the thinker was removed from the train of thought and the connections and the analysis of the connect was devoid of any bias of the thinker. Kerry Walter's describes this ideology in her essay Beyond Logicism in Critical Thinking, "A logistic approach to critical thinking conveys the message to students that thinking is legitimate only when it conforms to the procedures of informal (and, to a lesser extent,, formal) logic and that the good thinker necessarily aims for styles of examination and appraisal that are analytical, abstract, universal, and objective. This model of thinking has become so entrenched in conventional academic wisdom that many educators accept it as canon" (Walters, 1994, p. 1). The adoption of these principals parallel themselves with the increasing reliance on quantitative understanding of the world.

In the 'second wave' of critical thinking, as defined by Kerry S. Walters (Re-thinking Reason, 1994, p. 1), many authors moved away from the logocentric mode of critical thinking that the 'first wave' privileged, especially in institutions of higher learning. Walters summarizes logicism as "the unwarranted assumption that good thinking is reducible to logical thinking" (1994, p. 1).

"A logistic approach to critical thinking conveys the message to students that thinking is legitimate only when it conforms to the procedures of informal (and, to a lesser extent,, formal) logic and that the good thinker necessarily aims for styles of examination and appraisal that are analytical, abstract, universal, and objective." (Walters, 1994, p. 1) As the 'second wave' took hold, scholars began to take a more inclusive view of what constituted as critical thinking. Rationality and logic are still widely accepted in many circles as the primary examples of critical thinking.

2.3.1   Inductive versus deductive thinking

Inductive thinking involves drawing on many different facts, concepts, or opinions to come to a larger conclusion. Examples of inductive reasoning include differential diagnosis, inquiry-based education, and trial and error. Deductive Reasoning involves addressing the known first, and attempt to discover more information about why the known is what it is. Examples of deductive reasoning include root cause analysis and top down learning.

2.3.2   Critical thinking and rationality

Kerry S. Walters (Re-thinking Reason, 1994) argues that rationality demands more than just logical or traditional methods of problem solving and analysis or what he calls the "calculus of justification" but also considers "cognitive acts such as imagination, conceptual creativity, intuition and insight" (p. 63). These "functions" are focused on discovery, on more abstract processes instead of linear, rules-based approaches to problem solving. The lin-

ear and non-sequential mind must both be engaged in the rational mind.

The ability to critically analyze an argument – to dissect structure and components, thesis and reasons – is important. But so is the ability to be flexible and consider non-traditional alternatives and perspectives. These complementary functions are what allow for critical thinking; a practice encompassing imagination and intuition in cooperation with traditional modes of deductive inquiry.

2.4   Functions

The list of core critical thinking skills includes observation, interpretation, analysis, inference, evaluation, explanation, and metacognition. According to Reynolds (2011), an individual or group engaged in a strong way of critical thinking gives due consideration to establish for instance:[13]

- Evidence through reality

- Context skills to isolate the problem from context

- Relevant criteria for making the judgment well

- Applicable methods or techniques for forming the judgment

- Applicable theoretical constructs for understanding the problem and the question at hand

In addition to possessing strong critical-thinking skills, one must be disposed to engage problems and decisions using those skills. Critical thinking employs not only logic but broad intellectual criteria such as clarity, credibility, accuracy, precision, relevance, depth, breadth, significance, and fairness.[14]

2.5   Procedure

Critical thinking calls for the ability to:

- Recognize problems, to find workable means for meeting those problems

- Understand the importance of prioritization and order of precedence in problem solving

- Gather and marshal pertinent (relevant) information

- Recognize unstated assumptions and values

- Comprehend and use language with accuracy, clarity, and discernment

- Interpret data, to appraise evidence and evaluate arguments

- Recognize the existence (or non-existence) of logical relationships between propositions

- Draw warranted conclusions and generalizations

- Put to test the conclusions and generalizations at which one arrives

- Reconstruct one's patterns of beliefs on the basis of wider experience

- Render accurate judgments about specific things and qualities in everyday life

In sum:

"A persistent effort to examine any belief or supposed form of knowledge in the light of the evidence that supports or refutes it and the further conclusions to which it tends."[15]

2.6 Habits or traits of mind

The habits of mind that characterize a person strongly disposed toward critical thinking include a desire to follow reason and evidence wherever they may lead, a systematic approach to problem solving, inquisitiveness, even-handedness, and confidence in reasoning.[16]

According to a definition analysis by Kompf & Bond (2001), critical thinking involves problem solving, decision making, metacognition, rationality, rational thinking, reasoning, knowledge, intelligence and also a moral component such as reflective thinking. Critical thinkers therefore need to have reached a level of maturity in their development, possess a certain attitude as well as a set of taught skills.

2.7 Research

Edward M. Glaser proposed that the ability to think critically involves three elements:[15]

1. An attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experiences

2. Knowledge of the methods of logical inquiry and reasoning

3. Some skill in applying those methods.

Educational programs aimed at developing critical thinking in children and adult learners, individually or in group problem solving and decision making contexts, continue to address these same three central elements.

Contemporary cognitive psychology regards human reasoning as a complex process that is both reactive and reflective.[17]

The relationship between critical thinking skills and critical thinking dispositions is an empirical question. Some people have both in abundance, some have skills but not the disposition to use them, some are disposed but lack strong skills, and some have neither. A measure of critical thinking dispositions is the California Measure of Mental Motivation.[18]

2.8 Education

John Dewey is one of many educational leaders who recognized that a curriculum aimed at building thinking skills would benefit the individual learner, the community, and the entire democracy.[19]

Critical thinking is significant in academics due to being significant in learning. Critical thinking is significant in the learning process of internalization, in the construction of basic ideas, principles, and theories inherent in content. And critical thinking is significant in the learning process of application, whereby those ideas, principles, and theories are implemented effectively as they become relevant in learners' lives.

Each discipline adapts its use of critical thinking concepts and principles. The core concepts are always there, but they are embedded in subject-specific content. For students to learn content, intellectual engagement is crucial. All students must do their own thinking, their own construction of knowledge. Good teachers recognize this and therefore focus on the questions, readings, activities that stimulate the mind to take ownership of key concepts and principles underlying the subject.

Historically, teaching of critical thinking focused only on logical procedures such as formal and informal logic. This emphasized to students that good thinking is equivalent to logical thinking. However, a second wave of critical thinking, urges educators to value conventional techniques, meanwhile expanding what it means to be a critical thinker. In 1994, Kerry Walters[20] compiled a conglomeration of sources surpassing this logical restriction to include many different authors' research regarding connected knowing, empathy, gender-sensitive ideals, collaboration, world views, intellectual autonomy, morality and enlightenment. These concepts invite students to incorporate their own perspectives and experiences into their thinking.

In the English and Welsh school system, *Critical Thinking* is offered as a subject that 16- to 18-year-olds can take as an A-Level. Under the OCR exam board, students can sit two exam papers for the AS: "Credibility of Evidence" and "Assessing and Developing Argument". The full Advanced GCE is now available: in addition to the two AS units, candidates sit the two papers "Resolution of Dilem-

mas" and "Critical Reasoning". The A-level tests candidates on their ability to think critically about, and analyze, arguments on their deductive or inductive validity, as well as producing their own arguments. It also tests their ability to analyze certain related topics such as credibility and ethical decision-making. However, due to its comparative lack of subject content, many universities do not accept it as a main A-level for admissions.[21] Nevertheless, the AS is often useful in developing reasoning skills, and the full Advanced GCE is useful for degree courses in politics, philosophy, history or theology, providing the skills required for critical analysis that are useful, for example, in biblical study.

There used to also be an Advanced Extension Award offered in Critical Thinking in the UK, open to any A-level student regardless of whether they have the Critical Thinking A-level. Cambridge International Examinations have an A-level in Thinking Skills.[22]

From 2008, Assessment and Qualifications Alliance has also been offering an A-level Critical Thinking specification.[23]

OCR exam board have also modified theirs for 2008. Many examinations for university entrance set by universities, on top of A-level examinations, also include a critical thinking component, such as the LNAT, the UKCAT, the BioMedical Admissions Test and the Thinking Skills Assessment.

In Qatar, critical thinking was offered by AL-Bairaq which is an outreach, non-traditional educational program that targets high school students and focuses on a curriculum based on STEM fields. The idea behind AL-Bairaq is to offer high school students the opportunity to connect with the research environment in the Center for Advanced Materials (CAM) at Qatar University. Faculty members train and mentor the students and help develop and enhance their critical thinking, problem-solving, and teamwork skills.[24]

2.8.1   Efficacy

In 1995, a meta-analysis of the literature on teaching effectiveness in higher education was undertaken.[25] The study noted concerns from higher education, politicians and business that higher education was failing to meet society's requirements for well-educated citizens. It concluded that although faculty may aspire to develop students' thinking skills, in practice they have tended to aim at facts and concepts utilizing lowest levels of cognition, rather than developing intellect or values.

In a more recent meta-analysis, researchers reviewed 341 quasi- or true-experimental studies, all of which used some form of standardized critical thinking measure to assess the outcome variable.[26] The authors describe the various methodological approaches and attempt to categorize the differing assessment tools, which include standardized tests (and second-source measures), tests developed by teachers, tests developed by researchers, and tests developed by teachers who also serve the role as the researcher. The results emphasized the need for exposing students to real-world problems and the importance in encouraging open dialogue within a supportive environment. Effective strategies for teaching critical thinking are thought to be possible in a wide variety of educational settings.[26]

2.9   Importance in academia

Critical thinking is an important element of all professional fields and academic disciplines (by referencing their respective sets of permissible questions, evidence sources, criteria, etc.). Within the framework of scientific skepticism, the process of critical thinking involves the careful acquisition and interpretation of information and use of it to reach a well-justified conclusion. The concepts and principles of critical thinking can be applied to any context or case but only by reflecting upon the nature of that application. Critical thinking forms, therefore, a system of related, and overlapping, modes of thought such as anthropological thinking, sociological thinking, historical thinking, political thinking, psychological thinking, philosophical thinking, mathematical thinking, chemical thinking, biological thinking, ecological thinking, legal thinking, ethical thinking, musical thinking, thinking like a painter, sculptor, engineer, business person, etc. In other words, though critical thinking principles are universal, their application to disciplines requires a process of reflective contextualization.

Critical thinking is considered important in the academic fields because it enables one to analyze, evaluate, explain, and restructure their thinking, thereby decreasing the risk of adopting, acting on, or thinking with, a false belief. However, even with knowledge of the methods of logical inquiry and reasoning, mistakes can happen due to a thinker's inability to apply the methods or because of character traits such as egocentrism. Critical thinking includes identification of prejudice, bias, propaganda, self-deception, distortion, misinformation, etc.[27] Given research in cognitive psychology, some educators believe that schools should focus on teaching their students critical thinking skills and cultivation of intellectual traits.[28]

Critical thinking skills can be used to help nurses during the assessment process. Through the use of critical thinking, nurses can question, evaluate, and reconstruct the nursing care process by challenging the established theory and practice. Critical thinking skills can help nurses problem solve, reflect, and make a conclusive decision about the current situation they face. Critical thinking creates "new possibilities for the development of the nursing knowledge."[29] Due to the sociocultural, environmental, and political issues that are affecting healthcare delivery, it would be helpful to embody

new techniques in nursing. Nurses can also engage their critical thinking skills through the Socratic method of dialogue and reflection. This practice standard is even part of some regulatory organizations such as the College of Nurses of Ontario - Professional Standards for Continuing Competencies (2006).[30] It requires nurses to engage in Reflective Practice and keep records of this continued professional development for possible review by the College.

Critical thinking is also considered important for human rights education for toleration. The Declaration of Principles on Tolerance adopted by UNESCO in 1995 affirms that "education for tolerance could aim at countering factors that lead to fear and exclusion of others, and could help young people to develop capacities for independent judgement, *critical thinking* and ethical reasoning."[31]

Critical thinking is used as a way of deciding whether a claim is true, partially true, or false. It is a tool by which one can come about reasoned conclusions based on a reasoned process.

2.10 See also

- Cognitive bias mitigation

- Critical theory

- Dialectic

- Discourse analysis

- Freedom of thought

- Freethought

- Outline of human intelligence – topic tree presenting the traits, capacities, models, and research fields of human intelligence

- Outline of thought – topic tree that identifies many types of thoughts, types of thinking, aspects of thought, related fields

- *Sapere Aude*

2.11 References

[1] Walters, Kerry (1994). *Re-Thinking Reason*. Albany: State University of New York Press. pp. 181–198.

[2] Elkins, James R. "The Critical Thinking Movement: Alternating Currents in One Teacher's Thinking". *myweb.wvnet.edu*. Retrieved 23 March 2014.

[3] "Critical Thinking Index Page".

[4] "Defining Critical Thinking".

[5] Brown, Lesley. (ed.) *The New Shorter Oxford English Dictionary* (1993) p. 551.

[6] "Critical – Define Critical at Dictionary.com". *Dictionary.com*. Retrieved 2016-02-24.

[7] "SSConceptionCT.html".

[8] Facione, Peter A. (2011). "Critical Thinking: What It is and Why It Counts" (PDF). insightassessment.com. p. 26.

[9] Mulnix, J. W. (2010). "Thinking critically about critical thinking". *Educational Philosophy and Theory*: 471. doi:10.1111/j.1469-5812.2010.00673.x.

[10] Carmichael, Kirby; letter to Olivetti, Laguna Salada Union School District, May 1997.

[11] "critical analysis". *TheFreeDictionary.com*. Retrieved 2016-11-30.

[12] Walters, Kerry (1994). *Re-Thinking Reason*. Albany: State University of New York Press.

[13] Reynolds, Martin (2011). Critical thinking and systems thinking: towards a critical literacy for systems thinking in practice. In: Horvath , Christopher P. and Forte, James M. eds. Critical Thinking. New York, USA: Nova Science Publishers, pp. 37–68.

[14] Jones, Elizabeth A., & And Others (1995). *National Assessment of College Student Learning: Identifying College Graduates' Essential Skills in Writing, Speech and Listening, and Critical Thinking. Final Project Report (ISBN 0-16-048051-5; NCES-95-001)* (PDF). *from National Center on Postsecondary Teaching, Learning, and Assessment, University Park, PA.; Office of Educational Research and Improvement (ED), Washington, DC.; U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328. PUB TYPE - Reports Research/Technical (143) pp. 14–15*. Retrieved 2016-02-24.

[15] Edward M. Glaser (1941). *An Experiment in the Development of Critical Thinking*. New York, Bureau of Publications, Teachers College, Columbia University. ISBN 0-404-55843-7.

[16] The National Assessment of College Student Learning: Identification of the Skills to be Taught, Learned, and Assessed, NCES 94–286, US Dept of Education, Addison Greenwood (Ed), Sal Carrallo (PI). See also, Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction. ERIC Document No. ED 315–423

[17] Solomon, S.A. (2002) "Two Systems of Reasoning," in *Heuristics and Biases: The Psychology of Intuitive Judgment*, Govitch, Griffin, Kahneman (Eds), Cambridge University Press. ISBN 978-0-521-79679-8; *Thinking and Reasoning in Human Decision Making: The Method of Argument and Heuristic Analysis*, Facione and Facione, 2007, California Academic Press. ISBN 978-1-891557-58-3

[18] *Research on Sociocultural Influences on Motivation and Learning*, p. 46

[19] Dewey, John. (1910). *How we think*. Lexington, MA: D.C. Heath & Co.

[20] Walters, Kerry. (1994). *Re-Thinking Reason*. Albany, NY: State University of New York Press.

[21] Critical Thinking FAQs from Oxford Cambridge and RSA Examinations Archived 11 April 2008 at the Wayback Machine.

[22] "Cambridge International AS and A Level subjects".

[23] "New GCEs for 2008", Assessment and Qualifications Alliance Archived 17 February 2008 at the Wayback Machine.

[24] "Welcome to Al-Bairaq World". Archived from the original on 19 April 2014. Retrieved 5 July 2014.

[25] Lion Gardiner, Redesigning Higher Education: Producing Dramatic Gains in Student Learning, in conjunction with: ERIC Clearinghouse on Higher Education, 1995

[26] Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2014). Strategies for Teaching Students to Think Critically: A Meta-Analysis. Review of Educational Research, 1–40

[27] Lau, Joe; Chan, Jonathan. "[F08] Cognitive biases". *Critical thinking web*. Retrieved 2016-02-01.

[28] "Critical Thinking, Moral Integrity and Citizenship". *Criticalthinking.org*. Retrieved 2016-02-01.

[29] Catching the wave: understanding the concept of critical thinking (1999) doi:10.1046/j.1365-2648.1999.00925.x

[30] College of Nurses of Ontario – Professional Standards for Continuing Competencies (2006)

[31] "International Day for Tolerance . Declaration of Principles on Tolerance, Article 4, 3". *UNESCO*. Retrieved 2016-02-24.

2.12 Further reading

- Cederblom, J & Paulsen, D.W. (2006) Critical Reasoning: Understanding and criticizing arguments and theories, 6th edn. (Belmont, CA, Thomson-Wadsworth).

- College of Nurses of Ontario Professional Standards (2006) - Continuing Competencies

- Damer, T. Edward. (2005) Attacking Faulty Reasoning, 6th Edition, Wadsworth. ISBN 0-534-60516-8

- Dauer, Francis Watanabe. *Critical Thinking: An Introduction to Reasoning*, 1989, ISBN 978-0-19-504884-1

- Facione, P. 2007. *Critical Thinking: What It Is and Why It Counts – 2007 Update*

- Fisher, Alec and Scriven, Michael. (1997) *Critical Thinking: Its Definition and Assessment*, Center for Research in Critical Thinking (UK) / Edgepress (US). ISBN 0-9531796-0-5

- Hamby, B.W. (2007) *The Philosophy of Anything: Critical Thinking in Context.* Kendall Hunt Publishing Company, Dubuque Iowa. ISBN 978-0-7575-4724-9

- Vincent F. Hendricks. (2005) *Thought 2 Talk: A Crash Course in Reflection and Expression*, New York: Automatic Press / VIP. ISBN 87-991013-7-8

- Kompf, M., & Bond, R. (2001). Critical reflection in adult education. In T. Barer-Stein & M. Kompf(Eds.), *The craft of teaching adults* (pp. 21–38). Toronto, ON: Irwin.

- McPeck, J. (1992). Thoughts on subject specificity. In S. Norris (Ed.), *The generalizability of critical thinking* (pp. 198–205). New York: Teachers College Press.

- Moore, Brooke Noel and Parker, Richard. (2012) *Critical Thinking*. 10th ed. Published by McGraw-Hill. ISBN 0-07-803828-6.

- Mulnix, J. W. (2010). "Thinking critically about critical thinking". *Educational Philosophy and Theory*. doi:10.1111/j.1469-5812.2010.00673.x.

- Paul, R (1982). "Teaching critical thinking in the strong sense: A focus on self-deception, world views and a dialectical mode of analysis". *Informal Logic Newsletter*. **4** (2): 2–7.

- Paul, Richard. (1995) *Critical Thinking: How to Prepare Students for a Rapidly Changing World*. 4th ed. Foundation for Critical Thinking. ISBN 0-944583-09-1.

- Paul, Richard and Elder, Linda. (2006) *Critical Thinking Tools for Taking Charge of Your Learning and Your Life*, New Jersey: Prentice Hall Publishing. ISBN 0-13-114962-8.

- Paul, Richard; Elder, Linda. (2002) *Critical Thinking: Tools for Taking Charge of Your Professional and Personal Life*. Published by Financial Times Prentice Hall. ISBN 0-13-064760-8.

- Pavlidis, Periklis. (2010) Critical Thinking as Dialectics: a Hegelian–Marxist Approach. Journal for Critical Education Policy Studies.Vol.8(2)

- Sagan, Carl. (1995) *The Demon-Haunted World: Science As a Candle in the Dark*. Ballantine Books. ISBN 0-345-40946-9

- Theodore Schick & Lewis Vaughn "How to Think About Weird Things: Critical Thinking for a New Age" (2010) ISBN 0-7674-2048-9

- Twardy, Charles R. (2003) Argument Maps Improve Critical Thinking. *Teaching Philosophy* 27:2 June 2004.

- van den Brink-Budgen, R (2010) 'Critical Thinking for Students', How To Books. ISBN 978-1-84528-386-5

- Whyte, J. (2003) *Bad Thoughts – A Guide to Clear Thinking*, Corvo. ISBN 0-9543255-3-2.

- Zeigarnik, B.V. (1927). On finished and unfinished tasks. In English translation Edited by Willis D. Ellis ; with an introduction by Kurt Koffka. (1997). A source book of gestalt psychology xiv, 403 p. : ill. ; 22 cmHighland, N.Y: Gestalt Journal Press. "This Gestalt Journal Press edition is a verbatim reprint of the book as originally published in 1938" — T.p. verso. ISBN 9780939266302. OCLC 38755142

2.13 External links

Media related to Critical thinking at Wikimedia Commons Quotations related to Critical thinking at Wikiquote

- Critical thinking at PhilPapers

- Critical thinking at the Indiana Philosophy Ontology Project

- "Informal logic". *Stanford Encyclopedia of Philosophy*.

- Critical thinking at DMOZ

- Critical Thinking: What Is It Good for? (In Fact, What Is It?) by Howard Gabennesch, *Skeptical Inquirer* magazine.

- Glossary of Critical Thinking Terms

Chapter 3

Intellectual honesty

Intellectual honesty is an applied method of problem solving, characterized by an unbiased, honest attitude, which can be demonstrated in a number of different ways:

- One's personal beliefs do not interfere with the pursuit of truth;

- Relevant facts and information are not purposefully omitted even when such things may contradict one's hypothesis;

- Facts are presented in an unbiased manner, and not twisted to give misleading impressions or to support one view over another;

- References, or earlier work, are acknowledged where possible, and plagiarism is avoided.

Harvard ethicist Louis M. Guenin describes the "kernel" of intellectual honesty to be "a virtuous disposition to eschew deception when given an incentive for deception".[1]

Intentionally committed fallacies in debates and reasoning are called **intellectual dishonesty**.

3.1 See also

- Academic honesty

- Conflict of interest

- Epistemic feedback

- Good faith

- Intellectual

- List of fallacies

- Scientific method

- Sophism

- Systemic bias

3.2 References

[1] "Candor in Science", *Synthese*, Vol. 145, No. 2 (June 2005), p. 179.

3.3 Further reading

- Wiener, N. (November 1964). "Intellectual Honesty and the Contemporary Scientist". *American Behavioral Scientist*. 8 (3): 15.

- Toledo-Pereyra, Luis H. (May 2002). "Intellectual Honesty". *Journal of Investigative Surgery*, (15): 113-114.

Chapter 4

Knowledge

Knowledge is a familiarity, awareness or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning.

Knowledge can refer to a theoretical or practical understanding of a subject. It can be implicit (as with practical skill or expertise) or explicit (as with the theoretical understanding of a subject); it can be more or less formal or systematic.[1] In philosophy, the study of knowledge is called epistemology; the philosopher Plato famously defined knowledge as "justified true belief", though this definition is now agreed by most analytic philosophers to be problematic because of the Gettier problems. However, several definitions of knowledge and theories to explain it exist.

Knowledge acquisition involves complex cognitive processes: perception, communication, and reasoning;[2] while knowledge is also said to be related to the capacity of *acknowledgment* in human beings.[3]

4.1 Theories of knowledge

See also: Epistemology

> The eventual demarcation of philosophy from science was made possible by the notion that philosophy's core was "theory of knowledge," a theory distinct from the sciences because it was their *foundation*... Without this idea of a "theory of knowledge," it is hard to imagine what "philosophy" could have been in the age of modern science.
>
> — Richard Rorty, *Philosophy and the Mirror of Nature*

The definition of knowledge is a matter of ongoing debate among philosophers in the field of epistemology. The

Robert Reid, Knowledge *(1896). Thomas Jefferson Building, Washington, D.C.*

classical definition, described but not ultimately endorsed by Plato,[4] specifies that a statement must meet three criteria in order to be considered knowledge: it must be justified, true, and believed. Some claim that these conditions are not sufficient, as Gettier case examples allegedly demonstrate. There are a number of alternatives proposed, including Robert Nozick's arguments for a requirement that knowledge 'tracks the truth' and Simon Blackburn's additional requirement that we do not want to say that those who meet any of these conditions 'through a defect, flaw, or failure' have knowledge. Richard Kirkham suggests that our definition of knowledge requires that the evidence for the belief necessitates its truth.[5]

In contrast to this approach, Ludwig Wittgenstein observed, following Moore's paradox, that one can say "He believes it, but it isn't so," but not "He knows it, but it isn't so."[6] He goes on to argue that these do not correspond to distinct mental states, but rather to distinct ways of talking about conviction. What is different here is not the mental state of the speaker, but the activity in which they are engaged. For example, on this account, to *know*

that the kettle is boiling is not to be in a particular state of mind, but to perform a particular task with the statement that the kettle is boiling. Wittgenstein sought to bypass the difficulty of definition by looking to the way "knowledge" is used in natural languages. He saw knowledge as a case of a family resemblance. Following this idea, "knowledge" has been reconstructed as a cluster concept that points out relevant features but that is not adequately captured by any definition.[7]

4.2 Communicating knowledge

Los portadores de la antorcha (The Torch-Bearers) – *Sculpture by Anna Hyatt Huntington symbolizing the transmission of knowledge from one generation to the next (Ciudad Universitaria, Madrid, Spain)*

Symbolic representations can be used to indicate meaning and can be thought of as a dynamic process. Hence the transfer of the symbolic representation can be viewed as one ascription process whereby knowledge can be transferred. Other forms of communication include observation and imitation, verbal exchange, and audio and video recordings. Philosophers of language and semioticians construct and analyze theories of knowledge transfer or communication.

While many would agree that one of the most universal and significant tools for the transfer of knowledge is writing and reading (of many kinds), argument over the usefulness of the written word exists nonetheless, with some scholars skeptical of its impact on societies. In his collection of essays *Technopoly*, Neil Postman demonstrates

the argument against the use of writing through an excerpt from Plato's work *Phaedrus* (Postman, Neil (1992) *Technopoly*, Vintage, New York, pp 73). In this excerpt, the scholar Socrates recounts the story of Thamus, the Egyptian king and Theuth the inventor of the written word. In this story, Theuth presents his new invention "writing" to King Thamus, telling Thamus that his new invention "will improve both the wisdom and memory of the Egyptians" (Postman, Neil (1992) Technopoly, Vintage, New York, pp 74). King Thamus is skeptical of this new invention and rejects it as a tool of recollection rather than retained knowledge. He argues that the written word will infect the Egyptian people with fake knowledge as they will be able to attain facts and stories from an external source and will no longer be forced to mentally retain large quantities of knowledge themselves (Postman, Neil (1992) *Technopoly*, Vintage, New York,pp 74).

Classical early modern theories of knowledge, especially those advancing the influential empiricism of the philosopher John Locke, were based implicitly or explicitly on a model of the mind which likened ideas to words.[8] This analogy between language and thought laid the foundation for a graphic conception of knowledge in which the mind was treated as a table, a container of content, that had to be stocked with facts reduced to letters, numbers or symbols. This created a situation in which the spatial alignment of words on the page carried great cognitive weight, so much so that educators paid very close attention to the visual structure of information on the page and in notebooks.[9]

Media theorists like Andrew Robinson emphasise that the visual depiction of knowledge in the modern world was often seen as being 'truer' than oral knowledge. This plays into a longstanding analytic notion in the Western intellectual tradition in which verbal communication is generally thought to lend itself to the spread of falsehoods as much as written communication. It is harder to preserve records of what was said or who originally said it – usually neither the source nor the content can be verified. Gossip and rumors are examples prevalent in both media. As to the value of writing, the extent of human knowledge is now so great, and the people interested in a piece of knowledge so separated in time and space, that writing is considered central to capturing and sharing it.

Major libraries today can have millions of books of knowledge (in addition to works of fiction). It is only recently that audio and video technology for recording knowledge have become available and the use of these still requires replay equipment and electricity. Verbal teaching and handing down of knowledge is limited to those who would have contact with the transmitter or someone who could interpret written work. Writing is still the most available and most universal of all forms of recording and transmitting knowledge. It stands unchallenged as mankind's primary technology of knowledge transfer down through the ages and to all cultures and languages of the world.

4.3 Situated knowledge

Situated knowledge is knowledge specific to a particular situation. It is a term coined by Donna Haraway as an extension of the feminist approaches of "successor science" suggested by Sandra Harding, one which "offers a more adequate, richer, better account of a world, in order to live in it well and in critical, reflexive relation to our own as well as others' practices of domination and the unequal parts of privilege and oppression that makes up all positions."[10] This situation partially transforms science into a narrative, which Arturo Escobar explains as, "neither fictions nor supposed facts." This narrative of situation is historical textures woven of fact and fiction, and as Escobar explains further, "even the most neutral scientific domains are narratives in this sense," insisting that rather than a purpose dismissing science as a trivial matter of contingency, "it is to treat (this narrative) in the most serious way, without succumbing to its mystification as 'the truth' or to the ironic skepticism common to many critiques."[11]

Haraway's argument stems from the limitations of the human perception, as well as the overemphasis of the sense of vision in science. According to Haraway, vision in science has been, "used to signify a leap out of the marked body and into a conquering gaze from nowhere." This is the "gaze that mythically inscribes all the marked bodies, that makes the unmarked category claim the power to see and not be seen, to represent while escaping representation."[10] This causes a limitation of views in the position of science itself as a potential player in the creation of knowledge, resulting in a position of "modest witness". This is what Haraway terms a "god trick", or the aforementioned representation while escaping representation.[12] In order to avoid this, "Haraway perpetuates a tradition of thought which emphasizes the importance of the subject in terms of both ethical and political accountability".[13]

Some methods of generating knowledge, such as trial and error, or learning from experience, tend to create highly situational knowledge. One of the main attributes of the scientific method is that the theories it generates are much less situational than knowledge gained by other methods. Situational knowledge is often embedded in language, culture, or traditions. This integration of situational knowledge is an allusion to the community, and its attempts at collecting subjective perspectives into an embodiment "of views from somewhere." [10]

Knowledge generated through experience is called knowledge "a posteriori", meaning afterwards. The pure existence of a term like "a posteriori" means this also has a counterpart. In this case, that is knowledge "a priori", meaning before. The knowledge prior to any experience means that there are certain "assumptions" that one takes for granted. For example, if you are being told about a chair, it is clear to you that the chair is in space, that it is 3D. This knowledge is not knowledge that one can "for-

get", even someone suffering from amnesia experiences the world in 3D.

Even though Haraway's arguments are largely based on feminist studies,[10] this idea of different worlds, as well as the skeptic stance of situated knowledge is present in the main arguments of post-structuralism. Fundamentally, both argue the contingency of knowledge on the presence of history; power, and geography, as well as the rejection of universal rules or laws or elementary structures; and the idea of power as an inherited trait of objectification.[14]

4.4 Partial knowledge

One discipline of epistemology focuses on partial knowledge. In most cases, it is not possible to understand an information domain exhaustively; our knowledge is always *incomplete* or partial. Most real problems have to be solved by taking advantage of a partial understanding of the problem context and problem data, unlike the typical math problems one might solve at school, where all data is given and one is given a complete understanding of formulas necessary to solve them.

This idea is also present in the concept of bounded rationality which assumes that in real life situations people often have a limited amount of information and make decisions accordingly.

Intuition is the ability to acquire partial knowledge without inference or the use of reason.[15] An individual may "know" about a situation and be unable to explain the process that led to their knowledge.

4.5 Scientific knowledge

The development of the scientific method has made a significant contribution to how knowledge of the physical world and its phenomena is acquired.[16] To be termed scientific, a method of inquiry must be based on gathering observable and measurable evidence subject to specific principles of reasoning and experimentation.[17] The scientific method consists of the collection of data through observation and experimentation, and the formulation and testing of hypotheses.[18] Science, and the nature of scientific knowledge have also become the subject of Philosophy. As science itself has developed, scientific knowledge now includes a broader usage[19] in the soft sciences such as biology and the social sciences — discussed elsewhere as meta-epistemology, or genetic epistemology, and to some extent related to "theory of cognitive development". Note that "epistemology" is the study of knowledge and how it is acquired. Science is "the process used everyday to logically complete thoughts through inference of facts determined by calculated experiments." Sir Francis Bacon was critical in the historical develop-

Sir Francis Bacon, "Knowledge is Power"

ment of the scientific method; his works established and popularized an inductive methodology for scientific inquiry. His famous aphorism, "knowledge is power", is found in the Meditations Sacrae (1597).[20]

Until recent times, at least in the Western tradition, it was simply taken for granted that knowledge was something possessed only by humans — and probably *adult* humans at that. Sometimes the notion might stretch to (ii) *Society-as-such*, as in (e.g.) "the knowledge possessed by the Coptic culture" (as opposed to its individual members), but that was not assured either. Nor was it usual to consider *unconscious* knowledge in any systematic way until this approach was popularized by Freud.[21]

Other biological domains where "knowledge" might be said to reside, include: (iii) the *immune system*, and (iv) in the *DNA of the genetic code*. See the list of four "epistemological domains": Popper, (1975);[22] and Traill (2008:[23] Table S, page 31)—also references by both to Niels Jerne.

Such considerations seem to call for a separate definition of "knowledge" to cover the biological systems. For biologists, knowledge must be usefully *available* to the system, though that system need not be conscious. Thus the criteria seem to be:

- The system should apparently be dynamic and self-organizing (unlike a mere book *on its own*).

- The knowledge must constitute some sort of representation of "the outside world",[24] or ways of dealing with it (directly or indirectly).

- Some way must exist for the system to access this information quickly enough for it to be useful.

Scientific knowledge may not involve a claim to certainty, maintaining skepticism means that a scientist will never be absolutely certain when they are correct and when they are not. It is thus an irony of proper scientific method that one must doubt even when correct, in the hopes that this practice will lead to greater convergence on the truth in general.[25]

4.6   Religious meaning of knowledge

In many expressions of Christianity, such as Catholicism and Anglicanism, knowledge is one of the seven gifts of the Holy Spirit.[26]

The Old Testament's tree of the knowledge of good and evil contained the knowledge that separated Man from God: "And the LORD God said, Behold, the man is become as one of us, to know good and evil..." (Genesis 3:22)

In Gnosticism, divine knowledge or gnosis is hoped to be attained.

विद्या दान (Vidya Daan) i.e. knowledge sharing is a major part of Daan, a tenet of all Dharmic Religions.[27] Hindu Scriptures present two kinds of knowledge, *Paroksh Gyan* and *Prataksh Gyan*. *Paroksh Gyan* (also spelled *Paroksha-Jnana*) is secondhand knowledge: knowledge obtained from books, hearsay, etc. *Prataksh Gyan* (also spelled *Prataksha-Jnana*) is the knowledge borne of direct experience, i.e., knowledge that one discovers for oneself.[28] Jnana yoga ("path of knowledge") is one of three main types of yoga expounded by Krishna in the Bhagavad Gita. (It is compared and contrasted with Bhakti Yoga and Karma yoga.)

In Islam, knowledge (Arabic: علم, *ʿilm*) is given great significance. "The Knowing" (*al-ʿAlīm*) is one of the 99 names reflecting distinct attributes of God. The Qur'an asserts that knowledge comes from God (2:239) and various *hadith* encourage the acquisition of knowledge. Muhammad is reported to have said "Seek knowledge from the cradle to the grave" and "Verily the men of knowledge are the inheritors of the prophets". Islamic scholars, theologians and jurists are often given the title *alim*, meaning "knowledgeble".

In Jewish tradition, knowledge (Hebrew: דעת *da'ath*) is considered one of the most valuable traits a person

can acquire. Observant Jews recite three times a day in the Amidah "Favor us with knowledge, understanding and discretion that come from you. Exalted are you, Existent-One, the gracious giver of knowledge." The Tanakh states, "A wise man gains power, and a man of knowledge maintains power", and "knowledge is chosen above gold".

4.6.1 As a measure of religiosity (in sociology of religion)

According to the sociologist Mervin Verbit, knowledge may be understood as one of the key components of religiosity. Religious knowledge itself may be broken down into four dimensions:

- content

- frequency

- intensity

- centrality

The content of one's religious knowledge may vary from person to person, as will the degree to which it may occupy the person's mind (frequency), the intensity of the knowledge, and the centrality of the information (in that religious tradition, or to that individual).[29][30][31]

4.7 See also

- Outline of knowledge – guide to the subject of knowledge presented as a tree structured list of its subtopics.

- Analytic-synthetic distinction

- Epistemic modal logic

- Inductive inference

- Inductive probability

- Intelligence

- Metaknowledge

- Philosophical skepticism

- Society for the Diffusion of Useful Knowledge

4.8 References

[1] "knowledge: definition of knowledge in Oxford dictionary (American English) (US)". *oxforddictionaries.com*.

[2] Dekel, Gil. "Methodology". Retrieved 3 July 2006.

[3] Stanley Cavell, "Knowing and Acknowledging", *Must We Mean What We Say?* (Cambridge University Press, 2002), 238–266.

[4] In Plato's *Theaetetus*, Socrates and Theaetetus discuss three definitions of *knowledge*: knowledge as nothing but perception, knowledge as true judgment, and, finally, knowledge as a true judgment with an account. Each of these definitions is shown to be unsatisfactory.

[5] Kirkham, Richard L. (October 1984). "Does the Gettier Problem Rest on a Mistake?". *Mind, New Series*. Oxford University Press on behalf of the Mind Association. pp. 501–513. JSTOR 2254258. jstor (subscription required)

[6] Ludwig Wittgenstein, *On Certainty*, remark 42

[7] Gottschalk-Mazouz, N. (2008): "Internet and the flow of knowledge," in: Hrachovec, H.; Pichler, A. (Hg.): Philosophy of the Information Society. Proceedings of the 30. International Ludwig Wittgenstein Symposium Kirchberg am Wechsel, Austria 2007. Volume 2, Frankfurt, Paris, Lancaster, New Brunswik: Ontos, S. 215–232. http://sammelpunkt.philo.at:8080/2022/1/Gottschalk-Mazouz.pdf

[8] Hacking, Ian (1975). *Why Does Language Matter to Philosophy?*. Cambridge: Cambridge University Press.

[9] Eddy, Matthew Daniel (2013). "The Shape of Knowledge: Children and the Visual Culture of Literacy and Numeracy". *Science in Context*. **26**: 215–245. doi:10.1017/s0269889713000045.

[10] "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective". Haraway, Donna. *Feminist Studies* Vol. 14, No. 3. pp. 575–599. 1988.

[11] "Introduction: Development and the Anthropology of Modernity". Escobar, Arturo. *Encountering Development: The Making and Unmaking of the Third World*.

[12] Chapter 1. Haraway, Donna. *Modest_Witness@Second_Millennium. FemaleMan© Meets_OncoMouse2. Feminism and Technoscience*. 1997.

[13] "Posthuman, All Too Human: Towards a New Process Ontology". Braidotti, Rosi. *Theory Culture* Vol. 23. pp. 197–208. 2006.

[14] "The Subject and Power". Foucault, Michel. *Critical Inquiry* Volume 9, No. 4. pp. 777–795. 1982

[15] Oxford English Dictionary

[16] "Science – Definition of science by Merriam-Webster". *merriam-webster.com*.

[17] "[4] Rules for the study of natural philosophy", Newton 1999, pp. 794–6, from the General Scholium, which follows Book **3**, *The System of the World*.

[18] scientific method, *Merriam-Webster Dictionary*.

[19] http://articles.latimes.com/2012/jul/12/opinion/la-oe-wilson-social-sciences-20120712

[20] "Sir Francis Bacon – Quotationspage.com".   Retrieved 2009-07-08.

[21] There is quite a good case for this exclusive specialization used by philosophers, in that it allows for in-depth study of logic-procedures and other abstractions which are not found elsewhere. However this may lead to problems whenever the topic spills over into those excluded domains—e.g. when Kant (following Newton) dismissed *Space and Time* as axiomatically "transcendental" and "a priori" — a claim later disproved by Piaget's clinical studies. It also seems likely that the vexed problem of "*infinite regress*" can be largely (but not completely) solved by proper attention to how unconscious concepts are *actually* developed, both during infantile learning *and* as inherited "pseudo-transcendentals" inherited from the trial-and-error of previous generations. See also "Tacit knowledge".

  - Piaget, J., and B.Inhelder (1927 / 1969). *The child's conception of time*. Routledge & Kegan Paul: London.
  - Piaget, J., and B.Inhelder (1948 / 1956). *The child's conception of space*. Routledge & Kegan Paul: London.

[22] Popper, K.R. (1975). "The rationality of scientific revolutions"; in Rom Harré (ed.), *Problems of Scientific Revolution: Scientific Progress and Obstacles to Progress in the Sciences*. Clarendon Press: Oxford.

[23] http://www.ondwelle.com/OSM02.pdf

[24] This "outside world" could include other subsystems within the same organism—e.g. different "mental levels" corresponding to different Piagetian stages. See Theory of cognitive development.

[25] "philosophy bites". *philosophybites.com*.

[26] "Part Three, No.   1831". *Catechism of the Catholic Church*. Retrieved 2007-04-20.

[27] "विद्या दान ही सबसे बडा दान : वहिपि - Vishva Hindu Parishad – Official Website". *vhp.org*.

[28] Swami Krishnananda. "Chapter 7". *The Philosophy of the Panchadasi*. The Divine Life Society. Retrieved 2008-07-05.

[29] Verbit, M. F. (1970). The components and dimensions of religious behavior: Toward a reconceptualization of religiosity. American mosaic, 24, 39.

[30] Küçükcan, T. (2010). Multidimensional Approach to Religion: a way of looking at religious phenomena. Journal for the Study of Religions and Ideologies, 4(10), 60–70.

[31] http://www.eskieserler.com/dosyalar/mpdf%20(1135) .pdf

- "Knowledge". *Internet Encyclopedia of Philosophy*.

- "The Value of Knowledge". *Stanford Encyclopedia of Philosophy*.

- "The Analysis of Knowledge". *Stanford Encyclopedia of Philosophy*.

- "Knowledge by Acquaintance vs.   Description". *Stanford Encyclopedia of Philosophy*.

- Knowledge at the Indiana Philosophy Ontology Project

4.9   External links

- Knowledge at PhilPapers

Chapter 5

Confirmation bias

Confirmation bias, also called **confirmatory bias** or **myside bias**,[Note 1] is the tendency to search for, interpret, favor, and recall information in a way that confirms one's preexisting beliefs or hypotheses, while giving disproportionately less consideration to alternative possibilities.[1] It is a type of cognitive bias and a systematic error of inductive reasoning. People display this bias when they gather or remember information selectively, or when they interpret it in a biased way. The effect is stronger for emotionally charged issues and for deeply entrenched beliefs. People also tend to interpret ambiguous evidence as supporting their existing position. Biased search, interpretation and memory have been invoked to explain attitude polarization (when a disagreement becomes more extreme even though the different parties are exposed to the same evidence), belief perseverance (when beliefs persist after the evidence for them is shown to be false), the irrational primacy effect (a greater reliance on information encountered early in a series) and illusory correlation (when people falsely perceive an association between two events or situations).

A series of experiments in the 1960s suggested that people are biased toward confirming their existing beliefs. Later work re-interpreted these results as a tendency to test ideas in a one-sided way, focusing on one possibility and ignoring alternatives. In certain situations, this tendency can bias people's conclusions. Explanations for the observed biases include wishful thinking and the limited human capacity to process information. Another explanation is that people show confirmation bias because they are weighing up the costs of being wrong, rather than investigating in a neutral, scientific way.

Confirmation biases contribute to overconfidence in personal beliefs and can maintain or strengthen beliefs in the face of contrary evidence. Poor decisions due to these biases have been found in political and organizational contexts.[2][3][Note 2]

5.1 Types

Confirmation biases are effects in information processing. They differ from what is sometimes called the *behavioral confirmation effect*, commonly known as *self-fulfilling prophecy*, in which a person's expectations influence their own behavior, bringing about the expected result.[4]

Some psychologists restrict the term *confirmation bias* to selective collection of evidence that supports what one already believes while ignoring or rejecting evidence that supports a different conclusion. Other psychologists apply the term more broadly to the tendency to preserve one's existing beliefs when searching for evidence, interpreting it, or recalling it from memory.[5][Note 3]

5.1.1 Biased search for information

Experiments have found repeatedly that people tend to test hypotheses in a one-sided way, by searching for evidence consistent with their current hypothesis.[7][8] Rather than searching through all the relevant evidence, they phrase questions to receive an affirmative answer that supports their theory.[9] They look for the consequences that they would expect if their hypothesis were true, rather than what would happen if they were false.[9] For example, someone using yes/no questions to find a number he or she suspects to be the number 3 might ask, "Is it an odd number?" People prefer this type of question, called a "positive test", even when a negative test such as "Is it an even number?" would yield exactly the same information.[10] However, this does not mean that people seek tests that guarantee a positive answer. In studies where subjects could select either such pseudo-tests or genuinely diagnostic ones, they favored the genuinely diagnostic.[11][12]

The preference for positive tests in itself is not a bias, since positive tests can be highly informative.[13] However, in combination with other effects, this strategy can confirm existing beliefs or assumptions, independently of whether they are true.[14] In real-world situations, evidence is often complex and mixed. For example, various contradictory ideas about someone could each be supported by concentrating on one aspect of his or her behavior.[8] Thus any search for evidence in favor of a hypothesis is likely to succeed.[14] One illustration of this is the way the phrasing of a question can significantly change the answer.[8] For example, people who are asked, "Are you happy with your social life?" report greater sat-
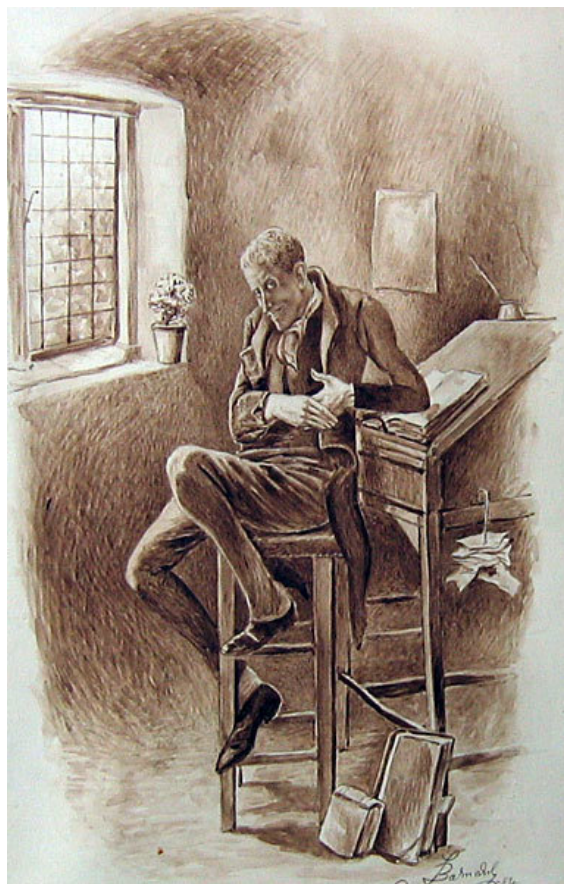
Confirmation bias has been described as an internal "yes man", echoing back a person's beliefs like Charles Dickens' character Uriah Heep.[6]

isfaction than those asked, "Are you *un*happy with your social life?"[15]

Even a small change in a question's wording can affect how people search through available information, and hence the conclusions they reach. This was shown using a fictional child custody case.[16] Participants read that Parent A was moderately suitable to be the guardian in multiple ways. Parent B had a mix of salient positive and negative qualities: a close relationship with the child but a job that would take him or her away for long periods of time. When asked, "Which parent should have custody of the child?" the majority of participants chose Parent B, looking mainly for positive attributes. However, when asked, "Which parent should be denied custody of the child?" they looked for negative attributes and the majority answered that Parent B should be denied custody, implying that Parent A should have custody.[16]

Similar studies have demonstrated how people engage in a biased search for information, but also that this phenomenon may be limited by a preference for genuine diagnostic tests. In an initial experiment, participants rated another person on the introversion–extroversion personality dimension on the basis of an interview. They chose the interview questions from a given list. When the in-

terviewee was introduced as an introvert, the participants chose questions that presumed introversion, such as, "What do you find unpleasant about noisy parties?" When the interviewee was described as extroverted, almost all the questions presumed extroversion, such as, "What would you do to liven up a dull party?" These loaded questions gave the interviewees little or no opportunity to falsify the hypothesis about them.[17] A later version of the experiment gave the participants less presumptive questions to choose from, such as, "Do you shy away from social interactions?"[18] Participants preferred to ask these more diagnostic questions, showing only a weak bias towards positive tests. This pattern, of a main preference for diagnostic tests and a weaker preference for positive tests, has been replicated in other studies.[18]

Personality traits influence and interact with biased search processes.[19] Individuals vary in their abilities to defend their attitudes from external attacks in relation to selective exposure. Selective exposure occurs when individuals search for information that is consistent, rather than inconsistent, with their personal beliefs.[20] An experiment examined the extent to which individuals could refute arguments that contradicted their personal beliefs.[19] People with high confidence levels more readily seek out contradictory information to their personal position to form an argument. Individuals with low confidence levels do not seek out contradictory information and prefer information that supports their personal position. People generate and evaluate evidence in arguments that are biased towards their own beliefs and opinions.[21] Heightened confidence levels decrease preference for information that supports individuals' personal beliefs.

Another experiment gave participants a complex rule-discovery task that involved moving objects simulated by a computer.[22] Objects on the computer screen followed specific laws, which the participants had to figure out. So, participants could "fire" objects across the screen to test their hypotheses. Despite making many attempts over a ten-hour session, none of the participants figured out the rules of the system. They typically attempted to confirm rather than falsify their hypotheses, and were reluctant to consider alternatives. Even after seeing objective evidence that refuted their working hypotheses, they frequently continued doing the same tests. Some of the participants were taught proper hypothesis-testing, but these instructions had almost no effect.[22]

5.1.2   Biased interpretation

Smart people believe weird things because they are skilled at defending beliefs they arrived at for non-smart reasons.

—Michael Shermer[23]

Confirmation biases are not limited to the collection of evidence. Even if two individuals have the same information, the way they interpret it can be biased.

A team at Stanford University conducted an experiment involving participants who felt strongly about capital punishment, with half in favor and half against it.[24][25] Each participant read descriptions of two studies: a comparison of U.S. states with and without the death penalty, and a comparison of murder rates in a state before and after the introduction of the death penalty. After reading a quick description of each study, the participants were asked whether their opinions had changed. Then, they read a more detailed account of each study's procedure and had to rate whether the research was well-conducted and convincing.[24] In fact, the studies were fictional. Half the participants were told that one kind of study supported the deterrent effect and the other undermined it, while for other participants the conclusions were swapped.[24][25]

The participants, whether supporters or opponents, reported shifting their attitudes slightly in the direction of the first study they read. Once they read the more detailed descriptions of the two studies, they almost all returned to their original belief regardless of the evidence provided, pointing to details that supported their viewpoint and disregarding anything contrary. Participants described studies supporting their pre-existing view as superior to those that contradicted it, in detailed and specific ways.[24][26] Writing about a study that seemed to undermine the deterrence effect, a death penalty proponent wrote, "The research didn't cover a long enough period of time", while an opponent's comment on the same study said, "No strong evidence to contradict the researchers has been presented".[24] The results illustrated that people set higher standards of evidence for hypotheses that go against their current expectations. This effect, known as "disconfirmation bias", has been supported by other experiments.[27]

An MRI scanner allowed researchers to examine how the human brain deals with unwelcome information.

Another study of biased interpretation occurred during the 2004 U.S. presidential election and involved participants who reported having strong feelings about the candidates. They were shown apparently contradictory pairs of statements, either from Republican candidate George W. Bush, Democratic candidate John Kerry or a politically neutral public figure. They were also given further statements that made the apparent contradiction seem reasonable. From these three pieces of information, they had to decide whether or not each individual's statements were inconsistent.[28]:1948 There were strong differences in these evaluations, with participants much more likely to interpret statements from the candidate they opposed as contradictory.[28]:1951

In this experiment, the participants made their judgments while in a magnetic resonance imaging (MRI) scanner which monitored their brain activity. As participants evaluated contradictory statements by their favored candidate, emotional centers of their brains were aroused. This did not happen with the statements by the other figures. The experimenters inferred that the different responses to the statements were not due to passive reasoning errors. Instead, the participants were actively reducing the cognitive dissonance induced by reading about their favored candidate's irrational or hypocritical behavior.[28]:1956

Biases in belief interpretation are persistent, regardless of intelligence level. Participants in an experiment took the SAT test (a college admissions test used in the United States) to assess their intelligence levels. They then read information regarding safety concerns for vehicles, and the experimenters manipulated the national origin of the car. American participants provided their opinion if the car should be banned on a six-point scale, where one indicated "definitely yes" and six indicated "definitely no." Participants firstly evaluated if they would allow a dangerous German car on American streets and a dangerous American car on German streets. Participants believed that the dangerous German car on American streets should be banned more quickly than the dangerous American car on German streets. There was no difference among intelligence levels at the rate participants would ban a car.[21]

Biased interpretation is not restricted to emotionally significant topics. In another experiment, participants were told a story about a theft. They had to rate the evidential importance of statements arguing either for or against a particular character being responsible. When they hypothesized that character's guilt, they rated statements supporting that hypothesis as more important than conflicting statements.[29]

5.1.3 Biased memory

Even if people gather and interpret evidence in a neutral manner, they may still remember it selectively to reinforce their expectations. This effect is called "selective recall", "confirmatory memory" or "access-biased

memory".[30] Psychological theories differ in their predictions about selective recall. Schema theory predicts that information matching prior expectations will be more easily stored and recalled than information that does not match.[31] Some alternative approaches say that surprising information stands out and so is memorable.[31] Predictions from both these theories have been confirmed in different experimental contexts, with no theory winning outright.[32]

In one study, participants read a profile of a woman which described a mix of introverted and extroverted behaviors.[33] They later had to recall examples of her introversion and extroversion. One group was told this was to assess the woman for a job as a librarian, while a second group were told it was for a job in real estate sales. There was a significant difference between what these two groups recalled, with the "librarian" group recalling more examples of introversion and the "sales" groups recalling more extroverted behavior.[33] A selective memory effect has also been shown in experiments that manipulate the desirability of personality types.[31][34] In one of these, a group of participants were shown evidence that extroverted people are more successful than introverts. Another group were told the opposite. In a subsequent, apparently unrelated, study, they were asked to recall events from their lives in which they had been either introverted or extroverted. Each group of participants provided more memories connecting themselves with the more desirable personality type, and recalled those memories more quickly.[35]

Changes in emotional states can also influence memory recall.[36][37] Participants rated how they felt when they had first learned that O.J. Simpson had been acquitted of murder charges.[36] They described their emotional reactions and confidence regarding the verdict one week, two months, and one year after the trial. Results indicated that participants' assessments for Simpson's guilt changed over time. The more that participants' opinion of the verdict had changed, the less stable were the participant's memories regarding their initial emotional reactions. When participants recalled their initial emotional reactions two months and a year later, past appraisals closely resembled current appraisals of emotion. People demonstrate sizable myside bias when discussing their opinions on controversial topics.[21] Memory recall and construction of experiences undergo revision in relation to corresponding emotional states.

Myside bias has been shown to influence the accuracy of memory recall.[37] In an experiment, widows and widowers rated the intensity of their experienced grief six months and five years after the deaths of their spouses. Participants noted a higher experience of grief at six months rather than at five years. Yet, when the participants were asked after five years how they had felt six months after the death of their significant other, the intensity of grief participants recalled was highly correlated with their current level of grief. Individuals appear to utilize their current emotional states to analyze how they must have felt when experiencing past events.[36] Emotional memories are reconstructed by current emotional states.

One study showed how selective memory can maintain belief in extrasensory perception (ESP).[38] Believers and disbelievers were each shown descriptions of ESP experiments. Half of each group were told that the experimental results supported the existence of ESP, while the others were told they did not. In a subsequent test, participants recalled the material accurately, apart from believers who had read the non-supportive evidence. This group remembered significantly less information and some of them incorrectly remembered the results as supporting ESP.[38]

5.2   Related effects

5.2.1   Polarization of opinion

Main article: Attitude polarization

When people with opposing views interpret new information in a biased way, their views can move even further apart. This is called "attitude polarization".[39] The effect was demonstrated by an experiment that involved drawing a series of red and black balls from one of two concealed "bingo baskets". Participants knew that one basket contained 60% black and 40% red balls; the other, 40% black and 60% red. The experimenters looked at what happened when balls of alternating color were drawn in turn, a sequence that does not favor either basket. After each ball was drawn, participants in one group were asked to state out loud their judgments of the probability that the balls were being drawn from one or the other basket. These participants tended to grow more confident with each successive draw—whether they initially thought the basket with 60% black balls or the one with 60% red balls was the more likely source, their estimate of the probability increased. Another group of participants were asked to state probability estimates only at the end of a sequence of drawn balls, rather than after each ball. They did not show the polarization effect, suggesting that it does not necessarily occur when people simply hold opposing positions, but rather when they openly commit to them.[40]

A less abstract study was the Stanford biased interpretation experiment in which participants with strong opinions about the death penalty read about mixed experimental evidence. Twenty-three percent of the participants reported that their views had become more extreme, and this self-reported shift correlated strongly with their initial attitudes.[24] In later experiments, participants also reported their opinions becoming more extreme in response to ambiguous information. However, comparisons of their attitudes before and after the new evidence showed

no significant change, suggesting that the self-reported changes might not be real.[27][39][41] Based on these experiments, Deanna Kuhn and Joseph Lao concluded that polarization is a real phenomenon but far from inevitable, only happening in a small minority of cases. They found that it was prompted not only by considering mixed evidence, but by merely thinking about the topic.[39]

Charles Taber and Milton Lodge argued that the Stanford team's result had been hard to replicate because the arguments used in later experiments were too abstract or confusing to evoke an emotional response. The Taber and Lodge study used the emotionally charged topics of gun control and affirmative action.[27] They measured the attitudes of their participants towards these issues before and after reading arguments on each side of the debate. Two groups of participants showed attitude polarization: those with strong prior opinions and those who were politically knowledgeable. In part of this study, participants chose which information sources to read, from a list prepared by the experimenters. For example, they could read the National Rifle Association's and the Brady Anti-Handgun Coalition's arguments on gun control. Even when instructed to be even-handed, participants were more likely to read arguments that supported their existing attitudes than arguments that did not. This biased search for information correlated well with the polarization effect.[27]

The *backfire effect* is a name for the finding that, given evidence against their beliefs, people can reject the evidence and believe even more strongly.[42][43] The phrase was first coined by Brendan Nyhan and Jason Reifler.[44]

5.2.2 Persistence of discredited beliefs

Main article: Belief perseverance

[B]eliefs can survive potent logical or empirical challenges. They can survive and even be bolstered by evidence that most uncommitted observers would agree logically demands some weakening of such beliefs. They can even survive the total destruction of their original evidential bases.

—Lee Ross and Craig Anderson[45]

Confirmation biases can be used to explain why some beliefs persist when the initial evidence for them is removed.[46] This belief perseverance effect has been shown by a series of experiments using what is called the "debriefing paradigm": participants read fake evidence for a hypothesis, their attitude change is measured, then the fakery is exposed in detail. Their attitudes are then measured once more to see if their belief returns to its previous level.[45]

A common finding is that at least some of the initial belief remains even after a full debriefing.[47] In one experiment, participants had to distinguish between real and fake suicide notes. The feedback was random: some were told

they had done well while others were told they had performed badly. Even after being fully debriefed, participants were still influenced by the feedback. They still thought they were better or worse than average at that kind of task, depending on what they had initially been told.[48]

In another study, participants read job performance ratings of two firefighters, along with their responses to a risk aversion test.[45] This fictional data was arranged to show either a negative or positive association: some participants were told that a risk-taking firefighter did better, while others were told they did less well than a risk-averse colleague.[49] Even if these two case studies were true, they would have been scientifically poor evidence for a conclusion about firefighters in general. However, the participants found them subjectively persuasive.[49] When the case studies were shown to be fictional, participants' belief in a link diminished, but around half of the original effect remained.[45] Follow-up interviews established that the participants had understood the debriefing and taken it seriously. Participants seemed to trust the debriefing, but regarded the discredited information as irrelevant to their personal belief.[49]

The *continued influence effect* is the tendency to believe previously learned misinformation even after it has been corrected. Misinformation can still influence inferences one generates after a correction has occurred.[50]

5.2.3 Preference for early information

Experiments have shown that information is weighted more strongly when it appears early in a series, even when the order is unimportant. For example, people form a more positive impression of someone described as "intelligent, industrious, impulsive, critical, stubborn, envious" than when they are given the same words in reverse order.[51] This *irrational primacy effect* is independent of the primacy effect in memory in which the earlier items in a series leave a stronger memory trace.[51] Biased interpretation offers an explanation for this effect: seeing the initial evidence, people form a working hypothesis that affects how they interpret the rest of the information.[46]

One demonstration of irrational primacy used colored chips supposedly drawn from two urns. Participants were told the color distributions of the urns, and had to estimate the probability of a chip being drawn from one of them.[51] In fact, the colors appeared in a pre-arranged order. The first thirty draws favored one urn and the next thirty favored the other.[46] The series as a whole was neutral, so rationally, the two urns were equally likely. However, after sixty draws, participants favored the urn suggested by the initial thirty.[51]

Another experiment involved a slide show of a single object, seen as just a blur at first and in slightly better focus with each succeeding slide.[51] After each slide, participants had to state their best guess of what the object

was. Participants whose early guesses were wrong persisted with those guesses, even when the picture was sufficiently in focus that the object was readily recognizable to other people.[46]

5.2.4 Illusory association between events

Main article: Illusory correlation

Illusory correlation is the tendency to see non-existent correlations in a set of data.[52] This tendency was first demonstrated in a series of experiments in the late 1960s.[53] In one experiment, participants read a set of psychiatric case studies, including responses to the Rorschach inkblot test. The participants reported that the homosexual men in the set were more likely to report seeing buttocks, anuses or sexually ambiguous figures in the inkblots. In fact the fictional case studies had been constructed so that the homosexual men were no more likely to report this imagery or, in one version of the experiment, were less likely to report it than heterosexual men.[52] In a survey, a group of experienced psychoanalysts reported the same set of illusory associations with homosexuality.[52][53]

Another study recorded the symptoms experienced by arthritic patients, along with weather conditions over a 15-month period. Nearly all the patients reported that their pains were correlated with weather conditions, although the real correlation was zero.[54]

This effect is a kind of biased interpretation, in that objectively neutral or unfavorable evidence is interpreted to support existing beliefs. It is also related to biases in hypothesis-testing behavior.[55] In judging whether two events, such as illness and bad weather, are correlated, people rely heavily on the number of *positive-positive* cases: in this example, instances of both pain and bad weather. They pay relatively little attention to the other kinds of observation (of no pain and/or good weather).[56] This parallels the reliance on positive tests in hypothesis testing.[55] It may also reflect selective recall, in that people may have a sense that two events are correlated because it is easier to recall times when they happened together.[55]

5.3 Individual differences

Myside bias was once believed to be associated with greater intelligence; however, studies have shown that myside bias can be more influenced by ability to rationally think as opposed to amount of intelligence.[57] Myside bias can cause an inability to effectively and logically evaluate the opposite side of an argument. Studies have stated that myside bias is an absence of "active open-mindedness," meaning the active search for why an initial idea may be wrong.[58] Typically, myside bias is

operationalized in empirical studies as the quantity of evidence used in support of their side in comparison to the opposite side.[59]

A study has found individual differences in myside bias. This study investigates individual differences that are acquired through learning in a cultural context and are mutable. The researcher found important individual difference in argumentation. Studies have suggested that individual differences such as deductive reasoning ability, ability to overcome belief bias, epistemological understanding, and thinking disposition are significant predictors of the reasoning and generating arguments, counter-arguments, and rebuttals.[60][61][62]

A study by Christopher Wolfe and Anne Britt also investigated how participants' views of "what makes a good argument?" can be a source of myside bias that influence the way a person formulates his own arguments.[59] The study investigated individual differences of argumentation schema and asked participants to write essays. The participants were randomly assigned to write essays either for or against their preferred side of an argument and were given research instructions that took either a balanced or an unrestricted approach. The balanced-research instructions directed participants to create a "balanced" argument, i.e., that included both pros and cons; the unrestricted-research instructions included nothing on how to create the argument.[59]

Overall, the results revealed that the balanced-research instructions significantly increased the incidence of opposing information in arguments. These data also reveal that personal belief is not a *source* of myside bias; however, that those participants, who believe that a good argument is one that is based on facts, are more likely to exhibit myside bias than other participants. This evidence is consistent with the claims proposed in Baron's article—that people's opinions about what makes good thinking can influence how arguments are generated.[59]

5.4 History

5.4.1 Informal observation

Before psychological research on confirmation bias, the phenomenon had been observed anecdotally throughout history. Beginning with the Greek historian Thucydides (c. 460 BC – c. 395 BC), who wrote of misguided treason in *The Peloponnesian War*; "... for it is a habit of mankind to entrust to careless hope what they long for, and to use sovereign reason to thrust aside what they do not fancy."[63] Italian poet Dante Alighieri (1265–1321), noted it in his famous work, the *Divine Comedy*, in which St. Thomas Aquinas cautions Dante upon meeting in Paradise, "opinion—hasty—often can incline to the wrong side, and then affection for one's own opinion binds, confines the mind."[64] English philosopher and scientist

Francis Bacon

Francis Bacon (1561–1626),[65] in the *Novum Organum* noted that biased assessment of evidence drove "all superstitions, whether in astrology, dreams, omens, divine judgments or the like".[66] He wrote:

> The human understanding when it has once adopted an opinion ... draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects or despises, or else by some distinction sets aside or rejects[.][66]

In his essay (1897) "What Is Art?", Russian novelist Leo Tolstoy wrote,

> I know that most men—not only those considered clever, but even those who are very clever, and capable of understanding most difficult scientific, mathematical, or philosophic problems—can very seldom discern even the simplest and most obvious truth if it be such as to oblige them to admit the falsity of conclusions they have formed, perhaps with much difficulty—conclusions of which they are proud, which they have taught to others, and on which they have built their lives.[67]

5.4.2 Wason's research on hypothesis-testing

The term "confirmation bias" was coined by English psychologist Peter Wason.[68] For an experiment published

in 1960, he challenged participants to identify a rule applying to triples of numbers. At the outset, they were told that (2,4,6) fits the rule. Participants could generate their own triples and the experimenter told them whether or not each triple conformed to the rule.[69][70]

While the actual rule was simply "any ascending sequence", the participants had a great deal of difficulty in finding it, often announcing rules that were far more specific, such as "the middle number is the average of the first and last".[69] The participants seemed to test only positive examples—triples that obeyed their hypothesized rule. For example, if they thought the rule was, "Each number is two greater than its predecessor", they would offer a triple that fit this rule, such as (11,13,15) rather than a triple that violates it, such as (11,12,19).[71]

Wason accepted falsificationism, according to which a scientific test of a hypothesis is a serious attempt to falsify it. He interpreted his results as showing a preference for confirmation over falsification, hence the term "confirmation bias".[Note 4][72] Wason also used confirmation bias to explain the results of his selection task experiment.[73] In this task, participants are given partial information about a set of objects, and have to specify what further information they would need to tell whether or not a conditional rule ("If A, then B") applies. It has been found repeatedly that people perform badly on various forms of this test, in most cases ignoring information that could potentially refute the rule.[74][75]

5.4.3 Klayman and Ha's critique

A 1987 paper by Joshua Klayman and Young-Won Ha argued that the Wason experiments had not actually demonstrated a bias towards confirmation. Instead, Klayman and Ha interpreted the results in terms of a tendency to make tests that are consistent with the working hypothesis.[76] They called this the "positive test strategy".[8] This strategy is an example of a heuristic: a reasoning shortcut that is imperfect but easy to compute.[77] Klayman and Ha used Bayesian probability and information theory as their standard of hypothesis-testing, rather than the falsificationism used by Wason. According to these ideas, each answer to a question yields a different amount of information, which depends on the person's prior beliefs. Thus a scientific test of a hypothesis is one that is expected to produce the most information. Since the information content depends on initial probabilities, a positive test can either be highly informative or uninformative. Klayman and Ha argued that when people think about realistic problems, they are looking for a specific answer with a small initial probability. In this case, positive tests are usually more informative than negative tests.[13] However, in Wason's rule discovery task the answer—three numbers in ascending order—is very broad, so positive tests are unlikely to yield informative answers. Klayman and Ha supported their analysis by citing an experiment that used the labels "DAX"

and "MED" in place of "fits the rule" and "doesn't fit the rule". This avoided implying that the aim was to find a low-probability rule. Participants had much more success with this version of the experiment.[78][79]

In light of this and other critiques, the focus of research moved away from confirmation versus falsification to examine whether people test hypotheses in an informative way, or an uninformative but positive way. The search for "true" confirmation bias led psychologists to look at a wider range of effects in how people process information.[80]

5.5 Explanations

Confirmation bias is often described as a result of automatic, unintentional strategies rather than deliberate deception.[14][81] According to Robert Maccoun, most biased evidence processing occurs through a combination of both "cold" (cognitive) and "hot" (motivated) mechanisms.[82]

Cognitive explanations for confirmation bias are based on limitations in people's ability to handle complex tasks, and the shortcuts, called *heuristics*, that they use.[83] For example, people may judge the reliability of evidence by using the *availability heuristic*—i.e., how readily a particular idea comes to mind.[84] It is also possible that people can only focus on one thought at a time, so find it difficult to test alternative hypotheses in parallel.[85] Another heuristic is the positive test strategy identified by Klayman and Ha, in which people test a hypothesis by examining cases where they expect a property or event to occur. This heuristic avoids the difficult or impossible task of working out how diagnostic each possible question will be. However, it is not universally reliable, so people can overlook challenges to their existing beliefs.[13][86]

Motivational explanations involve an effect of desire on belief, sometimes called "wishful thinking".[87][88] It is known that people prefer pleasant thoughts over unpleasant ones in a number of ways: this is called the "Pollyanna principle".[89] Applied to arguments or sources of evidence, this could explain why desired conclusions are more likely to be believed true.[87] According to experiments that manipulate the desirability of the conclusion, people demand a high standard of evidence for unpalatable ideas and a low standard for preferred ideas. In other words, they ask, "Can I believe this?" for some suggestions and, "Must I believe this?" for others.[90][91] Although consistency is a desirable feature of attitudes, an excessive drive for consistency is another potential source of bias because it may prevent people from neutrally evaluating new, surprising information.[87] Social psychologist Ziva Kunda combines the cognitive and motivational

theories, arguing that motivation creates the bias, but cognitive factors determine the size of the effect.[92]

Explanations in terms of cost-benefit analysis assume that people do not just test hypotheses in a disinterested way, but assess the costs of different errors.[93] Using ideas from evolutionary psychology, James Friedrich suggests that people do not primarily aim at truth in testing hypotheses, but try to avoid the most costly errors. For example, employers might ask one-sided questions in job interviews because they are focused on weeding out unsuitable candidates.[94] Yaacov Trope and Akiva Liberman's refinement of this theory assumes that people compare the two different kinds of error: accepting a false hypothesis or rejecting a true hypothesis. For instance, someone who underestimates a friend's honesty might treat him or her suspiciously and so undermine the friendship. Overestimating the friend's honesty may also be costly, but less so. In this case, it would be rational to seek, evaluate or remember evidence of their honesty in a biased way.[95] When someone gives an initial impression of being introverted or extroverted, questions that match that impression come across as more empathic.[96] This suggests that when talking to someone who seems to be an introvert, it is a sign of better social skills to ask, "Do you feel awkward in social situations?" rather than, "Do you like noisy parties?" The connection between confirmation bias and social skills was corroborated by a study of how college students get to know other people. Highly self-monitoring students, who are more sensitive to their environment and to social norms, asked more matching questions when interviewing a high-status staff member than when getting to know fellow students.[96]

Psychologists Jennifer Lerner and Philip Tetlock distinguish two different kinds of thinking process. *Exploratory thought* neutrally considers multiple points of view and tries to anticipate all possible objections to a particular position, while *confirmatory thought* seeks to justify a specific point of view. Lerner and Tetlock say that when people expect to justify their position to others whose views they already know, they will tend to adopt a similar position to those people, and then use confirmatory thought to bolster their own credibility. However, if the external parties are overly aggressive or critical, people will disengage from thought altogether, and simply assert their personal opinions without justification.[97] Lerner and Tetlock say that people only push themselves to think critically and logically when they know in advance they will need to explain themselves to others who are well-informed, genuinely interested in the truth, and whose views they don't already know.[98] Because those conditions rarely exist, they argue, most people are using confirmatory thought most of the time.[99]

5.6 Consequences

5.6.1 In finance

Confirmation bias can lead investors to be overconfident, ignoring evidence that their strategies will lose money.[6][100] In studies of political stock markets, investors made more profit when they resisted bias. For example, participants who interpreted a candidate's debate performance in a neutral rather than partisan way were more likely to profit.[101] To combat the effect of confirmation bias, investors can try to adopt a contrary viewpoint "for the sake of argument".[102] In one technique, they imagine that their investments have collapsed and ask themselves why this might happen.[6]

5.6.2 In physical and mental health

Raymond Nickerson, a psychologist, blames confirmation bias for the ineffective medical procedures that were used for centuries before the arrival of scientific medicine.[103] If a patient recovered, medical authorities counted the treatment as successful, rather than looking for alternative explanations such as that the disease had run its natural course.[103] Biased assimilation is a factor in the modern appeal of alternative medicine, whose proponents are swayed by positive anecdotal evidence but treat scientific evidence hyper-critically.[104][105][106]

Cognitive therapy was developed by Aaron T. Beck in the early 1960s and has become a popular approach.[107] According to Beck, biased information processing is a factor in depression.[108] His approach teaches people to treat evidence impartially, rather than selectively reinforcing negative outlooks.[65] Phobias and hypochondria have also been shown to involve confirmation bias for threatening information.[109]

5.6.3 In politics and law

Mock trials allow researchers to examine confirmation biases in a realistic setting.

Nickerson argues that reasoning in judicial and political contexts is sometimes subconsciously biased, favoring conclusions that judges, juries or governments have already committed to.[110] Since the evidence in a jury trial can be complex, and jurors often reach decisions about the verdict early on, it is reasonable to expect an attitude polarization effect. The prediction that jurors will become more extreme in their views as they see more evidence has been borne out in experiments with mock trials.[111][112] Both inquisitorial and adversarial criminal justice systems are affected by confirmation bias.[113]

Confirmation bias can be a factor in creating or extending conflicts, from emotionally charged debates to wars: by interpreting the evidence in their favor, each opposing party can become overconfident that it is in the stronger position.[114] On the other hand, confirmation bias can result in people ignoring or misinterpreting the signs of an imminent or incipient conflict. For example, psychologists Stuart Sutherland and Thomas Kida have each argued that US Admiral Husband E. Kimmel showed confirmation bias when playing down the first signs of the Japanese attack on Pearl Harbor.[74][115]

A two-decade study of political pundits by Philip E. Tetlock found that, on the whole, their predictions were not much better than chance. Tetlock divided experts into "foxes" who maintained multiple hypotheses, and "hedgehogs" who were more dogmatic. In general, the hedgehogs were much less accurate. Tetlock blamed their failure on confirmation bias—specifically, their inability to make use of new information that contradicted their existing theories.[116]

In the 2013 murder trial of David Camm, the defense argued that Camm was charged for the murders of his wife and two children solely because of confirmation bias within the investigation.[117] Camm was arrested three days after the murders on the basis of faulty evidence. Despite the discovery that almost every piece of evidence on the probable cause affidavit was inaccurate or unreliable, the charges were not dropped against him.[118][119] A sweatshirt found at the crime was subsequently discovered to contain the DNA of a convicted felon, his prison nickname, and his department of corrections number.[120] Investigators looked for Camm's DNA on the sweatshirt, but failed to investigate any other pieces of evidence found on it and the foreign DNA was not run through CODIS until 5 years after the crime.[121][122] When the second suspect was discovered, prosecutors charged them as co-conspirators in the crime despite finding no evidence linking the two men.[123][124] Camm was acquitted of the murders.[125]

5.6.4 In the paranormal

One factor in the appeal of alleged psychic readings is that listeners apply a confirmation bias which fits the psychic's statements to their own lives.[126] By making a large

number of ambiguous statements in each sitting, the psychic gives the client more opportunities to find a match. This is one of the techniques of cold reading, with which a psychic can deliver a subjectively impressive reading without any prior information about the client.[126] Investigator James Randi compared the transcript of a reading to the client's report of what the psychic had said, and found that the client showed a strong selective recall of the "hits".[127]

As a striking illustration of confirmation bias in the real world, Nickerson mentions numerological pyramidology: the practice of finding meaning in the proportions of the Egyptian pyramids.[128] There are many different length measurements that can be made of, for example, the Great Pyramid of Giza and many ways to combine or manipulate them. Hence it is almost inevitable that people who look at these numbers selectively will find superficially impressive correspondences, for example with the dimensions of the Earth.[128]

5.6.5   In science

A distinguishing feature of scientific thinking is the search for falsifying as well as confirming evidence.[129] However, many times in the history of science, scientists have resisted new discoveries by selectively interpreting or ignoring unfavorable data.[129] Previous research has shown that the assessment of the quality of scientific studies seems to be particularly vulnerable to confirmation bias. It has been found several times that scientists rate studies that report findings consistent with their prior beliefs more favorably than studies reporting findings inconsistent with their previous beliefs.[81][130][131] However, assuming that the research question is relevant, the experimental design adequate and the data are clearly and comprehensively described, the found results should be of importance to the scientific community and should not be viewed prejudicially, regardless of whether they conform to current theoretical predictions.[131]

In the context of scientific research, confirmation biases can sustain theories or research programs in the face of inadequate or even contradictory evidence;[74][132] the field of parapsychology has been particularly affected.[133]

An experimenter's confirmation bias can potentially affect which data are reported. Data that conflict with the experimenter's expectations may be more readily discarded as unreliable, producing the so-called file drawer effect. To combat this tendency, scientific training teaches ways to prevent bias.[134] For example, experimental design of randomized controlled trials (coupled with their systematic review) aims to minimize sources of bias.[134][135] The social process of peer review is thought to mitigate the effect of individual scientists' biases,[136] even though the peer review process itself may be susceptible to such biases.[131][137][138] Confirmation bias may thus be especially harmful to objec-

tive evaluations regarding nonconforming results since biased individuals may regard opposing evidence to be weak in principle and give little serious thought to revising their beliefs.[130] Scientific innovators often meet with resistance from the scientific community, and research presenting controversial results frequently receives harsh peer review.[139]

5.6.6   In self-image

Social psychologists have identified two tendencies in the way people seek or interpret information about themselves. *Self-verification* is the drive to reinforce the existing self-image and *self-enhancement* is the drive to seek positive feedback. Both are served by confirmation biases.[140] In experiments where people are given feedback that conflicts with their self-image, they are less likely to attend to it or remember it than when given self-verifying feedback.[141][142][143] They reduce the impact of such information by interpreting it as unreliable.[141][144][145] Similar experiments have found a preference for positive feedback, and the people who give it, over negative feedback.[140]

5.7   See also

- Belief perseverance
- Cherry picking
- Cognitive bias mitigation
- Cognitive inertia
- Cognitive miser
- Denial
- Denialism
- Eisegesis
- Filter bubble
- Hostile media effect
- Hypocrisy
- Idée fixe (psychology)
- List of biases in judgment and decision making
- List of memory biases
- Observer-expectancy effect
- Reinforcement theory
- Selective exposure theory
- Selective perception
- Semmelweis reflex
- Woozle effect

5.8 Notes

[1] David Perkins, a geneticist, coined the term "myside bias" referring to a preference for "my" side of an issue. (Baron 2000, p. 195)

[2] Tuchman (1984) described a form of confirmation bias at work in the process of justifying policies to which a government has committed itself: "Once a policy has been adopted and implemented, all subsequent activity becomes an effort to justify it" (p. 245). In the context of a discussion of the policy that drew the United States into war in Vietnam and kept the U.S. military engaged for 16 years despite countless evidences that it was a lost cause from the beginning, Tuchman argued:

> Wooden-headedness, the source of self-deception is a factor that plays a remarkably large role in government. It consists in assessing a situation in terms of preconceived fixed notions while ignoring or rejecting any contrary signs. It is acting according to wish while not allowing oneself to be deflected by the facts. It is epitomized in a historian's statement about Philip II of Spain, the surpassing wooden head of all sovereigns: "no experience of the failure of his policy could shake his belief in essential excellence." (p. 7)

Folly, she argued, is a form of self-deception characterized by "insistence on a rooted notion regardless of contrary evidence" (p. 209)

[3] "Assimilation bias" is another term used for biased interpretation of evidence. (Risen & Gilovich 2007, p. 113)

[4] Wason also used the term "verification bias". (Poletiek 2001, p. 73)

5.9 References

[1] Plous, Scott (1993). *The Psychology of Judgment and Decision Making*. p. 233.

[2] Nickerson, Raymond S. (June 1998). "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises". *Review of General Psychology*. **2** (2): 175–220. doi:10.1037/1089-2680.2.2.175.

[3] Tuchman, Barbara (1984). *The March of Folly: From Troy to Vietnam*. New York: Knopf.

[4] Darley, John M.; Gross, Paget H. (2000), "A Hypothesis-Confirming Bias in Labelling Effects", in Stangor, Charles, *Stereotypes and prejudice: essential readings*, Psychology Press, p. 212, ISBN 978-0-86377-589-5, OCLC 42823720

[5] Risen & Gilovich 2007

[6] Zweig, Jason (November 19, 2009), "How to Ignore the Yes-Man in Your Head", *Wall Street Journal*, Dow Jones & Company, retrieved 2010-06-13

[7] Nickerson 1998, pp. 177–78

[8] Kunda 1999, pp. 112–15

[9] Baron 2000, pp. 162–64

[10] Kida 2006, pp. 162–65

[11] Devine, Patricia G.; Hirt, Edward R.; Gehrke, Elizabeth M. (1990), "Diagnostic and confirmation strategies in trait hypothesis testing", *Journal of Personality and Social Psychology*, American Psychological Association, **58** (6): 952–63, doi:10.1037/0022-3514.58.6.952, ISSN 1939-1315

[12] Trope, Yaacov; Bassok, Miriam (1982), "Confirmatory and diagnosing strategies in social information gathering", *Journal of Personality and Social Psychology*, American Psychological Association, **43** (1): 22–34, doi:10.1037/0022-3514.43.1.22, ISSN 1939-1315

[13] Klayman, Joshua; Ha, Young-Won (1987), "Confirmation, Disconfirmation and Information in Hypothesis Testing" (PDF), *Psychological Review*, American Psychological Association, **94** (2): 211–28, doi:10.1037/0033-295X.94.2.211, ISSN 0033-295X, retrieved 2009-08-14

[14] Oswald & Grosjean 2004, pp. 82–83

[15] Kunda, Ziva; Fong, G.T.; Sanitoso, R.; Reber, E. (1993), "Directional questions direct self-conceptions", *Journal of Experimental Social Psychology*, Society of Experimental Social Psychology, **29**: 62–63, doi:10.1006/jesp.1993.1004, ISSN 0022-1031 via Fine 2006, pp. 63–65

[16] Shafir, E. (1993), "Choosing versus rejecting: why some options are both better and worse than others", *Memory and Cognition*, **21** (4): 546–56, doi:10.3758/bf03197186, PMID 8350746 via Fine 2006, pp. 63–65

[17] Snyder, Mark; Swann, Jr., William B. (1978), "Hypothesis-Testing Processes in Social Interaction", *Journal of Personality and Social Psychology*, American Psychological Association, **36** (11): 1202–12, doi:10.1037/0022-3514.36.11.1202 via Poletiek 2001, p. 131

[18] Kunda 1999, pp. 117–18

[19] Albarracin, D.; Mitchell, A.L. (2004). "The Role of Defensive Confidence in Preference for Proattitudinal Information: How Believing That One Is Strong Can Sometimes Be a Defensive Weakness". *Personality and Social Psychology Bulletin*. **30** (12): 1565–84. doi:10.1177/0146167204271180.

[20] Fischer, P.; Fischer, Julia K.; Aydin, Nilüfer; Frey, Dieter (2010). "Physically Attractive Social Information Sources Lead to Increased Selective Exposure to Information". *Basic and Applied Social Psychology*. **32** (4): 340–47. doi:10.1080/01973533.2010.519208.

[21] Stanovich, K. E.; West, R. F.; Toplak, M. E. (2013). "Myside Bias, Rational Thinking, and Intelligence". *Current Directions in Psychological Science*. **22** (4): 259–64. doi:10.1177/0963721413480174.

[22] Mynatt, Clifford R.; Doherty, Michael E.; Tweney, Ryan D. (1978), "Consequences of confirmation and disconfirmation in a simulated research environment", *Quarterly Journal of Experimental Psychology*, **30** (3): 395–406, doi:10.1080/00335557843000007

[23] Kida 2006, p. 157

[24] Lord, Charles G.; Ross, Lee; Lepper, Mark R. (1979), "Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence", *Journal of Personality and Social Psychology*, American Psychological Association, **37** (11): 2098–209, doi:10.1037/0022-3514.37.11.2098, ISSN 0022-3514

[25] Baron 2000, pp. 201–02

[26] Vyse 1997, p. 122

[27] Taber, Charles S.; Lodge, Milton (July 2006), "Motivated Skepticism in the Evaluation of Political Beliefs", *American Journal of Political Science*, Midwest Political Science Association, **50** (3): 755–69, doi:10.1111/j.1540-5907.2006.00214.x, ISSN 0092-5853

[28] Westen, Drew; Blagov, Pavel S.; Harenski, Keith; Kilts, Clint; Hamann, Stephan (2006), "Neural Bases of Motivated Reasoning: An fMRI Study of Emotional Constraints on Partisan Political Judgment in the 2004 U.S. Presidential Election" (PDF), *Journal of Cognitive Neuroscience*, Massachusetts Institute of Technology, **18** (11): 1947–58, doi:10.1162/jocn.2006.18.11.1947, PMID 17069484, Archived from the original on March 24, 2012, retrieved 2009-08-14

[29] Gadenne, V.; Oswald, M. (1986), "Entstehung und Veränderung von Bestätigungstendenzen beim Testen von Hypothesen [Formation and alteration of confirmatory tendencies during the testing of hypotheses]", *Zeitschrift für experimentelle und angewandte Psychologie*, **33**: 360–74 via Oswald & Grosjean 2004, p. 89

[30] Hastie, Reid; Park, Bernadette (2005), "The Relationship Between Memory and Judgment Depends on Whether the Judgment Task is Memory-Based or On-Line", in Hamilton, David L., *Social cognition: key readings*, New York: Psychology Press, p. 394, ISBN 0-86377-591-8, OCLC 55078722

[31] Oswald & Grosjean 2004, pp. 88–89

[32] Stangor, Charles; McMillan, David (1992), "Memory for expectancy-congruent and expectancy-incongruent information: A review of the social and social developmental literatures", *Psychological Bulletin*, American Psychological Association, **111** (1): 42–61, doi:10.1037/0033-2909.111.1.42

[33] Snyder, M.; Cantor, N. (1979), "Testing hypotheses about other people: the use of historical knowledge", *Journal of Experimental Social Psychology*, **15** (4): 330–42, doi:10.1016/0022-1031(79)90042-8 via Goldacre 2008, p. 231

[34] Kunda 1999, pp. 225–32

[35] Sanitioso, Rasyid; Kunda, Ziva; Fong, G.T. (1990), "Motivated recruitment of autobiographical memories", *Journal of Personality and Social Psychology*, American Psychological Association, **59** (2): 229–41, doi:10.1037/0022-3514.59.2.229, ISSN 0022-3514, PMID 2213492

[36] Levine, L.; Prohaska, V.; Burgess, S.L.; Rice, J.A.; Laulhere, T.M. (2001). "Remembering past emotions: The role of current appraisals.". *Cognition and Emotion*. **15**: 393–417. doi:10.1080/02699930125955.

[37] Safer, M.A.; Bonanno, G.A.; Field, N. (2001). ""It was never that bad": Biased recall of grief and long-term adjustment to the death of a spouse". *Memory*. **9** (3): 195–203. doi:10.1080/09658210143000065.

[38] Russell, Dan; Jones, Warren H. (1980), "When superstition fails: Reactions to disconfirmation of paranormal beliefs", *Personality and Social Psychology Bulletin*, Society for Personality and Social Psychology, **6** (1): 83–88, doi:10.1177/014616728061012, ISSN 1552-7433 via Vyse 1997, p. 121

[39] Kuhn, Deanna; Lao, Joseph (March 1996), "Effects of Evidence on Attitudes: Is Polarization the Norm?", *Psychological Science*, American Psychological Society, **7** (2): 115–20, doi:10.1111/j.1467-9280.1996.tb00340.x

[40] Baron 2000, p. 201

[41] Miller, A.G.; McHoskey, J.W.; Bane, C.M.; Dowd, T.G. (1993), "The attitude polarization phenomenon: Role of response measure, attitude extremity, and behavioral consequences of reported attitude change", *Journal of Personality and Social Psychology*, **64** (4): 561–74, doi:10.1037/0022-3514.64.4.561

[42] "backfire effect". *The Skeptic's Dictionary*. Retrieved 26 April 2012.

[43] Silverman, Craig (2011-06-17). "The Backfire Effect". *Columbia Journalism Review*. Retrieved 2012-05-01. When your deepest convictions are challenged by contradictory evidence, your beliefs get stronger.

[44] Nyhan, Brendan; Reifler, Jason (June 2010). "When corrections fail: the persistence of political misperceptions". *Political Behavior*. Springer. **32** (2): 303–30. doi:10.1007/s11109-010-9112-2. Pdf.

[45] Ross, Lee; Anderson, Craig A. (1982), "Shortcomings in the attribution process: On the origins and maintenance of erroneous social assessments", in Kahneman, Daniel; Slovic, Paul; Tversky, Amos, *Judgment under uncertainty: Heuristics and biases*, Cambridge University Press, pp. 129–52, ISBN 978-0-521-28414-1, OCLC 7578020

[46] Nickerson 1998, p. 187

[47] Kunda 1999, p. 99

[48] Ross, Lee; Lepper, Mark R.; Hubbard, Michael (1975), "Perseverance in self-perception and social perception: Biased attributional processes in the debriefing paradigm", *Journal of Personality and Social Psychology*, American Psychological Association, **32** (5): 880–92, doi:10.1037/0022-3514.32.5.880, ISSN 0022-3514, PMID 1185517 via Kunda 1999, p. 99

[49] Anderson, Craig A.; Lepper, Mark R.; Ross, Lee (1980), "Perseverance of Social Theories: The Role of Explanation in the Persistence of Discredited Information", *Journal of Personality and Social Psychology*, American Psychological Association, **39** (6): 1037–49, doi:10.1037/h0077720, ISSN 0022-3514

[50] Johnson, Hollyn M.; Colleen M. Seifert (November 1994). "Sources of the continued influence effect: When misinformation in memory affects later inferences". *Journal of Experimental Psychology: Learning, Memory, and Cognition*. **20** (6): 1420–36. doi:10.1037/0278-7393.20.6.1420.

[51] Baron 2000, pp. 197–200

[52] Fine 2006, pp. 66–70

[53] Plous 1993, pp. 164–66

[54] Redelmeir, D. A.; Tversky, Amos (1996), "On the belief that arthritis pain is related to the weather", *Proceedings of the National Academy of Sciences*, **93** (7): 2895–96, doi:10.1073/pnas.93.7.2895 via Kunda 1999, p. 127

[55] Kunda 1999, pp. 127–30

[56] Plous 1993, pp. 162–64

[57] Stanovich, K. E.; West, R. F.; Toplak, M. E. (5 August 2013). "Myside Bias, Rational Thinking, and Intelligence". *Current Directions in Psychological Science*. **22** (4): 259–64. doi:10.1177/0963721413480174.

[58] Baron, Jonathan (1995). "Myside bias in thinking about abortion.". *Thinking & Reasoning*: 221–35.

[59] Wolfe, Christopher; Anne Britt (2008). "The locus of the myside bias in written argumentation" (PDF). *Thinking & Reasoning*. **14**: 1–27. doi:10.1080/13546780701527674.

[60] Mason, Lucia; Scirica, Fabio (October 2006). "Prediction of students' argumentation skills about controversial topics by epistemological understanding". *Learning and Instruction*. **16** (5): 492–509. doi:10.1016/j.learninstruc.2006.09.007.

[61] Weinstock, Michael (December 2009). "Relative expertise in an everyday reasoning task: Epistemic understanding, problem representation, and reasoning competence". *Learning and Individual Differences*. **19** (4): 423–34. doi:10.1016/j.lindif.2009.03.003.

[62] Weinstock, Michael; Neuman, Yair; Tabak, Iris (January 2004). "Missing the point or missing the norms? Epistemological norms as predictors of students' ability to identify fallacious arguments". *Contemporary Educational Psychology*. **29** (1): 77–94. doi:10.1016/S0361-476X(03)00024-9.

[63] Thucydides 4.108.4

[64] Alighieri, Dante. *Paradiso* canto XIII: 118–20. Trans. Allen Mandelbaum

[65] Baron 2000, pp. 195–96

[66] Bacon, Francis (1620). *Novum Organum*. reprinted in Burtt, E.A., ed. (1939), *The English philosophers from Bacon to Mill*, New York: Random House, p. 36 via Nickerson 1998, p. 176

[67] Tolstoy, Leo. *What is Art?* p. 124 (1899). In *The Kingdom of God Is Within You* (1893), he similarly declared, "The most difficult subjects can be explained to the most slow-witted man if he has not formed any idea of them already; but the simplest thing cannot be made clear to the most intelligent man if he is firmly persuaded that he knows already, without a shadow of doubt, what is laid before him." (ch. 3). Translated from the Russian by Constance Garnett, New York, 1894. Project Gutenberg edition released November 2002. Retrieved 2009-08-24.

[68] Gale, Maggie; Ball, Linden J. (2002), "Does Positivity Bias Explain Patterns of Performance on Wason's 2-4-6 task?", in Gray, Wayne D.; Schunn, Christian D., *Proceedings of the Twenty-Fourth Annual Conference of the Cognitive Science Society*, Routledge, p. 340, ISBN 978-0-8058-4581-5, OCLC 469971634

[69] Wason, Peter C. (1960), "On the failure to eliminate hypotheses in a conceptual task", *Quarterly Journal of Experimental Psychology*, Psychology Press, **12** (3): 129–40, doi:10.1080/17470216008416717, ISSN 1747-0226

[70] Nickerson 1998, p. 179

[71] Lewicka 1998, p. 238

[72] Oswald & Grosjean 2004, pp. 79–96

[73] Wason, Peter C. (1968), "Reasoning about a rule", *Quarterly Journal of Experimental Psychology*, Psychology Press, **20** (3): 273–28, doi:10.1080/14640746808400161, ISSN 1747-0226, PMID 5683766

[74] Sutherland, Stuart (2007), *Irrationality* (2nd ed.), London: Pinter and Martin, pp. 95–103, ISBN 978-1-905177-07-3, OCLC 72151566

[75] Barkow, Jerome H.; Cosmides, Leda; Tooby, John (1995), *The adapted mind: evolutionary psychology and the generation of culture*, Oxford University Press US, pp. 181–84, ISBN 978-0-19-510107-2, OCLC 33832963

[76] Oswald & Grosjean 2004, pp. 81–82, 86–87

[77] Plous 1993, p. 233

[78] Lewicka 1998, p. 239

[79] Tweney, Ryan D.; Doherty, Michael E.; Worner, Winifred J.; Pliske, Daniel B.; Mynatt, Clifford R.; Gross, Kimberly A.; Arkkelin, Daniel L. (1980), "Strategies of rule discovery in an inference task", *The Quarterly Journal of Experimental Psychology*, Psychology Press, **32** (1): 109–23, doi:10.1080/00335558008248237, ISSN 1747-0226 (Experiment IV)

[80] Oswald & Grosjean 2004, pp. 86–89

[81] Hergovich, Schott & Burger 2010

[82] Maccoun 1998

[83] Friedrich 1993, p. 298

[84] Kunda 1999, p. 94

[85] Nickerson 1998, pp. 198–99

[86] Nickerson 1998, p. 200

[87] Nickerson 1998, p. 197

[88] Baron 2000, p. 206

[89] Matlin, Margaret W. (2004), "Pollyanna Principle", in Pohl, Rüdiger F., *Cognitive Illusions: A Handbook on Fallacies and Biases in Thinking, Judgement and Memory*, Hove: Psychology Press, pp. 255–72, ISBN 978-1-84169-351-4, OCLC 55124398

[90] Dawson, Erica; Gilovich, Thomas; Regan, Dennis T. (October 2002), "Motivated Reasoning and Performance on the Wason Selection Task" (PDF), *Personality and Social Psychology Bulletin*, Society for Personality and Social Psychology, **28** (10): 1379–87, doi:10.1177/014616702236869, Archived from the original on June 12, 2015, retrieved 2009-09-30

[91] Ditto, Peter H.; Lopez, David F. (1992), "Motivated skepticism: use of differential decision criteria for preferred and nonpreferred conclusions", *Journal of Personality and Social Psychology*, American Psychological Association, **63** (4): 568–84, doi:10.1037/0022-3514.63.4.568, ISSN 0022-3514

[92] Nickerson 1998, p. 198

[93] Oswald & Grosjean 2004, pp. 91–93

[94] Friedrich 1993, pp. 299, 316–17

[95] Trope, Y.; Liberman, A. (1996), "Social hypothesis testing: cognitive and motivational mechanisms", in Higgins, E. Tory; Kruglanski, Arie W., *Social Psychology: Handbook of basic principles*, New York: Guilford Press, ISBN 978-1-57230-100-9, OCLC 34731629 via Oswald & Grosjean 2004, pp. 91–93

[96] Dardenne, Benoit; Leyens, Jacques-Philippe (1995), "Confirmation Bias as a Social Skill", *Personality and Social Psychology Bulletin*, Society for Personality and Social Psychology, **21** (11): 1229–39, doi:10.1177/01461672952111011, ISSN 1552-7433

[97] Shanteau, James (2003). Sandra L. Schneider, ed. *Emerging perspectives on judgment and decision research*. Cambridge [u.a.]: Cambridge University Press. p. 445. ISBN 0-521-52718-X.

[98] Haidt, Jonathan (2012). *The Righteous Mind : Why Good People are Divided by Politics and Religion*. New York: Pantheon Books. pp. 1473–74 (e–book edition). ISBN 0-307-37790-3.

[99] Lindzey, edited by Susan T. Fiske, Daniel T. Gilbert, Gardner (2010). *The handbook of social psychology.* (5th ed.). Hoboken, N.J.: Wiley. p. 811. ISBN 0-470-13749-5.

[100] Pompian, Michael M. (2006), *Behavioral finance and wealth management: how to build optimal portfolios that account for investor biases*, John Wiley and Sons, pp. 187–90, ISBN 978-0-471-74517-4, OCLC 61864118

[101] Hilton, Denis J. (2001), "The psychology of financial decision-making: Applications to trading, dealing, and investment analysis", *Journal of Behavioral Finance*, Institute of Behavioral Finance, **2** (1): 37–39, doi:10.1207/S15327760JPFM0201_4, ISSN 1542-7579

[102] Krueger, David; Mann, John David (2009), *The Secret Language of Money: How to Make Smarter Financial Decisions and Live a Richer Life*, McGraw Hill Professional, pp. 112–13, ISBN 978-0-07-162339-1, OCLC 277205993

[103] Nickerson 1998, p. 192

[104] Goldacre 2008, p. 233

[105] Singh, Simon; Ernst, Edzard (2008), *Trick or Treatment?: Alternative Medicine on Trial*, London: Bantam, pp. 287–88, ISBN 978-0-593-06129-9

[106] Atwood, Kimball (2004), "Naturopathy, Pseudoscience, and Medicine: Myths and Fallacies vs Truth", *Medscape General Medicine*, **6** (1): 33

[107] Neenan, Michael; Dryden, Windy (2004), *Cognitive therapy: 100 key points and techniques*, Psychology Press, p. ix, ISBN 978-1-58391-858-6, OCLC 474568621

[108] Blackburn, Ivy-Marie; Davidson, Kate M. (1995), *Cognitive therapy for depression & anxiety: a practitioner's guide* (2 ed.), Wiley-Blackwell, p. 19, ISBN 978-0-632-03986-9, OCLC 32699443

[109] Harvey, Allison G.; Watkins, Edward; Mansell, Warren (2004), *Cognitive behavioural processes across psychological disorders: a transdiagnostic approach to research and treatment*, Oxford University Press, pp. 172–73, 176, ISBN 978-0-19-852888-3, OCLC 602015097

[110] Nickerson 1998, pp. 191–93

[111] Myers, D.G.; Lamm, H. (1976), "The group polarization phenomenon", *Psychological Bulletin*, **83** (4): 602–27, doi:10.1037/0033-2909.83.4.602 via Nickerson 1998, pp. 193–94

[112] Halpern, Diane F. (1987), *Critical thinking across the curriculum: a brief edition of thought and knowledge*, Lawrence Erlbaum Associates, p. 194, ISBN 978-0-8058-2731-6, OCLC 37180929

[113] Roach, Kent (2010), "Wrongful Convictions: Adversarial and Inquisitorial Themes", *North Carolina Journal of International Law and Commercial Regulation*, **35**, SSRN 1619124⊘, Both adversarial and inquisitorial systems seem subject to the dangers of tunnel vision or confirmation bias.

[114] Baron 2000, pp. 191, 195

[115] Kida 2006, p. 155

[116] Tetlock, Philip E. (2005), *Expert Political Judgment: How Good Is It? How Can We Know?*, Princeton, N.J.: Princeton University Press, pp. 125–28, ISBN 978-0-691-12302-8, OCLC 56825108

[117] "David Camm Blog: Investigation under fire". *WDRB*. October 10, 2013.

[118] Kircher, Travis. "David Camm blogsite: opening statements". *WDRB*. Retrieved January 3, 2014.

[119] "David Camm v. State of Indiana" (PDF). Court of Appeals of Indiana. 2011-11-15.

[120] Boyd, Gordon (September 10, 2013). "Camm trial 9/10: Defense finds inconsistencies but can't touch Boney's past". *WBRC*.

[121] Zambroski,James. "Witness Says Prosecutor In First Camm Trial Blew Up When She Couldn't Link Camm's DNA To Boney's Shirt". WAVE News.

[122] Eisenmenger, Sarah (September 9, 2013). "Convicted Killer Charles Boney says David Camm was the shooter". *wave3*. Retrieved January 5, 2014.

[123] Eisenmenger, Sarah (Sep 9, 2013). "Convicted Killer Charles Boney says David Camm was the shooter". *wave3*.

[124] Adams, Harold J. (2011-02-18). "David Camm's attorney's appeal ruling, seek prosecutor's removal". *Courier Journal*. p. B1.

[125] David Camm verdict: NOT GUILTY, WDRB TV, October 24, 2013

[126] Smith, Jonathan C. (2009), *Pseudoscience and Extraordinary Claims of the Paranormal: A Critical Thinker's Toolkit*, John Wiley and Sons, pp. 149–51, ISBN 978-1-4051-8122-8, OCLC 319499491

[127] Randi, James (1991), *James Randi: psychic investigator*, Boxtree, pp. 58–62, ISBN 978-1-85283-144-8, OCLC 26359284

[128] Nickerson 1998, p. 190

[129] Nickerson 1998, pp. 192–94

[130] Koehler 1993

[131] Mahoney 1977

[132] Proctor, Robert W.; Capaldi, E. John (2006), *Why science matters: understanding the methods of psychological research*, Wiley-Blackwell, p. 68, ISBN 978-1-4051-3049-3, OCLC 318365881

[133] Sternberg, Robert J. (2007), "Critical Thinking in Psychology: It really is critical", in Sternberg, Robert J.; Roediger III, Henry L.; Halpern, Diane F., *Critical Thinking in Psychology*, Cambridge University Press, p. 292, ISBN 0-521-60834-1, OCLC 69423179, Some of the worst examples of confirmation bias are in research on parapsychology ... Arguably, there is a whole field here with no powerful confirming data at all. But people want to believe, and so they find ways to believe.

[134] Shadish, William R. (2007), "Critical Thinking in Quasi-Experimentation", in Sternberg, Robert J.; Roediger III, Henry L.; Halpern, Diane F., *Critical Thinking in Psychology*, Cambridge University Press, p. 49, ISBN 978-0-521-60834-3

[135] Jüni, P.; Altman, D. G.; Egger, M. (2001). "Systematic reviews in health care: Assessing the quality of controlled clinical trials". *BMJ (Clinical research ed.)*. **323** (7303): 42–46. doi:10.1136/bmj.323.7303.42. PMC 1120670. PMID 11440947.

[136] Shermer, Michael (July 2006), "The Political Brain", *Scientific American*, ISSN 0036-8733, retrieved 2009-08-14

[137] Emerson, G. B.; Warme, W. J.; Wolf, F. M.; Heckman, J. D.; Brand, R. A.; Leopold, S. S. (2010). "Testing for the Presence of Positive-Outcome Bias in Peer Review: A Randomized Controlled Trial". *Archives of Internal Medicine*. **170** (21): 1934–39. doi:10.1001/archinternmed.2010.406. PMID 21098355.

[138] Steven James Bartlett, "The Psychology of Abuse in Publishing: Peer Review and Editorial Bias," Chap. 7, pp. 147-177, in Steven James Bartlett, *Normality Does Not Equal Mental Health: The Need to Look Elsewhere for Standards of Good Psychological Health*. Santa Barbara, CA: Praeger, 2011.

[139] Horrobin 1990

[140] Swann, William B.; Pelham, Brett W.; Krull, Douglas S. (1989), "Agreeable Fancy or Disagreeable Truth? Reconciling Self-Enhancement and Self-Verification", *Journal of Personality and Social Psychology*, American Psychological Association, **57** (5): 782–91, doi:10.1037/0022-3514.57.5.782, ISSN 0022-3514, PMID 2810025

[141] Swann, William B.; Read, Stephen J. (1981), "Self-Verification Processes: How We Sustain Our Self-Conceptions", *Journal of Experimental Social Psychology*, Academic Press, **17** (4): 351–72, doi:10.1016/0022-1031(81)90043-3, ISSN 0022-1031

[142] Story, Amber L. (1998), "Self-Esteem and Memory for Favorable and Unfavorable Personality Feedback", *Personality and Social Psychology Bulletin*, Society for Personality and Social Psychology, **24** (1): 51–64, doi:10.1177/0146167298241004, ISSN 1552-7433

[143] White, Michael J.; Brockett, Daniel R.; Overstreet, Belinda G. (1993), "Confirmatory Bias in Evaluating Personality Test Information: Am I Really That Kind of Person?", *Journal of Counseling Psychology*, American Psychological Association, **40** (1): 120–26, doi:10.1037/0022-0167.40.1.120, ISSN 0022-0167

[144] Swann, William B.; Read, Stephen J. (1981), "Acquiring Self-Knowledge: The Search for Feedback That Fits", *Journal of Personality and Social Psychology*, American Psychological Association, **41** (6): 1119–28, doi:10.1037/0022-3514.41.6.1119, ISSN 0022-3514

[145] Shrauger, J. Sidney; Lund, Adrian K. (1975), "Self-evaluation and reactions to evaluations from others", *Journal of Personality*, Duke University Press, **43** (1): 94–108, doi:10.1111/j.1467-6494.1975.tb00574, PMID 1142062

5.10 Sources

- Baron, Jonathan (2000), *Thinking and deciding* (3rd ed.), New York: Cambridge University Press, ISBN 0-521-65030-5, OCLC 316403966

- Fine, Cordelia (2006), *A Mind of its Own: how your brain distorts and deceives*, Cambridge, UK: Icon books, ISBN 1-84046-678-2, OCLC 60668289

- Friedrich, James (1993), "Primary error detection and minimization (PEDMIN) strategies in social cognition: a reinterpretation of confirmation bias phenomena", *Psychological Review*, American Psychological Association, **100** (2): 298–319, doi:10.1037/0033-295X.100.2.298, ISSN 0033-295X, PMID 8483985

- Goldacre, Ben (2008), *Bad Science*, London: Fourth Estate, ISBN 978-0-00-724019-7, OCLC 259713114

- Hergovich, Andreas; Schott, Reinhard; Burger, Christoph (2010), "Biased Evaluation of Abstracts Depending on Topic and Conclusion: Further Evidence of a Confirmation Bias Within Scientific Psychology", *Current Psychology*, **29** (3): 188–209, doi:10.1007/s12144-010-9087-5

- Horrobin, David F. (1990), "The philosophical basis of peer review and the suppression of innovation", *Journal of the American Medical Association*, **263** (10): 1438–41, doi:10.1001/jama.263.10.1438, PMID 2304222

- Kida, Thomas E. (2006), *Don't believe everything you think: the 6 basic mistakes we make in thinking*, Amherst, New York: Prometheus Books, ISBN 978-1-59102-408-8, OCLC 63297791

- Koehler, Jonathan J. (1993), "The influence of prior beliefs on scientific judgments of evidence quality", *Organizational Behavior and Human Decision Processes*, **56**: 28–55, doi:10.1006/obhd.1993.1044

- Kunda, Ziva (1999), *Social Cognition: Making Sense of People*, MIT Press, ISBN 978-0-262-61143-5, OCLC 40618974

- Lewicka, Maria (1998), "Confirmation Bias: Cognitive Error or Adaptive Strategy of Action Control?", in Kofta, Mirosław; Weary, Gifford; Sedek, Grzegorz, *Personal control in action: cognitive and motivational mechanisms*, Springer, pp. 233–55, ISBN 978-0-306-45720-3, OCLC 39002877

- Maccoun, Robert J. (1998), "Biases in the interpretation and use of research results" (PDF), *Annual Review of Psychology*, **49**: 259–87, doi:10.1146/annurev.psych.49.1.259, PMID 15012470

- Mahoney, Michael J. (1977), "Publication prejudices: an experimental study of confirmatory bias in the peer review system", *Cognitive Therapy and Research*, **1** (2): 161–75, doi:10.1007/BF01173636

- Nickerson, Raymond S. (1998), "Confirmation Bias; A Ubiquitous Phenomenon in Many Guises", *Review of General Psychology*, Educational Publishing Foundation, **2** (2): 175–220, doi:10.1037/1089-2680.2.2.175, ISSN 1089-2680

- Oswald, Margit E.; Grosjean, Stefan (2004), "Confirmation Bias", in Pohl, Rüdiger F., *Cognitive Illusions: A Handbook on Fallacies and Biases in Thinking, Judgement and Memory*, Hove, UK: Psychology Press, pp. 79–96, ISBN 978-1-84169-351-4, OCLC 55124398

- Plous, Scott (1993), *The Psychology of Judgment and Decision Making*, McGraw-Hill, ISBN 978-0-07-050477-6, OCLC 26931106

- Poletiek, Fenna (2001), *Hypothesis-testing behaviour*, Hove, UK: Psychology Press, ISBN 978-1-84169-159-6, OCLC 44683470

- Risen, Jane; Gilovich, Thomas (2007), "Informal Logical Fallacies", in Sternberg, Robert J.; Roediger III, Henry L.; Halpern, Diane F., *Critical Thinking in Psychology*, Cambridge University Press, pp. 110–30, ISBN 978-0-521-60834-3, OCLC 69423179

- Vyse, Stuart A. (1997), *Believing in magic: The psychology of superstition*, New York: Oxford University Press, ISBN 0-19-513634-9, OCLC 35025826

5.11 Further reading

- Keohane, Joe (11 July 2010), "How facts backfire: Researchers discover a surprising threat to democracy: our brains", *Boston Globe*, NY Times

- Leavitt, Fred (2015), *Dancing with Absurdity: Your Most Cherished Beliefs (and All Your Others) are Probably Wrong*, Peter Lang Publishers

- Stanovich, Keith (2009), *What Intelligence Tests Miss: The Psychology of Rational Thought*, New Haven (CT): Yale University Press, ISBN 978-0-300-12385-2, lay summary (PDF) (21 November 2010)

- Westen, Drew (2007), *The political brain: the role of emotion in deciding the fate of the nation*, PublicAffairs, ISBN 978-1-58648-425-5, OCLC 86117725

5.12 External links

- Skeptic's Dictionary: confirmation bias – Robert T. Carroll

- Teaching about confirmation bias – class handout and instructor's notes by K. H. Grobman

- Confirmation bias at You Are Not So Smart

- Confirmation bias learning object – interactive number triples exercise by Rod McFarland for Simon Fraser University

- Brief summary of the 1979 Stanford assimilation bias study – Keith Rollag, Babson College

Chapter 6

Transparency (behavior)

Transparency, as used in science, engineering, business, the humanities and in other social contexts, implies openness, communication, and accountability. Transparency is operating in such a way that it is easy for others to see what actions are performed. It has been defined simply as "the perceived quality of intentionally shared information from a sender".[1] Transparency is practiced in companies, organizations, administrations, and communities.[2] It guides an organization's decisions and policies on the disclosure of information to its employees and the public, or simply the intended recipient of the information.[1]

For example, a cashier making change after a point of sale transaction by offering a record of the items purchased (e.g., a receipt) as well as counting out the customer's change on the counter demonstrates one type of transparency.

Shimer College students demonstrate in favor of transparency in school administration, 2010

6.1 Wages

In Norway and in Sweden, tax authorities annually release the "skatteliste" or "tax list"; official records showing the annual income and overall wealth of nearly every taxpayer.[3]

Regulations in Hong Kong require banks to list their top earners – without naming them – by pay band.[4]

In 2009, the Spanish government for the first time released information on how much each cabinet member is worth, but data on ordinary citizens is private.

6.2 Management

Recent research suggests there are three primary aspects of transparency relevant to management practice: information disclosure, clarity, and accuracy.[1] To increase transparency, managers actively infuse greater disclosure, clarity, and accuracy into their communications with stakeholders. For example, managers that voluntarily share information related to the firm's ecological impact with environmental activists are demonstrating disclosure; managers that limit the use of technical ter-minology, fine print, or complicated mathematical notations in their correspondence with suppliers and customers are demonstrating clarity; and managers that do not bias, embellish, or otherwise distort known facts in their communications with investors are demonstrating accuracy. The *strategic* management of transparency therefore involves intentional modifications in disclosure, clarity, and accuracy to accomplish the organization's specific objectives.[1]

Alternatively, radical transparency is a management method where nearly all decision making is carried out publicly. All draft documents, all arguments for and against a proposal, all final decisions, and the decision making process itself are made public and remain publicly archived. This approach has grown in popularity with the rise of the Internet.[5] Two examples of organizations utilizing this style are the GNU/Linux community and Indymedia.

Corporate transparency, a form of radical transparency, is the concept of removing all barriers to —and the facilitating of— free and easy public access to corporate information and the laws, rules, social connivance and processes that facilitate and protect those individuals and corporations that freely join, develop, and improve the process.[6]

6.2.1   Non-governmental organizations

Accountability and transparency are of high relevance for non-governmental organisations (NGOs). In view of their responsibilities to stakeholders, including donors, sponsors, programme beneficiaries, staff, states and the public, they are considered to be of even greater importance to them than to commercial undertakings.[7] Yet these same values are often found to be lacking in NGOs.[7]

The *International NGO Accountability Charter*, linked to the Global Reporting Initiative, documents the commitment of its members international NGOs to accountability and transparency, requiring them to submit an annual report, among others.[8][9] Signed in 2006 by 11 NGOs active in the area of humanitarian rights, the INGO Accountability Charter has been referred to as the "first global accountability charter for the non-profit sector".[10] In 1997, the One World Trust created an *NGO Charter*, a code of conduct comprising commitment to accountability and transparency.[11]

6.3   Media

Main article: Media Transparency

Media Transparency is the concept of determining how and why information is conveyed through various means.

If the media and the public knows everything that happens in all authorities and county administrations there will be a lot of questions, protests and suggestions coming from media and the public. People who are interested in a certain issue will try to influence the decisions. Transparency creates an everyday participation in the political processes by media and the public. One tool used to increase everyday participation in political processes is Freedom of Information legislation and requests. Modern democracy builds on such participation of the people and media.

There are, for anybody who is interested, many ways to influence the decisions at all levels in society.[12]

6.4   Politics

The right and the means to examine the process of decision making is known as transparency. In politics, transparency is used as a means of holding public officials accountable and fighting corruption. When a government's meetings are open to the press and the public, its budgets may be reviewed by anyone, and its laws and decisions are open to discussion, it is seen as transparent. It is not clear however if this provides less opportunity for the authorities to abuse the system for their own interests.[13]

A 2011 plaque recognizing the municipality of Santa Barbara, Pangasinan for its "efforts in advancing the principles of accountability and transparency in local governance."

When military authorities classify their plans as secret, transparency is absent. This can be seen as either positive or negative; positive because it can increase national security, negative because it can lead to corruption and, in extreme cases, a military dictatorship.

While a liberal democracy can be a plutocracy, where decisions are made behind locked doors and the people have fewer possibilities to influence politics between the elections, a participative democracy is more closely connected to the will of the people. Participative democracy, built on transparency and everyday participation, has been used officially in northern Europe for decades. In the northern European country Sweden, public access to government documents became a law as early as 1766. It has officially been adopted as an ideal to strive for by the rest of EU, leading to measures like freedom of information laws and laws for lobby transparency.

To promote transparency in politics, Hans Peter Martin, Paul van Buitenen (Europa Transparant) and Ashley Mote decided to cooperate under the name Platform for Transparency (PfT) in 2005. Similar organizations that promotes transparency are Transparency International and the Sunlight Foundation.

A recent political movement to emerge in conjunction with the demands for transparency is the Pirate Party, a label for a number of political parties across different countries who advocate freedom of information, direct democracy, network neutrality, and the free sharing of knowledge.

6.5   Online culture

21st century culture affords a higher level of public transparency than ever before, and actually requires it in many cases. Modern technology and associated culture shifts have changed how government works (see WikiLeaks), what information people can find out about each other,

and the ability of politicians to stay in office if they are involved in sex scandals. Due to the digital revolution, people no longer have a high level of control over what is public information, leading to a tension between the values of transparency and privacy.[14]

6.6 Research

Scholarly research in any academic discipline may also be labeled as (partly) transparent (or open research) if some or all relevant aspects of the research are open in the sense of open source,[15] open access and open data,[16] thereby facilitating social recognition and accountability of the scholars who did the research and replication by others interested in the matters addressed by it.[17]

Some mathematicians and scientists are critical of using closed source mathematical software such as Mathematica for mathematical proofs, because these do not provide transparency, and thus are not verifiable.[18] Open-source software such as SageMath aims to solve this problem.[19]

6.7 Technology

In the computer software world, open source software concerns the creation of software, to which access to the underlying source code is freely available. This permits use, study, and modification without restriction.

In computer security, the debate is ongoing as to the relative merits of the full disclosure of security vulnerabilities, versus a security-by-obscurity approach.

There is a different (perhaps almost opposite) sense of transparency in human-computer interaction, whereby a system after change adheres to its previous external interface as much as possible while changing its internal behaviour. That is, a change in a system is transparent to its users if the change is unnoticeable to them.

6.8 Sports

Sports has become a global business over the last century, and here, too, initiatives ranging from mandatory drug testing to the fighting of sports-related corruption are gaining ground based on the transparent activities in other domains.[20]

6.9 Criticism

Sigmund Freud following Friedrich Nietzsche ("On Truth and Lie in a Nonmoral Sense") regularly argues that trans-

parency is impossible because of the occluding function of the unconscious.

Among philosophical and literary works that have examined the idea of transparency are Michel Foucault's Discipline and Punish or David Brin's The Transparent Society. The German philosopher and media theorist Byung-Chul Han in his 2012 work *Transparenzgesellschaft* sees transparency as a cultural norm created by neoliberal market forces, which he understands as the insatiable drive toward voluntary disclosure bordering on the pornographic. According to Han, the dictates of transparency enforce a totalitarian system of openness at the expense of other social values such as shame, secrecy, and trust. He was criticized for his concepts, as they would suggest corrupt politics and for referring to the anti-democratic Carl Schmitt.[21]

Anthropologists have long explored ethnographically the relation between revealed and concealed knowledges, and have increasingly taken up the topic in relation to accountability, transparency and conspiracy theories and practices today.[22][23][24] Todd Sanders and Harry West for example suggest not only that realms of the revealed and concealed require each other, but also that transparency in practice produces the very opacities it claims to obviate.[25]

Clare Birchall, Christina Gaarsten, Mikkel Flyverbom, and Mark Fenster among others, write in the vein of 'Critical Transparency Studies' which attempts to challenge particular orthodoxies concerning transparency. Birchall, assessed in an article "[...] whether the ascendance of transparency as an ideal limits political thinking, particularly for western socialists and radicals struggling to seize opportunities for change [...]". She argues that the promotion of 'datapreneurial' activity through open data initiatives outsources and interrupts the political contract between governed and government. She is concerned that the dominant model of governmental data-driven transparency produces neoliberal subjectivities that reduce the possibility of politics as an arena of dissent between real alternatives. She suggests that the radical Left might want to work with and reinvent secrecy as an alternative to neoliberal transparency.[26]

Researchers at University of Oxford and Warwick Business School found that transparency can also have significant unintended consequences in the field of medical care. McGivern[27] and Fischer[28] found 'media spectacles' and transparent regulation combined to create 'spectacular transparency' which some perverse effects on doctors' practice and increased defensive behaviour in doctors and their staff.[29][30] Similarly, in a four-year organizational study, Fischer and Ferlie found that transparency in the context of a clinical risk management can act perversely to undermine ethical behavior, leading to organizational crisis and even collapse.[31]

6.10 See also

- Accountability

- Civic Openness In Negotiations (COIN)

- Ethical banking

- Access to public information

- Freedom of information

- Lobbying

- Market transparency

- Media transparency

- Transparency of media ownership in Europe

- Open government

- Open science

- Open society

- Political corruption

- Public record

- Sunshine law

- The Transparent Society (David Brin)

- Transparency International

- Whistleblower

- Whitewash

6.11 Footnotes

[1] Schnackenberg, Andrew K.; Tomlinson, Edward C. (March 2014). "Organizational transparency: a new perspective on managing trust in organization-stakeholder relationships". *Journal of Management*. Sage. doi:10.1177/0149206314525202. Published online before print.

[2] "Opening government: A guide to best practice in transparency, accountability and civic engagement across the public sector" (PDF). *Transparency Initiative*. Transparency & Accountability Initiative. Retrieved September 11, 2015.

[3] "Norway Divided by Citizen Wealth Tables". *The New York Times*. October 23, 2009. Retrieved 22 November 2009.

[4] Treanor, Jill (22 November 2009). "Government retreats over naming bank top earners - Top 20 highest paid employees now unlikely to be identified unless they have boardroom roles". *The Guardian*. Retrieved 22 November 2009.

[5] DiStaso, Marcia W.; Bortree, Denise Sevick (2014). *Ethical practice of social media in public relations*. Routledge. p. 23. ISBN 9781317917908. Preview.

[6] Bernardi, Richard A.; LaCross, Catherine C. (April 2005). "Corporate transparency: code of ethics disclosures". *The CPA Journal*. New York State Society of the Certified Public Accountants (CPA).

[7] Francesch-Huidobro, Maria (2008). *Governance, politics and the environment: a Singapore study*. Institute of Southeast Asian Studies (ISEAS). p. 60. ISBN 9789812308313. Preview.

[8] "Is GRI too much transparency for NGOs?". PRIZMA. March 27, 2011.

[9] "Our accountability commitments: transparency". INGO accountability charter.

[10] Thompson, Andrew S. (2008), "Laying the groundwork: Considerations for a charter for a proposed global civi society forum", in Walker, James W. St.G.; Thompson, Andrew S., *Critical mass: the emergence of global civil society*, Ontario, Canada: The Centre for International Governance Innovation and Wilfried Laurier University Press, p. 214, ISBN 9781554580224. Preview.

[11] "Charte des ONG (NGO Charter)". One World Trust. 1997.

[12] Moeller, Susan D.; et al. "Openness & accountability: a study of transparency in global media outlets". *Studies*. International Center for Media and the Public Agenda (ICMPA).

[13] Mattozzi, Andrea; Merlo, Antonio (May 2007). "The transparency of politics and the quality of politicians". *American Economic Review*. American Economic Association. **97** (2): 311–315. doi:10.1257/aer.97.2.311. Pdf.

[14] Solove, Daniel J. (2004). *The Digital person: technology and privacy in the information age*. p. 140. ISBN 0814798462.

[15] Rocchini, Duccio; Neteler, Markus (June 2012). "Let the four freedoms paradigm apply to ecology". *Trends in Ecology & Evolution, (letters)*. Elsevier. **27** (6): 310–311. doi:10.1016/j.tree.2012.03.009.

[16] "Wissenschaftsrat: Home". *wissenschaftsrat.de*.

[17] "Transparent science". *nature.com*.

[18] "Mathematica and free software". *everything2.com*.

[19] "Free software brings affordability, transparency to mathematics". physorg.com.

[20] "Transparency in Sport". *transparencyinsport.org*.

[21] "Klarheit schaffen". *der Freitag* (in German). 7 June 2012. Retrieved 3 July 2012.

[22] Strathern, M. 2000. Audit Cultures: Anthropological Studies in Accountability, Ethics and the Academy. London: Routledge.

[23] Hetherington, K. 2011. Guerrilla Auditors: The Politics of Transparency in Neoliberal Paraguay. Durham, NC: Duke University Press.

[24] "ReadCube for Researchers". *readcube.com*.

[25] Sanders, Todd & Harry G. West 2003. Powers revealed and concealed in the New World Order. In H. G. West & T. Sanders (eds) Transparency and Conspiracy: Ethnographies of Suspicion in the New World Order. Durham, NC: Duke University Press, p. 16.

[26] Birchall, Clare (December 2011). "Transparency interrupted: secrets of the left". *Theory, Culture & Society*. Sage. **28** (7–8): 60–84. doi:10.1177/0263276411423040.

[27] "Gerry McGivern - University of Warwick - Academia.edu".

[28] "Michael D Fischer - Australian Catholic University - Academia.edu".

[29] McGivern, Gerry; Fischer, Michael D. (2010). "Medical regulation, spectacular transparency and the blame business". *Journal of Health, Organization and Management*. **24** (6): 597–610. PMID 21155435.

[30] McGivern, Gerry; Fischer, Michael D. (1 February 2012). "Reactivity and reactions to regulatory transparency in medicine, psychotherapy and counselling". *Social Science & Medicine*. **74** (3): 289–296. doi:10.1016/j.socscimed.2011.09.035. PMID 22104085.

[31] Fischer, Michael D.; Ferlie, Ewan (1 January 2013). "Resisting hybridization between modes of clinical risk management: Contradiction, contest, and the production of intractable conflict". *Accounting, Organizations and Society*. **38** (1): 30–49. doi:10.1016/j.aos.2012.11.002.

6.12   Further reading

- Michael Schudson, *The Rise of the Right to Know: Politics and the Culture of Transparency, 1945-1973*. Cambridge, MA: Harvard University Press, 2015.

6.13   External links

- Transparency International

- Transparency and Development

6.13.1   Regional

- Sunlight Foundation

- The National Institute on Money in State Politics

Chapter 7

Accountability

In ethics and governance, **accountability** is answerability, blameworthiness, liability, and the expectation of account-giving.[1] As an aspect of governance, it has been central to discussions related to problems in the public sector, nonprofit and private (corporate) and individual contexts. In leadership roles,[2] accountability is the acknowledgment and assumption of responsibility for actions, products, decisions, and policies including the administration, governance, and implementation within the scope of the role or employment position and encompassing the obligation to report, explain and be answerable for resulting consequences.

In governance, accountability has expanded beyond the basic definition of "being called to account for one's actions".[3][4] It is frequently described as an account-giving relationship between individuals, e.g. "A is accountable to B when A is obliged to inform B about A's (past or future) actions and decisions, to justify them, and to suffer punishment in the case of eventual misconduct".[5] Accountability cannot exist without proper accounting practices; in other words, an absence of accounting means an absence of accountability.

Accountability is an element of a RACI to indicate who (or group) is ultimately answerable for the correct and thorough completion of the deliverable or task, and the one who delegates the work to those responsible.

There are various reasons (legitimate or excuses) why accountability fails.[6]

7.1 History and etymology

"Accountability" stems from late Latin *accomptare* (to account), a prefixed form of *computare* (to calculate), which in turn derived from *putare* (to reckon).[7] While the word itself does not appear in English until its use in 13th century Norman England,[8][9] the concept of account-giving has ancient roots in record keeping activities related to governance and money-lending systems that first developed in Ancient Egypt,[10] Israel,[11] Babylon,[12] Greece,[13] and later, Rome.[14]

7.2 Types

Bruce Stone, O.P. Dwivedi, and Joseph G. Jabbra list 8 types of accountability, namely: moral, administrative, political, managerial, market, legal/judicial, constituency relation, and professional.[15] Leadership accountability cross cuts many of these distinctions.

7.2.1 Political

Political accountability is the accountability of the government, civil servants and politicians to the public and to legislative bodies such as a congress or a parliament.

Recall elections can be used to revoke the office of an elected official. Generally, however, voters do not have any direct way of holding elected representatives to account during the term for which they have been elected. Additionally, some officials and legislators may be appointed rather than elected. Constitution, or statute, can empower a legislative body to hold their own members, the government, and government bodies to account. This can be through holding an internal or independent inquiry. Inquiries are usually held in response to an allegation of misconduct or corruption. The powers, procedures and sanctions vary from country to country. The legislature may have the power to impeach the individual, remove them, or suspend them from office for a period of time. The accused person might also decide to resign before trial. Impeachment in the United States has been used both for elected representatives and other civil offices, such as district court judges.

In parliamentary systems, the government relies on the support or parliament, which gives parliament power to hold the government to account. For example, some parliaments can pass a vote of no confidence in the government.

Researchers at the Overseas Development Institute found that empowering citizens in developing countries to be able to hold their domestic governments to account was incredibly complex in practice. However, by developing explicit processes that generate change from individuals, groups or communities (Theories of Change), and by

fusing political economy analysis and outcome mapping tools, the complex state-citizen dynamics can be better understood. As such, more effective ways to achieve outcomes can hence be generated.[16]

Researchers at the International Budget Partnership (IBP) found that civil society organizations play an important role in achieving accountability outcomes. The IBP case studies showed that CSOs can have an impact in a broad array of political and economic contexts. The researchers concluded that CSOs are most effective when they draw in a broad web of actors from across the accountability system, including the media, auditors, donors, the legislature, executive insiders, and political parties.[17]

7.2.2   Ethical

See also: Social accounting and Environmental accounting

Within an organization, the principles and practices of ethical accountability aim to improve both the internal standard of individual and group conduct as well as external factors, such as sustainable economic and ecologic strategies. Also, ethical accountability plays a progressively important role in academic fields, such as laboratory experiments and field research. Debates around the practice of ethical accountability on the part of researchers in the social field – whether professional or others – have been thoroughly explored by Norma R.A. Romm in her work on Accountability in Social Research,[18] including her book on New Racism: Revisiting Researcher Accountabilities, reviewed by Carole Truman in the journal Sociological Research Online.[19] Here it is suggested that researcher accountability implies that researchers are cognisant of, and take some responsibility for, the potential impact of their ways of doing research – and of writing it up – on the social fields of which the research is part. That is, accountability is linked to considering carefully, and being open to challenge in relation to, one's choices concerning how research agendas are framed and the styles in which write-ups of research "results" are created.

7.2.3   Administrative

Internal rules and norms as well as some independent commission are mechanisms to hold civil servants within the administration of government accountable. Within department or ministry, firstly, behavior is bound by rules and regulations; secondly, civil servants are subordinates in a hierarchy and accountable to superiors. Nonetheless, there are independent "watchdog" units to scrutinize and hold departments accountable; legitimacy of these commissions is built upon their independence, as it avoids any conflicts of interests. The accountability is defined as "an element which is part of a unique responsibility

and which represents an obligation of an actor to achieve the goal, or to perform the procedure of a task, and the justification that it is done to someone else, under threat of sanction".[20]

7.2.4   Individuals within organizations

Because many different individuals in large organizations contribute in many ways to the decisions and policies, it is difficult even in principle to identify who should be accountable for the results. This is what is known, following Thompson, as the problem of many hands.[21] It creates a dilemma for accountability. If individuals are held accountable or responsible, individuals who could not have prevented the results are either unfairly punished, or they "take responsibility" in a symbolic ritual without suffering any consequences. If only organizations are held accountable, then all individuals in the organization are equally blameworthy or all are excused. Various solutions have been proposed. One is to broaden the criteria for individual responsibility so that individuals are held accountable for not anticipating failures in the organization. Another solution, recently proposed by Thompson, is to hold individuals accountable for the design of the organization, both retrospectively and prospectively.[22]

7.2.5   Constituency relations

Within this perspective, a particular agency of the government is accountable if voices are heard from agencies, groups or institutions outside the public sector representing citizens' interests from a particular constituency or field. Moreover, the government is obliged to empower members of agencies with political rights to run for elections and be elected; or, appoint them into the public sector as a way to make the government representative and to ensure that voices from all constituencies are included in policy-making.

7.2.6   Public/private overlap

With the increase over the last several decades in public service provided by private entities, especially in Britain and the United States, some have called for increased political accountability mechanisms for otherwise non-political entities. Legal scholar Anne Davies, for instance, argues that the line between public institutions and private entities like corporations is becoming blurred in certain areas of public service in the United Kingdom, and that this can compromise political accountability in those areas. She and others argue that some administrative law reform is necessary to address this accountability gap.[23]

With respect to the public/private overlap in the United States, public concern over the contracting of government

services (including military) and the resulting accountability gap has been highlighted recently following the shooting incident involving the Blackwater security firm in Iraq.[24]

7.3 Contemporary studies

Accountability involves either the expectation or assumption of account-giving behavior. The study of account giving as a sociological act was articulated in a 1968 article on "Accounts" by Marvin Scott and Stanford Lyman,[25] although it can be traced as well to J. L. Austin's 1956 essay "A Plea for Excuses",[26] in which he used excuse-making as an example of speech acts.

Communications scholars have extended this work through the examination of strategic uses of excuses, justifications, rationalizations, apologies and other forms of account giving behavior by individuals and corporations, and Philip Tetlock and his colleagues have applied experimental design techniques to explore how individuals behave under various scenarios and situations that demand accountability.

Recently, accountability has become an important topic in the discussion about the legitimacy of international institutions.[27] Because there is no global democratically elected body to which organizations must account, global organizations from all sectors bodies are often criticized as having large accountability gaps. The Charter 99 for Global Democracy,[28] spearheaded by the One World Trust, first proposed that cross-sector principles of accountability be researched and observed by institutions that affect people, independent of their legal status. One paradigmatic problem arising in the global context is that of institutions such as the World Bank and the International Monetary Fund who are founded and supported by wealthy nations or individuals and provide grants and loans, to developing nations. Should those institutions be accountable to their founders and investors or to the persons and nations they lend money to? In the debate over global justice and its distributional consequences, Cosmopolitans tend to advocate greater accountability to the disregarded interests of traditionally marginalized populations and developing nations. On the other hand, those in the Nationalism and Society of States traditions deny the tenets of moral universalism and argue that beneficiaries of global development initiatives have no substantive entitlement to call international institutions to account. The One World Trust Global Accountability Report, published in a first full cycle 2006 to 2008,[29] is one attempt to measure the capability of global organizations to be accountable to their stakeholders.

7.3.1 Accountability in education

Student accountability is traditionally based on having school and classroom rules, combined with sanctions for infringement. As defined by National Council on Measurement in Education (NCME), accountability is "A program, often legislated, that attributes the responsibility for student learning to teachers, school administrators, and/or students. Test results typically are used to judge accountability, and often consequences are imposed for shortcomings."[30]

In contrast, some educational establishments such as Sudbury schools believe that students are personally responsible for their acts, and that traditional schools do not permit students to choose their course of action fully; they do not permit students to embark on the course, once chosen; and they do not permit students to suffer the consequences of the course, once taken. Freedom of choice, freedom of action, freedom to bear the results of action are considered the three great freedoms that constitute personal responsibility. Sudbury schools claim that "'Ethics' is a course taught by life experience". They adduce that the essential ingredient for acquiring values—and for moral action is personal responsibility, that schools will become involved in the teaching of morals when they become communities of people who fully respect each other's right to make choices, and that the only way the schools can become meaningful purveyors of ethical values is if they provide students and adults with real-life experiences that are bearers of moral import. Students are given complete responsibility for their own education and the school is run by a direct democracy in which students and staff are equals.[31][32][33][34][35][36]

7.4 Media and accountability

Econometric research has found that countries with greater press freedom tend to have less corruption.[37] Greater political accountability and lower corruption were more likely where newspaper consumption was higher in data from roughly 100 countries and from different states in the US.[38] A "poor fit between newspaper markets and political districts reduces press coverage of politics. ... Congressmen who are less covered by the local press work less for their constituencies: they are less likely to stand witness before congressional hearings ... . Federal spending is lower in areas where there is less press coverage of the local members of congress."[39] This was supported by an analysis of the consequences of the closure of the *Cincinnati Post* in 2007. The following year, "fewer candidates ran for municipal office in the Kentucky suburbs most reliant on the *Post*, incumbents became more likely to win reelection, and voter turnout and campaign spending fell."[40]

An analysis of the evolution of mass media in the US and Europe since World War II noted mixed results from the

growth of the Internet: "The digital revolution has been good for freedom of expression [and] information [but] has had mixed effects on freedom of the press": It has disrupted traditional sources of funding, and new forms of Internet journalism have replaced only a tiny fraction of what's been lost.[41] Various systems have been proposed for increasing the funds available for investigative journalism that allow individual citizens to direct small amounts of government funds to news outlets or investigative journalism projects of their choice.

To train people to conduct these kinds of investigations, Charles Lewis has proposed "the creation of a new multidisciplinary academic field called Accountability Studies. ... [S]tudents from widely different academic backgrounds are excited about the prospect of learning exactly how to investigate those in power and hold them accountable."[42]

7.5   Standards

Accountability standards have been set up, and organizations can voluntarily commit to them. Standards apply in particular to the non-profit world and to Corporate Social Responsibility (CSR) initiatives. Accountability standards include:

- INGO Accountability Charter, signed by a large number of NGOs to "demonstrate their commitment to accountability and transparency"[43]

- AccountAbility's AA1000 series. "principles-based standards to help organisations become more accountable, responsible and sustainable. They address issues affecting governance, business models and organizational strategy, as well as providing operational guidance on sustainability assurance and stakeholder engagement"[44]

- Humanitarian Accountability Partnership (HAP) 2010 standards. A standard for humanitarian organizations to help them "design, implement, assess, improve and recognise accountable programmes"[45]

In addition, some non-profit organizations set up their own commitments to accountability:

- Accountability, Learning and Planning System (ALPS) by ActionAid, a framework that sets out the key accountability requirements,guidelines, and processes.[46]

7.6   Proposed symbolism

Viktor Frankl, neurologist, psychiatrist, author, and founder of logotherapy and one of the key figures in existential therapy, in his book *Man's Search for Meaning* recommended "that the Statue of Liberty on the East Coast (that has become a symbol of Liberty and Freedom) should be supplemented by a Statue of Responsibility on the West Coast." Frankl stated: "Freedom, however, is not the last word. Freedom is only part of the story and half of the truth. Freedom is but the negative aspect of the whole phenomenon whose positive aspect is responsibleness. In fact, freedom is in danger of degenerating into mere arbitrariness unless it is lived in terms of responsibleness."[47][48]

7.7   See also

- Accountability Partner

- Accountability Software

- Campaign finance reform

- Committee on Standards in Public Life

- Euthenics

- Freedom of information legislation

- Government Accountability Office

- Moral responsibility

- One World Trust

- Right to be forgotten

- Special-purpose district

- Transparency International

- Worldwide Governance Indicators

- World Bank's Inspection Panel

7.8   Footnotes

[1] Dykstra, Clarence A. (February 1939). "The Quest for Responsibility". *American Political Science Review*. The American Political Science Review, Vol. 33, No. 1. **33** (1): 1–25. doi:10.2307/1949761. JSTOR 1949761.

[2] Williams, Reyes(2006) Leadership accountability in a globalizing world. London: Palgrave Macmillan.

[3] Mulgan, Richard (2000). "'Accountability': An Ever-Expanding Concept?". *Public Administration*. **78** (3): 555–573. doi:10.1111/1467-9299.00218.

[4] Sinclair, Amanda (1995). "The Chameleon of Accountability: Forms and Discourses". *Accounting, Organizations and Society*. **20** (2/3): 219–237. doi:10.1016/0361-3682(93)E0003-Y.

[5] Schedler, Andreas (1999). "Conceptualizing Accountability". In Andreas Schedler; Larry Diamond; Marc F. Plattner. *The Self-Restraining State: Power and Accountability in New Democracies.* London: Lynne Rienner Publishers. pp. 13–28. ISBN 1-55587-773-7.

[6] "Accountable Partner – Why You Fail - Katy Christian Magazine". *Katy Christian Magazine.* Retrieved 2016-02-13.

[7] Oxford English Dictionary 2nd Ed.

[8] Dubnick, Melvin (1998). "Clarifying Accountability: An Ethical Theory Framework". In Charles Sampford; Noel Preston; C. A. Bois. *Public Sector Ethics: Finding And Implementing Values.* Leichhardt, NSW, Australia: The Federation Press/Routledge. pp. 68–8l.

[9] Seidman, Gary I (Winter 2005). "The Origins of Accountability: Everything I Know About the Sovereign's Immunity, I Learned from King Henry III". *St. Louis University Law Journal.* **49** (2): 393–480.

[10] Ezzamel, Mahmoud (December 1997). "Accounting, Control and Accountability: Preliminary Evidence from Ancient Egypt". *Critical Perspectives on Accounting.* **8** (6): 563–601. doi:10.1006/cpac.1997.0123.

[11] Walzer, Michael (1994). "The Legal Codes of Ancient Israel". In Ian Shapiro. *the Rule of Law.* NY: New York University Press. pp. 101–119.

[12] Urch, Edwin J. (July 1929). "The Law Code of Hammurabi". *American Bar Association Journal.* **15** (7): 437–441.

[13] Roberts, Jennifer T. (1982). *Accountability in Athenian Government.* Madison, WI: University of Wisconsin Press.

[14] Plescia, Joseph (January 2001). "Judicial Accountability and Immunity in Roman Law". *American Journal of Legal History.* The American Journal of Legal History, Vol. 45, No. 1. **45** (1): 51–70. doi:10.2307/3185349. JSTOR 3185349.

[15] Jabbra, J. G. and Dwivedi, 0. P. (eds.), *Public Service Accountability: A Comparative Perspective*, Kumarian Press, Hartford, CT, 1989, ISBN 0-7837-7581-4

[16] Tembo, F., March 2012, Citizen voice and state accountability: towards theories of change that embrace contextual dynamics *Overseas Development Institute*, retrieved 23 March 2012

[17] van Zyl, Albert, October 2013, Greasing the Wheels of the Accountability System: How Civil Society Organizations Close the Gap between Transparency and Accountability, *International Budget Partnership*, retrieved 1 December 2014

[18] Romm, Norma R.A. (2001). *Accountability in Social Research.* New York: Klower Academic. ISBN 978-0-306-46564-2.

[19] Truman, Carole (2010). "Review of New Racism: Revisiting Researcher Accountabilities". Sociological Research Online. Retrieved 27 August 2012.

[20] Feltus C. (2011). *Aligning Access Rights to Governance Needs with the Responsibility MetaModel (ReMMo) in the Frame of Enterprise Architecture* (PDF).

[21] Thompson, Dennis (2005). "The Problem of Many Hands" in *Restoring Responsibility: Ethics in Government, Business and Healthcare.* Cambridge University Press. pp. 33-49. ISBN 978-0521547222

[22] Thompson, Dennis F. (2014). "Responsibility for Failures of Government: The Problem of Many Hands," *American Review of Public Administration* **44** (3): 259–273.

[23] "oxford law - the faculty and its members : anne davies". Competition-law.ox.ac.uk. Retrieved 2009-08-26.

[24] Harriman, Ed (2007-09-28). "Blackwater poisons the well". London: Commentisfree.guardian.co.uk. Retrieved 2009-08-26.

[25] Scott, Marvin B.; Lyman, Stanford M. (February 1968). "Accounts". *American Sociological Review.* American Sociological Review, Vol. 33, No. 1. **33** (1): 46–62. doi:10.2307/2092239. JSTOR 2092239. PMID 5644339.

[26] Austin, J.L. 1956-7. A plea for excuses. Proceedings of the Aristotelian Society. Reprinted in J. O. Urmson & G. J. Warnock, eds., 1979, J. L. Austin: Philosophical Papers, 3rd edition. Oxford: Clarendon Press, 175-204.

[27] Grant, Ruth W.; Keohane, Robert O. (2005). "Accountability and Abuses of Power in World Politics". *American Political Science Review.* **99** (1): 29–43. doi:10.1017/S0003055405051476.

[28] http://www.oneworldtrust.org/index.php?option=com_docman&task=doc_download&gid=14&Itemid=55

[29] Administrator. "Global Accountability Report (GAR)". *oneworldtrust.org.*

[30] National Council on Measurement in Education http://www.ncme.org/ncme/NCME/Resource_Center/Glossary/NCME/Resource_Center/Glossary1.aspx?hkey=4bb87415-44dc-4088-9ed9-e8515326a061#anchorA

[31] Greenberg, D. (1992), Education in America - A View from Sudbury Valley, "'Ethics' is a Course Taught By Life Experience." Retrieved, 24 October 2009.

[32] Greenberg, D. (1987) The Sudbury Valley School Experience "Back to Basics - Moral basics." Retrieved, 24 October 2009.

[33] Feldman, J. (2001) "The Moral Behavior of Children and Adolescents at a Democratic School." Pdf. __This study examined moral discourse, reflection, and development in a school community with a process similar to that described by Lawrence Kohlberg. Data were drawn from an extensive set of field notes made in an ethnographic study at Sudbury Valley School (an ungraded, democratically structured school in Framingham, MA), where students, ranging in age from 4 to 19, are free to choose their own activities and companions. Vignettes were analyzed using grounded theory approach to qualitative analysis, and

themes were developed from an analysis of observations of meetings. Each theme describes a participation level that students assume in the process and that provide opportunities for them to develop and deepen understanding of the balance of personal rights and responsibilities within a community. The study adds to the understanding of education and child development by describing a school that differs significantly in its practice from the wider educational community and by validating Kohlberg's thesis about developing moral reasoning. Retrieved, 24 October 2009.

[34] The Sudbury Valley School (1970), "Law and Order: Foundations of Discipline" The Crisis in American Education — An Analysis and a Proposal.(p. 49-55). Retrieved, 24 October 2009.

[35] Greenberg, D. (1992) "Democracy Must be Experienced to be Learned!" Education in America — A View from Sudbury Valley. Retrieved, 24 October 2009.

[36] Reiss, S. (2010), *Whatever Happened to Personal Responsibility?* Retrieved August 18, 2010.

[37] Brunetti, Aymo; Weder, Beatrice (2003), "A free press is bad news for corruption", *Journal of Public Economics*, Elsevier, **87**: 1801–1824, doi:10.1016/s0047-2727(01)00186-4

[38] Adserà, Alícia; Boix, Carles; Payne, Mark (2000), "Are You Being Served?: Political Accountability and Quality of Government" (PDF), *Working Paper*, Inter-American Development Bank Research Department (438), retrieved 2014-08-17 and Adserà, Alícia; Boix, Carles; Payne, Mark (2003), "Are You Being Served? Political Accountability and Quality of Government" (PDF), *Journal of Law, Economics, & Organization*, Oxford U. Pr., **19**: 445–490, doi:10.1093/jleo/19.2.445, retrieved 2014-08-31

[39] Snyder, James M.; Strömberg, David (2008), *Press Coverage and Political Accountability*, NBER Working Paper Series (13878), National Bureau of Economic Research, retrieved 2014-08-17

[40] Schulhofer-Wohl, Sam; Garrido, Miguel (2009), *Do newspapers matter? Short-run and long-run evidence from the closure of the Cincinnati Post*, NBER Working Paper Series (14817), National Bureau of Economic Research, retrieved 2014-08-17

[41] Starr, Paul (2012), "An Unexpected Crisis: The News Media in Post-industrial Democracies" (PDF), *International Journal of Press / Politics*, Sage, **17**: 234ff, retrieved 2014-08-31, Since 2000, the newspaper industry alone has lost an estimated "$1.6 billion in annual reporting and editing capacity... or roughly 30 per cent," but the new non-profit money coming into journalism has made up less than one-tenth that amount.

[42] Lewis, Charles (2014), *935 Lies*, Public Affairs, pp. 236–237, ISBN 978-1-61039-117-7

[43] http://www.ingoaccountabilitycharter.org/about-the-charter/

[44] Website: http://www.accountability.org/standards/index.html

[45] Webpage: http://www.hapinternational.org/projects/standard/hap-2010-standard.aspx

[46] ActionAid (2005). ALPS - Accountability, Learning, and Planning System.

[47] Frankl, Viktor Emil (1956) *Man's Search for Meaning*, p. 209-210.

[48] Warnock, C. (2005) "Statue of Responsibility," DAILY HERALD. Retrieved 24 October 2009.

7.9   References

- Bovens, Mark. *The Quest for Responsibility: Accountability and Citizenship in Complex Organisations* (Cambridge University Press, 1998).

- Mastop, Rosja. "Characterising Responsibility in Organisational Structures: The Problem of Many Hands" in *Deontic Logic in Computer Science*, eds. G. Governatori and G. Sartor (Berlin: Springer-Verlag, 2010). pp. 274–287. ISBN 978-3-540-70524-6

- Thompson, Dennis F. "Responsibility for Failures of Government: The Problem of Many Hands," *American Review of Public Administration* 44:3 (2014), 259-273.

- Thompson, Dennis F. "The Responsibility of Advisers" in *Restoring Responsibility: Ethics in Government, Business and Healthcare* (Cambridge University Press, 2005), pp. 33–49. ISBN 978-0521547222

7.10   Further reading

- Mark Bovens, "Two concepts of accountability: accountability as a virtue and as a mechanism," *West European Politics* 33 (2010), 946–967.

- Sterling Harwood, "Accountability," in John K. Roth, ed., Ethics: Ready Reference (Salem Press, 1994), reprinted in Sterling Harwood, ed., Business as Ethical and Business as Usual (Wadsworth Publishing Co., 1996).

- David Luban, Alan Strudler, and David Wasserman, "Moral Responsibility in the Age of Bureaucracy," *Michigan Law Review* 90 (1992), 2348-2392.

- Romm, Norma RA (2001) Accountability in Social Research. New York: Springer.

- Dennis Thompson, "The Responsibility of Advisers" in *Restoring Responsibility: Ethics in Government, Business and Healthcare* (Cambridge University Press, 2005), pp. 33–49. ISBN 978-0521547222

- Williams, Christopher (2006) Leadership account-ability in a globalizing world. London: Palgrave Macmillan.

- Painter-Morland Mollie, Ghislain Deslandes, (2015), "Authentic leading as relational account-ability: Facing up to the conflicting expectations of media leaders", *Leadership*, online available April 2, DOI:1742715015578307.

7.11 External links

- Citizens' Circle for Accountability

- Accountability Initiative

- Organizational Realities - Accountability: What Does It Really Mean?

- International Budget Partnership: What We Do

7.12   Text and image sources, contributors, and licenses

7.12.1   Text

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- **Critical thinking** *Source:* https://en.wikipedia.org/wiki/Critical_thinking?oldid=760245143 *Contributors:* Dreamyshade, Fubar Obfusco, William Avery, Hephaestos, D, Michael Hardy, Snoyes, Bueller 007, Markhurd, Fuzzywolfenburger, Pedant17, Hyacinth, Bevo, Raul654, Wetman, Merriam~enwiki, Tomchiukc, BitwiseMan, Altenmann, Nurg, DHN, Sunray, Hadal, JesseW, Wereon, Alan Liefting, Matthew Stannard, Hargettp, Niteowlneils, Gilgamesh~enwiki, Siroxo, Rparle, Deus Ex, SoWhy, Andycjp, Xinit, Ian Yorston, Ablewisuk, Vorpal suds, Djenner, Icairns, Beardless, WpZurp, Guppyfinsoup, Ayager, DanielCD, Discospinster, Xezbeth, Arthur Holland, Bender235, El C, Carlon, Lycurgus, Chalst, Jon the Geek, Bobo192, Meggar, Viriditas, Xevious, A.t.bruland, Valar, Mdd, Mark Dingemanse, Touqen, TracyRenee, SlimVirgin, Wtmitchell, Pioneer-12, Voxadam, Paulegg, Paulcoyne, Ogambear, Jensgb, Adamwiggins~enwiki, Kelly Martin, TiesThatBind, Micaqueen, Phuzzy3d, Mindmatrix, VinM, Carlos Porto, Blair P. 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Friedman, Sandris.Ã, Rick1223, Krelnik, Jim1138, Dwayne, Materialscientist, Ptiloser64, Citation bot, Felyza, Gondwanabanana, MarkAllenby, 4twenty42o, Nasnema, Srich32977, JanDeFietser, Omnipaedista, SassoBot, Aaron Kauppi, Jagungal, Javad61 12, Dan6hell66, FrescoBot, Diablotin, Liufeng, TurningWork, Dottydotdot, Flatronwide, Pasteurizer, Machine Elf 1735, Finalius, Kwiki, Redrose64, Winterst, Biker Biker, Pinethicket, Augustofretes, Leboite, Dazedbythebell, Dmitry St, Jandalhandler, Marine79, VAP+VYK, Gamewizard71, Colchester121891, Villaonisland, Lotje, LilyKitty, Utegmy, ThinkEnemies, WillNess, Dj6ual, Onel5969, Mean as custard, Rcriticalthink, Bento00, Eekerz, NeonNights79, T3dkjn89q00vl02Cxp1kqs3x7, Immunize, Edlitz36, Zellskelington, Uradumbs, Dcirovic, K6ka, The Blade of the Northern Lights, Anirudh Emani, Woownick, Alexetc, Brookenoelmoore, PBS-AWB, Muckauppa, Rexodus, Alpha Quadrant (alt), Lapinkert, Tristan Davie, Wayne Slam, Architect21c, Peterh5322, Kbs 1990, L Kensington, Pfacione, Donner60, Phronetic, Kyew, FurryAminal, Tijfo098, NTox, Avid0g, Sven Manguard, ClueBot NG, Djklgk, MelbourneStar, This lousy T-shirt, Satellizer, KIeio, Vitalii-Fedorenko, Bped1985, Amr.rs, Trescious, Masssly, Widr, EHAF, Helpful Pixie Bot, Iste Praetor, HMSSolent, Juro2351, Northamerica1000, Rhennis, Bark3141, AlisonLeCornu, Marcocapelle, Allecher, Mark Arsten, Emcdona89, Aranea Mortem, Dentalplanlisa, OdikiaNeuro, Cgreen26, Willycactus, MrBill3, Smerch, FCT1980, G.E.Hoostal, Radsmachine, David.moreno72, Sfarney, Mrt3366, Cyberbot II, EuroCarGT, BinaryPhoton, Tobaifo, TwoTwoHello, Hhira13, CForcesMajor, Frosty, Nancyorschel, BurritoBazooka, Subitizer, Kwaddell28, SomeFreakOnTheInternet, Red-eyed demon, Tentinator, DavidLeighEllis, Keblibrarian, Ctackett3, TDJankins, Mandruss, Ginsuloft, Little Ninpire, Thennicke, Rozalfaro, Arson McFire, GrantWishes, LAciti, JaconaFrere, Opgrandmaster, Lisa Beck, KCToon, Mattybinks, Sexmonkeyreadytogetfunky, P714-853-1212, AKS.9955, TJ&TheAmericanWay, Prisencolin, Vanhung2210, RaxaWiki, Roborodger, AmiraNasr, Ardenbrat, Pff1971, Amortias, Dr.mbl, Holypod, KH-1, 12345bobby12345112233, Loraof, Spss3000, KINGOFTO, User000name, Johnprince203, Nøkkenbuer, KasparBot, Next-geniusindia, Revant m, Datbubblegumdoe, Buzeaston, KSFT, Hodges334, Baking Soda, Tim7878, Activnadine, GreenC bot, Jmcgnh, JuicyApricot, William94La, Niawt, Mlefebvre21683, Basf531, Kevin.pietro, Teamawesomeunh, Wildcat jab,

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