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Chapter 1 : Popper: Critical Rationalism | Internet Encyclopedia of Philosophy

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Philosophical usage[edit] Rationalism is often contrasted with empiricism. Taken very broadly these views are not mutually exclusive, since a philosopher can be both rationalist and empiricist. The empiricist essentially believes that knowledge is based on or derived directly from experience. In other words, as Galen Strawson once wrote, "you can see that it is true just lying on your couch. Whereas both philosophies are under the umbrella of epistemology , their argument lies in the understanding of the warrant, which is under the wider epistemic umbrella of the theory of justification. Theory of justification[edit] Main article: Theory of justification The theory of justification is the part of epistemology that attempts to understand the justification of propositions and beliefs. Epistemologists are concerned with various epistemic features of belief, which include the ideas of justification , warrant, rationality , and probability. Of these four terms, the term that has been most widely used and discussed by the early 21st century is "warrant". Loosely speaking, justification is the reason that someone probably holds a belief. The precise method one uses to provide justification is where the lines are drawn between rationalism and empiricism among other philosophical views. Much of the debate in these fields are focused on analyzing the nature of knowledge and how it relates to connected notions such as truth , belief , and justification. Thesis of rationalism[edit] At its core, rationalism consists of three basic claims. For one to consider themselves a rationalist, they must adopt at least one of these three claims: In addition, rationalists can choose to adopt the claims of Indispensability of Reason and or the Superiority of Reason " although one can be a rationalist without adopting either thesis. Intuition philosophy and Deductive reasoning Rationale: We simply "see" something in such a way as to give us a warranted belief. Beyond that, the nature of intuition is hotly debated. In the same way, generally speaking, deduction is the process of reasoning from one or more general premises to reach a logically certain conclusion. Using valid arguments , we can deduce from intuited premises. For example, when we combine both concepts, we can intuit that the number three is prime and that it is greater than two. We then deduce from this knowledge that there is a prime number greater than two. Thus, it can be said that intuition and deduction combined to provide us with a priori knowledge " we gained this knowledge independently of sense experience. Empiricists such as David Hume have been willing to accept this thesis for describing the relationships among our own concepts. Most rationalists agree mathematics is knowable by applying the intuition and deduction. Some go further to include ethical truths into the category of things knowable by intuition and deduction. Furthermore, some rationalists also claim metaphysics is knowable in this thesis. In addition to different subjects, rationalists sometimes vary the strength of their claims by adjusting their understanding of the warrant. Some rationalists understand warranted beliefs to be beyond even the slightest doubt; others are more conservative and understand the warrant to be belief beyond a reasonable doubt. Rationalists also have different understanding and claims involving the connection between intuition and truth. Some rationalists claim that intuition is infallible and that anything we intuit to be true is as such. Now all the instances which confirm a general truth, however numerous they may be, are not sufficient to establish the universal necessity of this same truth, for it does not follow that what happened before will happen in the same way again. The two theses go their separate ways when describing how that knowledge is gained. As the name, and the rationale, suggests, the Innate Knowledge thesis claims knowledge is simply part of our rational nature. The knowledge has been with us since the beginning and the experience simply brought into focus, in the same way a photographer can bring the background of a picture into focus by changing the aperture of the lens. The background was always there, just not in focus. This thesis targets a problem with the nature of inquiry originally postulated by Plato in Meno. Here, Plato asks about inquiry; how do we gain knowledge of a theorem in geometry? We inquire into the matter. Yet, knowledge by inquiry seems impossible. Either way

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we cannot gain knowledge of the theorem by inquiry. Yet, we do know some theorems. The Innate Concept Thesis[edit] Rationale: These concepts are a priori in nature and sense experience is irrelevant to determining the nature of these concepts though, sense experience can help bring the concepts to our conscious mind. Some philosophers, such as John Locke who is considered one of the most influential thinkers of the Enlightenment and an empiricist argue that the Innate Knowledge thesis and the Innate Concept thesis are the same. As with the other theses covered under the umbrella of rationalism, the more types and greater number of concepts a philosopher claims to be innate, the more controversial and radical their position; "the more a concept seems removed from experience and the mental operations we can perform on experience the more plausibly it may be claimed to be innate. Since we do not experience perfect triangles but do experience pains, our concept of the former is a more promising candidate for being innate than our concept of the latter. My understanding of what a thing is, what truth is, and what thought is, seems to derive simply from my own nature. But my hearing a noise, as I do now, or seeing the sun, or feeling the fire, comes from things which are located outside me, or so I have hitherto judged. Lastly, sirens, hippogriffs and the like are my own invention. Ideas invented by us, such as those found in mythology, legends, and fairy tales are created by us from other ideas we possess. Lastly, innate ideas, such as our ideas of perfection, are those ideas we have as a result of mental processes that are beyond what experience can directly or indirectly provide. Gottfried Wilhelm Leibniz defends the idea of innate concepts by suggesting the mind plays a role in determining the nature of concepts, to explain this, he likens the mind to a block of marble in the *New Essays on Human Understanding*, "This is why I have taken as an illustration a block of veined marble, rather than a wholly uniform block or blank tablets, that is to say what is called *tabula rasa* in the language of the philosophers. For if the soul were like those blank tablets, truths would be in us in the same way as the figure of Hercules is in a block of marble, when the marble is completely indifferent whether it receives this or some other figure. But if there were veins in the stone which marked out the figure of Hercules rather than other figures, this stone would be more determined thereto, and Hercules would be as it were in some manner innate in it, although labour would be needed to uncover the veins, and to clear them by polishing, and by cutting away what prevents them from appearing. It is in this way that ideas and truths are innate in us, like natural inclinations and dispositions, natural habits or potentialities, and not like activities, although these potentialities are always accompanied by some activities which correspond to them, though they are often imperceptible. To be considered a rationalist, one must adopt at least one of those three claims. The Indispensability of Reason Thesis has the following rationale, "The knowledge we gain in subject area, S, by intuition and deduction, as well as the ideas and instances of knowledge in S that are innate to us, could not have been gained by us through sense experience. In addition to the following claims, rationalists often adopt similar stances on other aspects of philosophy. Most rationalists reject skepticism for the areas of knowledge they claim are knowable a priori. Naturally, when you claim some truths are innately known to us, one must reject skepticism in relation to those truths. This is the view that we know some truths without basing our belief in them on any others and that we then use this foundational knowledge to know more truths. The analytical nature of much of philosophical enquiry, the awareness of apparently a priori domains of knowledge such as mathematics, combined with the emphasis of obtaining knowledge through the use of rational faculties commonly rejecting, for example, direct revelation have made rationalist themes very prevalent in the history of philosophy. Since the Enlightenment, rationalism is usually associated with the introduction of mathematical methods into philosophy as seen in the works of Descartes, Leibniz, and Spinoza. Even then, the distinction between rationalists and empiricists was drawn at a later period and would not have been recognized by the philosophers involved. Also, the distinction between the two philosophies is not as clear-cut as is sometimes suggested; for example, Descartes and Locke have similar views about the nature of human ideas. The philosophers who held this view most clearly were Baruch Spinoza and Gottfried Leibniz, whose attempts to grapple with the epistemological and metaphysical problems raised by Descartes led to a development of the fundamental approach of rationalism. Both Spinoza and Leibniz asserted that, in principle, all knowledge, including scientific knowledge, could be gained through

the use of reason alone, though they both observed that this was not possible in practice for human beings except in specific areas such as mathematics. On the other hand, Leibniz admitted in his book *Monadology* that "we are all mere Empirics in three fourths of our actions. He is considered to be the first known proponent of Indian materialism, and forerunner to the Charvaka school of Indian thought, which holds direct perception, empiricism, and conditional inference as proper sources of knowledge, embraces philosophical skepticism and rejects Vedas, Vedic ritualism, and supernaturalism. Pythagoras Pythagoras was one of the first Western philosophers to stress rationalist insight. Pythagoras "believed these harmonies reflected the ultimate nature of reality. He summed up the implied metaphysical rationalism in the words "All is number". Plato Plato held rational insight to a very high standard, as is seen in his works such as *Meno* and *The Republic*. He taught on the Theory of Forms or the Theory of Ideas [24] [25] [26] which asserts that the highest and most fundamental kind of reality is not the material world of change known to us through sensation, but rather the abstract, non-material but substantial world of forms or ideas. Aristotle defines syllogism as "a discourse in which certain specific things having been supposed, something different from the things supposed results of necessity because these things are so. One notable event in the Western timeline was the philosophy of Thomas Aquinas who attempted to merge Greek rationalism and Christian revelation in the thirteenth-century. He also argued that although dreams appear as real as sense experience, these dreams cannot provide persons with knowledge. Also, since conscious sense experience can be the cause of illusions, then sense experience itself can be doubtable. As a result, Descartes deduced that a rational pursuit of truth should doubt every belief about sensory reality. Descartes developed a method to attain truths according to which nothing that cannot be recognised by the intellect or reason can be classified as knowledge. These truths are gained "without any sensory experience," according to Descartes. Truths that are attained by reason are broken down into elements that intuition can grasp, which, through a purely deductive process, will result in clear truths about reality. Descartes therefore argued, as a result of his method, that reason alone determined knowledge, and that this could be done independently of the senses. For instance, his famous dictum, *cogito ergo sum* or "I think, therefore I am", is a conclusion reached a priori i. Descartes posited a metaphysical dualism, distinguishing between the substances of the human body "res extensa" and the mind or soul "res cogitans". This crucial distinction would be left unresolved and lead to what is known as the mind-body problem, since the two substances in the Cartesian system are independent of each other and irreducible. Baruch Spinoza" [edit] Main article: Philosophy of Spinoza The philosophy of Baruch Spinoza is a systematic, logical, rational philosophy developed in seventeenth-century Europe. Goethe admitted that he found this concept confusing [citation needed]. Gottfried Leibniz Leibniz was the last of the great Rationalists who contributed heavily to other fields such as metaphysics, epistemology, logic, mathematics, physics, jurisprudence, and the philosophy of religion; he is also considered to be one of the last "universal geniuses". Leibniz rejected Cartesian dualism and denied the existence of a material world. Leibniz developed his theory of monads in response to both Descartes and Spinoza, because the rejection of their visions forced him to arrive at his own solution. Monads are the fundamental unit of reality, according to Leibniz, constituting both inanimate and animate objects. These units of reality represent the universe, though they are not subject to the laws of causality or space which he called "well-founded phenomena". Leibniz, therefore, introduced his principle of pre-established harmony to account for apparent causality in the world. Immanuel Kant" [edit] Main article: Immanuel Kant Kant is one of the central figures of modern philosophy, and set the terms by which all subsequent thinkers have had to grapple. He argued that human perception structures natural laws, and that reason is the source of morality.

Chapter 2 : SAGE Reference - Rationality and Rationalist Approaches in the Social Sciences

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It is no longer fashionable in political science to refer to "self-evident principles. Instead, the overthrow of behaviorism and positivism was precipitated by criticisms of the behaviorist epistemology and methodology from other empirically-minded scholars. This debate is completely "in-house," in that all of the parties represented in the debate take as given that man must be studied empirically. If this characterization of political science possessing a dominant research tradition is accepted, then an obvious question presents itself: Is the empiricist research tradition the one we ought to adopt? I want to suggest that the empiricist epistemological position is not the one that we ought to accept, and that this epistemological position will make it literally impossible for political science to progress. Instead, social phenomena can only be tentatively known to be true after examining the social world. If you think you know something to be true about the social world you have to test your theory against real experience. While there are obvious differences between the methodological schools within political science in the way in which they apply this empiricist epistemological position to concrete problems, virtually every modern methodological school assumes that you have to observe empirical phenomena before you can draw any conclusions about the social world. In sum, the scientific enterprise looks something like this for empiricists for both natural and social science: Or, for pragmatists, a more "useful" theory Quite obviously, then, progress occurs in the social sciences in a manner exactly analogous to progress in the natural sciences. This is, of course, the logical positivist epistemological position. The logical positivists claim that all non-testable propositions are either definitions, tautologies, or altogether meaningless. For if it is true that we have to test our hypotheses against empirical evidence, the predictive ability of an hypothesis or theory quite literally determines its tentative acceptability. We can see the unrivaled importance of prediction for the empiricist epitomized in the pragmatist philosophy of science. Although it may not be immediately obvious that pragmatists are empiricists, this fact emerges quite clearly once we recall that a pragmatist evaluates the utility of a theory only a posteriori; that is, there is for the pragmatist no way to establish the usefulness of a theory prior to its employment for some definite task. The importance of prediction to the empirical political scientist can also be observed in the many critiques of the Rational Choice School. For the Rational Choice School is frequently berated for its inability to predict even general events, which is interpreted as evidence that the Rational Choice School is observably deficient in some respect. Indeed, this fact would appear completely unremarkable were it not for the fact that there still exists an alternative epistemology and methodology; namely, Rationalism. The rationalist epistemology starts from the assumption that man can know at least some things about his world with absolute certainty, and without "testing" to see if they are true through experience. For the social sciences, the rationalists claim, the synthetic a priori is vital. Because man can reason, choose, and act, it is imperative that we acquire knowledge about human action that is, while synthetic, necessarily true. This epistemological position implies, quite obviously, that the methods to be employed in the study of man must be of a radically different nature than those employed in the natural sciences. The primary reason we must rely upon the synthetic a priori in the social sciences, so the rationalist contend, is that without some sort of irrefutable axiomatic foundation for social science we have absolutely no way to know whether or not we are falling prey to the post hoc ergo propter hoc fallacy. In other words, there is no way to tell whether or not the "causal-nomological" patterns we empirically observe in the social world are "caused" by the things we think they are, or whether they just coincidentally related and have no necessary connection. This is, quite simply, that every formulation of the empiricist epistemological and methodological position itself must be formulated in synthetic a priori terms. To state that "science is problem solving" is to state a synthetic a priori proposition which purports to be true!

There is obviously no way to demonstrate the pragmatic utility of these propositions utilizing the pragmatic method itself. Of course all of these propositions claim universal validity; [19] and if they claim universal validity then they are synthetic a priori propositions. As yet another example, the hermeneutical epistemological position can similarly only be formulated solely in synthetic a priori terms. Hermeneuticians need not deny the existence of synthetic a priori knowledge, [20] but if they do, then they would have to state something to the effect that "social science can only proceed through the exegesis of written or acted texts. More frequently, the hermeneutician argues something to the effect that there are "multiple complimentary truths about a complex practice or text," and thus, "we never arrive at one absolute truth. As a final example, let us examine the pronouncements of the logical positivists against the existence of true a priori propositions" or any metaphysical statements at all. It was argued that 1 it is impossible to determine solely on empirical grounds whether or not empirically-derived propositions are "true" or whether they are instantiations of the post hoc ergo propter hoc fallacy, and 2 that, as Johnson has argued, it is logically impossible to formulate a denial of the existence of synthetic a priori propositions that is not in itself a synthetic a priori proposition. What implications does this have for the idea of progress in political science? In the first place, recognition of the fact that synthetic a priori propositions do indeed exist should spur the political scientist to go out and find some of them! What possible reason could there be for a political scientist to remain in the necessarily hypothetical realm of empirical research if there is a method through which we can acquire necessary knowledge about human action? Can anyone possibly believe that any sort of progress could be made in geometry if every axiom was subject to empirical testing? In such a situation, where no axioms were regarded as universally true, at least some geometers might even be running around "testing" to see if every point on a circle was the same distance from the center! Of course, this defense of the synthetic a priori could be considered just so much empty verbiage if no axioms have yet been discovered that hold true with regard to all human action. Indeed, some empiricists might want to insist that they are open to the possibility of discovering such propositions, but until any have been found we must rely upon the only thing left to us "empirical investigation. For the benefit of these potential converts to rationalism, let me advance some of the axioms of social science that have already been discovered, axioms that afford the political scientist an apodictically true foundation for erecting a deductive science of politics. The axiom itself is apodictically true, and it implies other axiomatic propositions about human action such as: No one can purposefully not act. Recognizing that these propositions are axiomatically true, we can immediately see that progress for the rationalist means continually attempting to deduce propositions such as these from other prior axioms already known to be irrefutably true. There is no obsession with prediction or testing. The propositions are necessarily true "no testing is needed or is even possible. But then we come to the vital truth about political science once we come to recognize that progress in the discipline means improving our understanding of human action rather than improving our predictive ability as the empiricist claims. This is, quite simply, that the proposition "understanding human action is the goal of social science" is itself a synthetic a priori proposition that cannot be refuted without self-contradiction as well! For any attempted refutation of this proposition would itself be a synthetic a priori proposition that purported to clarify our understanding of human action specifically, our understanding of human action as it is manifested in social science itself ; and the attempted refutation could not, and never could be, an empirical statement whose goal was to better predict human action. In this way, the rationalist epistemological position with regard to political science is totally vindicated. It is about time these irrefutable epistemological truths came to be accepted within the discipline, and the empiricist epistemological and methodological position rejected as offering no hope for political scientists. Mark Crovelli is a graduate student in political science at the University of Colorado at Boulder. *Diverse Tools, Shared Standards. How Does Social Science Work?* University of Pittsburgh Press, Cambridge University Press, *The Economics and Ethics of Private Property: Studies in Political Economy and Philosophy.* Kluwer Academic Publishers, *The Structure of Scientific Revolutions.* University of Chicago Press, *Progress and Its Problems: Toward a Theory of Scientific Growth.* University of California Press, Ludwig von Mises Institute, Simply because the

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Austrians employ an aprioristic and deductive epistemology and methodology. University of Pittsburg Press, , p. Cambridge University Press, , p. The Perestroikans never question whether or not man ought to be studied empirically. On the contrary, they simply take issue with the fact that their own empirical methods are disparaged by other empiricists and are discriminated against in the journals and departments of political science. Toward a Theory of Scientific Growth Berkeley: If what I claim is true, that there is an overarching empiricist research tradition, we can also set aside all the bickering about whether or not political science has a dominant "paradigm" as irrelevant. Even if there is not a dominant "paradigm" in the discipline there is still a shared research tradition under which all of the dominant methodologies can be subsumed; namely, empiricism. See, for example, Karl R. David Braybrooke New York: No empirical theory perfectly explains everything. Kuhn, *The Structure of Scientific Revolutions*, 2nd ed. On the contrary, this school is every bit as committed to the empiricist epistemology and methodology as the other schools. The members of this school also construct hypothetically true, probabilistic models of the social world which they then try to confirm a posteriori through experience. Their methodology only appears to be deductive and "rationalist" to some because they attempt to logically deduce all the implications of their hypotheses. Their hypotheses, however, are no more axiomatic or a priori true than were the hypotheses of the Vienna Circle. Open Court, , A. Johnson, "Denial of the Synthetic a Priori," *Philosophy* 35, no. Helmut Schoeck, *James W. Studies in Political Economy and Philosophy* Boston: Also see the other references cited in note 10 above. Obviously, if they did not claim universal validity, they would then leave open the possibility that a priori knowledge exists. David Gordon, "Hermeneutics Vs. I can only hope that he will release this privileged information in the future so that I can amend my pseudo-scientific ways. Scholar, Creator, Hero Auburn, Ala.:

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Chapter 3 : Rationality and Rationalist Approaches in the Social Sciences - SAGE Research Methods

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References and Further Reading 1. This school sought to develop a deductivist philosophy of science to complement their deductivist psychology. While working on this program, Karl Popper stumbled onto a non-justificationist theory of scientific knowledge: Popper and other critical rationalists took on the project of explaining the growth of knowledge without justification. This project has produced various competing theories of rationality and has been extended to many fields. This article will concentrate on the internal logic and problems involved in the development of critical methods capable of producing the growth of knowledge. Of the numerous justificationist predecessors let only this be said. The overwhelming majority of those who comment on critical rationalism claim that critical rationalism is somehow incoherent and that inductivism is better. A major exception was Bertrand Russell. He appreciated the logical strength of critical rationalism and knew the logical weakness of induction. Nevertheless he clung to induction. He thought that critical rationalism was a philosophy of despair. Whether his judgment of critical rationalism was correct depends on whether its development can bring progress. To show this progress, new critical rationalist ideas are described and presented below. This should provide an answer to Russell that he amply deserves. Popper and Non-Justificationism Inductive inferences have observations as premises and theories as conclusions. They are notoriously invalid but often are deemed unavoidable. Critical rationalism views them as unnecessary. He hoped to build a theory of the proper assessment of sentences, that is, of the possibility of proving the truth or falsity of some sentences. He began with the fact that a theory is false if it contradicts a singular sentence describing some observation reports. Popper then said that such singular sentences were veridical, that is, truthful as opposed to illusory, so they may be used to produce final proofs of the falsity of some universal sentences. As a consequence no such putative proof can be valid. Popper himself found the theory he presented in *Die beiden Grundprobleme der Erkenntnistheorie* without chapter 5 inadequate for three reasons. The first reason is that singular statements are not veridical. He began work on this problem in chapter 5 of *Die beiden Grundprobleme*. This chapter contains a theory of science which differs on important points from the theory found in the rest of that volume. The task of the philosophy of science is to explain how these assignments are properly made. Reichenbach said the calculus of probabilities serves that purpose. Popper argued that it is not possible to properly assign either the truth value True or some degree of probability to universal sentences. He could not distinguish between these two sets of theories within his justificationist framework, since, on this view, only proofs or refutations of these theories could do that. He asserted, however, that no proof was possible and refutations could establish only the falsity of universal propositions. As a consequence of these three difficulties Popper developed an entirely different theory of science in chapter 5, then in *Logik der Forschung*. In order to overcome the problems his first view faced, he adopted two central strategies. First, he reformulated the task of the philosophy of science. Rather than presenting scientific method as a tool for properly assigning truth values to sentences, he presented rules of scientific method as conducive to the growth of knowledge. Apparently he still held that only proven or refuted sentences could take truth values. But this view is incompatible with his new philosophy of science as it appears in his *Logik der Forschung*: It is the job of scientists to discover their falsity when they can. So, he worked around the difficulty posed by the fact that, on the one hand, he had to assume that theories were refutable and thus had truth values, whereas, on the other hand, he thought that only proven or refuted theories had truth values at all. He argued that his view could be interpreted as realist or as antirealist. He hedged his bets as best he could and appealed to Mach, who had stipulated that one should avoid participation in any metaphysical dispute. In *Logik der Forschung* Popper solved his three initial difficulties in the following ways. First, instead of claiming that singular sentences were veridical, he said that basic statements are only provisionally accepted,

provided that they were repeatable and so testable. He thereby introduced the following rule: He claimed that the provisional acceptance of basic statements does not disqualify them as refutations of theoriesâ€”no longer simply universal sentencesâ€”because for the most part we can agree on which basic sentences we provisionally assume to be true. Second, he proposed the rule that one should always replace some theory which is contradicted by a basic statement by whichever new alternative has the highest degree of falsifiability. This rule should guarantee that refutations lead to progress. Reichenbach had declared that there was no logic of scientific method, that is, no proof or refutation. The basis for his claim that there could be no refutation was that any theory could be protected from a putative refutation with some ad hoc maneuver. Popper responded to Reichenbach with his *Logik der Forschung* *Logic of Research* and by introducing methodology into his deliberations. The methodological rule enabled him to avoid ad hoc protection of theories and thus enabled him to show how theories could be refuted. Third, he introduced the rule: This view was no longer justificationist, that is, it no longer claimed properly to assign truth values to sentences. But Popper had at that point no non-justificationist theory of rationality in general; his theory applied to science alone. He did not at that point notice problems which his theory raised for the broader framework of rationality which all philosophers of science had used since antiquity, the framework that identified the rational with the proven. Tarski thereby did away with the theory of truth that had given Popper so much trouble. Tarski did not necessarily offer Popper an adequate theory of truth for his philosophy of science. But Tarski did free him from a false theory which was a great impediment to the construction of a truly fallibilist, realist theory of science. Popper never clearly explained the importance that Tarski had for him at the time. After his meeting with Tarski, he was free to develop his fallibilist theory of science in new ways, because he could claim that theories could be true even though there was no proof of them. During his earlier years in London, during or so, he returned to the possibilities this fact opened up. In *Logik der Forschung* Popper developed a theory of the growth of scientific knowledge without justification. But he had no general theory of rationality without justification. Indeed, he still limited rationality to science and methodology. However, at least three problems arose for this limited view of rationality. Popper maintained at that point that scientists gain knowledge not by proofs but by refutations of good conjectures and by replacing them with new and better ones. These new conjectures avoid earlier mistakes, explain more, and invite new tests. He originally thought of this theory as *eo ipso* a theory of rationality: He identified research, science and methodology, as the title of his book indicates. Difficulties piled up fast. First, if rationality is limited to science, how is methodology rational? Methodology can only be rational if methodology is the empirical study of scienceâ€”as Whewell saidâ€”or if non-empirical research can be rational. Popper could not view methodology as a science of science because he held that it is not merely descriptive but also prescriptive. Yet it should be rational. The second problem arose as Popper tried to apply his methodology of the physical sciences to the social sciences. The *Poverty of Historicism* and *The Open Society and Its Enemies* defend the open society on the grounds that only open societies preserve reason, that is, criticism, and as a consequence only open societies can be civilized. But why is a choice for the open society rational? He had no answer. He merely said that the acceptance of reason was a consequence of sympathy for others. Nothing can be said to convince those to change their minds who accept the barbaric consequences of fascism or communism. The third problem concerns metaphysics. Before he had ever developed his own philosophy of science, he had defended in his doctoral dissertation the view that metaphysical hypotheses can serve as working hypotheses in the construction of scientific theories. His discussion there merely concerned the use of physicalist metaphysics as a guide for psychological research. He said that this was fine, but one should not decide a priori that a view of psychological processes as physical is needed or even possible. Scientific researchâ€”he was not clear then what that meantâ€”should decide this. He was later pressed, however, to decide between competing metaphysical theories with which to interpret science, even in the absence of a scientific answer. Was the world determined or not? Questions such as this raised the question as to whether one metaphysical theory can be better or worse than another and whether one could find out which one is better. He gave up his earlier view of rationality as limited to scientific research

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and methodology, but he still insisted that for science some metaphysical theories are merely heuristic, and no more than that. To extend his theory that rationality consisted of scientific research and methodology alone, Popper loosened his standard of rationality. Rejecting the older standard of rationality -- proof - - as too high, he began to view the standard for science, refutability, as too high for the rationality that obtains outside science. Whereas earlier he had replaced justification with refutation, he now replaced refutation with criticism. Popper thereby created a new philosophical perspective by generalizing his theory of scientific research. Could his critical rationalism apply to other fields? Could various fields also not only do without epistemological justification but also raise their levels of rationality with the use of critical methods? Critical rationalism became a project to employ critical methods as a substitute for epistemological justification in all areas of life. Agassi began with his dissertation, in which he posed the question, How can metaphysics be used to guide scientific research without making science subordinate to it? Duhem had warned that, were science to concern itself with metaphysics, it would be subordinate to it. On his view metaphysics need not be a mere heuristic, that is, a source of ideas, but rather a systematic guide to scientific research and a provisional standard for desirable theories.

Chapter 4 : Rationalism - SAGE Research Methods

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The methodology section of a research paper answers two main questions: How was the data collected or generated? And, how was it analyzed? The writing should be direct and precise and always written in the past tense. Importance of a Good Methodology Section You must explain how you obtained and analyzed your results for the following reasons: Readers need to know how the data was obtained because the method you chose affects the results and, by extension, how you interpreted their significance. Methodology is crucial for any branch of scholarship because an unreliable method produces unreliable results and, as a consequence, undermines the value of your interpretations of the findings. In most cases, there are a variety of different methods you can choose to investigate a research problem. The methodology section of your paper should clearly articulate the reasons why you chose a particular procedure or technique. The reader wants to know that the data was collected or generated in a way that is consistent with accepted practice in the field of study. For example, if you are using a multiple choice questionnaire, readers need to know that it offered your respondents a reasonable range of answers to choose from. The method must be appropriate to fulfilling the overall aims of the study. For example, you need to ensure that you have a large enough sample size to be able to generalize and make recommendations based upon the findings. The methodology should discuss the problems that were anticipated and the steps you took to prevent them from occurring. For any problems that do arise, you must describe the ways in which they were minimized or why these problems do not impact in any meaningful way your interpretation of the findings. In the social and behavioral sciences, it is important to always provide sufficient information to allow other researchers to adopt or replicate your methodology. This information is particularly important when a new method has been developed or an innovative use of an existing method is utilized. Writing the Empirical Journal Article. University of Washington; Denscombe, Martyn. The Good Research Guide: Writing a Successful Thesis or Dissertation: Structure and Writing Style I. Groups of Research Methods There are two main groups of research methods in the social sciences: The empirical-analytical group approaches the study of social sciences in a similar manner that researchers study the natural sciences. This type of research focuses on objective knowledge, research questions that can be answered yes or no, and operational definitions of variables to be measured. The empirical-analytical group employs deductive reasoning that uses existing theory as a foundation for formulating hypotheses that need to be tested. This approach is focused on explanation. The interpretative group of methods is focused on understanding phenomenon in a comprehensive, holistic way. Interpretive methods focus on analytically disclosing the meaning-making practices of human subjects [the why, how, or by what means people do what they do], while showing how those practices arrange so that it can be used to generate observable outcomes. Interpretive methods allow you to recognize your connection to the phenomena under investigation. However, the interpretative group requires careful examination of variables because it focuses more on subjective knowledge. Content The introduction to your methodology section should begin by restating the research problem and underlying assumptions underpinning your study. If the method you choose lies outside of the tradition of your field [i. The remainder of your methodology section should describe the following: Decisions made in selecting the data you have analyzed or, in the case of qualitative research, the subjects and research setting you have examined, Tools and methods used to identify and collect information, and how you identified relevant variables, The ways in which you processed the data and the procedures you used to analyze that data, and The specific research tools or strategies that you utilized to study the underlying hypothesis and research questions. In addition, an effectively written methodology section should: Introduce the overall methodological approach for investigating your research problem. Is your study qualitative or quantitative or a combination of both mixed method? Are you going to take a special approach, such as action

research, or a more neutral stance? Indicate how the approach fits the overall research design. Your methods for gathering data should have a clear connection to your research problem. In other words, make sure that your methods will actually address the problem. One of the most common deficiencies found in research papers is that the proposed methodology is not suitable to achieving the stated objective of your paper. Describe the specific methods of data collection you are going to use, such as, surveys, interviews, questionnaires, observation, archival research. If you are analyzing existing data, such as a data set or archival documents, describe how it was originally created or gathered and by whom. Also be sure to explain how older data is still relevant to investigating the current research problem. Explain how you intend to analyze your results. Will you use statistical analysis? Will you use specific theoretical perspectives to help you analyze a text or explain observed behaviors? Describe how you plan to obtain an accurate assessment of relationships, patterns, trends, distributions, and possible contradictions found in the data. Provide background and a rationale for methodologies that are unfamiliar for your readers. Be clear and concise in your explanation. Provide a justification for subject selection and sampling procedure. For instance, if you propose to conduct interviews, how do you intend to select the sample population? If you are analyzing texts, which texts have you chosen, and why? If you are using statistics, why is this set of data being used? If other data sources exist, explain why the data you chose is most appropriate to addressing the research problem. Are there any practical limitations that could affect your data collection? How will you attempt to control for potential confounding variables and errors? If your methodology may lead to problems you can anticipate, state this openly and show why pursuing this methodology outweighs the risk of these problems cropping up. Once you have written all of the elements of the methods section, subsequent revisions should focus on how to present those elements as clearly and as logically as possible. The description of how you prepared to study the research problem, how you gathered the data, and the protocol for analyzing the data should be organized chronologically. For clarity, when a large amount of detail must be presented, information should be presented in sub-sections according to topic. If you are conducting a qualitative analysis of a research problem, the methodology section generally requires a more elaborate description of the methods used as well as an explanation of the processes applied to gathering and analyzing of data than is generally required for studies using quantitative methods. Because you are the primary instrument for generating the data, the process for collecting that data has a significantly greater impact on producing the findings. Therefore, qualitative research requires a more detailed description of the methods used. If your study involves interviews, observations, or other qualitative techniques involving human subjects, you may be required to obtain approval from your Institutional Review Board before beginning your research. If this is the case, you must include a statement in your methods section that you received official endorsement and adequate informed consent from the IRB and that there was a clear assessment and minimization of risks to participants and to the university. This statement informs the reader that your study was conducted in an ethical and responsible manner. In some cases, the IRB approval notice is included as an appendix to your paper.

Problems to Avoid

Irrelevant Detail The methodology section of your paper should be thorough but to the point. Do not provide any background information that does not directly help the reader understand why a particular method was chosen, how the data was gathered or obtained, and how the data was analyzed in relation to the research problem [note: Save how you interpreted the findings for the discussion section]. With this in mind, the page length of your methods section will generally be less than any other section of your paper except the conclusion.

Unnecessary Explanation of Basic Procedures Remember that you are not writing a how-to guide about a particular method. You should make the assumption that readers possess a basic understanding of how to investigate the research problem on their own and, therefore, you do not have to go into great detail about specific methodological procedures. The focus should be on how you applied a method, not on the mechanics of doing a method. An exception to this rule is if you select an unconventional methodological approach; if this is the case, be sure to explain why this approach was chosen and how it enhances the overall process of discovery.

Problem Blindness It is almost a given that you will encounter problems when collecting or

generating your data, or, gaps will exist in existing data or archival materials. Do not ignore these problems or pretend they did not occur. Often, documenting how you overcame obstacles can form an interesting part of the methodology. It demonstrates to the reader that you can provide a cogent rationale for the decisions you made to minimize the impact of any problems that arose. Literature Review Just as the literature review section of your paper provides an overview of sources you have examined while researching a particular topic, the methodology section should cite any sources that informed your choice and application of a particular method [i. Such a list of sources is useful in and of itself, especially if it is accompanied by an explanation about the selection and use of the sources. Writing the Methods Section. Sense Publishers , pp. Corwin, ; Carter, Susan. Structuring Your Research Thesis. Palgrave Macmillan, ; Kallet, Richard H. Describing Your Research Plan. A Comprehensive Guide to Content and Process. Thousand Oaks, Sage Publications, , pp. Methods, Results, and Discussion. Purdue University; Methods and Materials. Writing Tip Statistical Designs and Tests? Do Not Fear Them! A qualitative approach, such as conducting interviews or content analysis of archival texts, can yield exciting new insights about a research problem, but it should not be undertaken simply because you have a disdain for running a simple regression. A well designed quantitative research study can often be accomplished in very clear and direct ways, whereas, a similar study of a qualitative nature usually requires considerable time to analyze large volumes of data and a tremendous burden to create new paths for analysis where previously no path associated with your research problem had existed. Another Writing Tip Knowing the Relationship Between Theories and Methods There can be multiple meaning associated with the term "theories" and the term "methods" in social sciences research.

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Empirical method A central concept in science and the scientific method is that it must be empirically based on the evidence of the senses. Both natural and social sciences use working hypotheses that are testable by observation and experiment. The term semi-empirical is sometimes used to describe theoretical methods that make use of basic axioms, established scientific laws, and previous experimental results in order to engage in reasoned model building and theoretical inquiry. For example, John Locke held that some knowledge e. Similarly Robert Boyle, a prominent advocate of the experimental method, held that we have innate ideas. The earliest Western proto-empiricists were the Empiric school of ancient Greek medical practitioners, who rejected the three doctrines of the Dogmatic school, preferring to rely on the observation of "phenomena". This denies that humans have innate ideas. The image dates back to Aristotle: What the mind nous thinks must be in it in the same sense as letters are on a tablet grammateion which bears no actual writing grammenon; this is just what happens in the case of the mind. Aristotle, *On the Soul*, 3. Aristotle was considered to give a more important position to sense perception than Plato, and commentators in the Middle Ages summarized one of his positions as "nihil in intellectu nisi prius fuerit in sensu" Latin for "nothing in the intellect without first being in the senses". This idea was later developed in ancient philosophy by the Stoic school. Stoic epistemology generally emphasized that the mind starts blank, but acquires knowledge as the outside world is impressed upon it. In the 12th century CE the Andalusian Muslim philosopher and novelist Abu Bakr Ibn Tufail known as "Abubacer" or "Ebn Tophail" in the West included the theory of tabula rasa as a thought experiment in his Arabic philosophical novel, *Hayy ibn Yaqdhan* in which he depicted the development of the mind of a feral child "from a tabula rasa to that of an adult, in complete isolation from society" on a desert island, through experience alone. Renaissance Italy[edit] In the late renaissance various writers began to question the medieval and classical understanding of knowledge acquisition in a more fundamental way. Machiavelli in particular was scornful of writers on politics who judged everything in comparison to mental ideals and demanded that people should study the "effectual truth" instead. Their contemporary, Leonardo da Vinci " said, "If you find from your own experience that something is a fact and it contradicts what some authority has written down, then you must abandon the authority and base your reasoning on your own findings. The Italian word he used for "experiment" was *esperienza*. It is known that he was the essential pedagogical influence upon the young Galileo, his eldest son cf. *Music and Science in the Age of Galileo Galilei*, arguably one of the most influential empiricists in history. British empiricism[edit] British empiricism, though it was not a term used at the time, derives from the 17th century period of early modern philosophy and modern science. Thomas Hobbes and Baruch Spinoza, in the next generation, are often also described as an empiricist and a rationalist respectively. John Locke, George Berkeley, and David Hume were the primary exponents of empiricism in the 18th century Enlightenment, with Locke being the person who is normally known as the founder of empiricism as such. In response to the early-to-mid 18th century "continental rationalism" John Locke " proposed in *An Essay Concerning Human Understanding* a very influential view wherein the only knowledge humans can have is *a posteriori*, i. There are two sources of our ideas: In both cases, a distinction is made between simple and complex ideas. The former are unanalysable, and are broken down into primary and secondary qualities. Primary qualities are essential for the object in question to be what it is. Without specific primary qualities, an object would not be what it is. For example, an apple is an apple because of the arrangement of its atomic structure. If an apple was structured differently, it would cease to be an apple. Secondary qualities are the sensory information we can perceive from its primary qualities. For example, an apple can be perceived in various colours, sizes, and textures but it is still identified as an apple. Therefore, its primary qualities dictate what the object essentially is, while its secondary qualities

define its attributes. Complex ideas combine simple ones, and divide into substances, modes, and relations. According to Locke, our knowledge of things is a perception of ideas that are in accordance or discordance with each other, which is very different from the quest for certainty of Descartes. In response to Locke, he put forth in his *Treatise Concerning the Principles of Human Knowledge* an important challenge to empiricism in which things only exist either as a result of their being perceived, or by virtue of the fact that they are an entity doing the perceiving. For Berkeley, God fills in for humans by doing the perceiving whenever humans are not around to do it. In his text *Alciphron*, Berkeley maintained that any order humans may see in nature is the language or handwriting of God. Hume argued in keeping with the empiricist view that all knowledge derives from sense experience, but he accepted that this has implications not normally acceptable to philosophers. He wrote for example, "Locke divides all arguments into demonstrative and probable. On this view, we must say that it is only probable that all men must die or that the sun will rise to-morrow, because neither of these can be demonstrated. Locke, chapter of power. But to be convinced that this explication is more popular than philosophical, we need but reflect on two very obvious principles. First, That reason alone can never give rise to any original idea, and secondly, that reason, as distinguished from experience, can never make us conclude, that a cause or productive quality is absolutely requisite to every beginning of existence. Both these considerations have been sufficiently explained: Mathematical and logical propositions e. For Hume, an "impression" corresponds roughly with what we call a sensation. To remember or to imagine such impressions is to have an "idea". Ideas are therefore the faint copies of sensations. Hume maintained that no knowledge, even the most basic beliefs about the natural world, can be conclusively established by reason. Rather, he maintained, our beliefs are more a result of accumulated habits, developed in response to accumulated sense experiences. Among his many arguments Hume also added another important slant to the debate about scientific method – that of the problem of induction. Hume argued that it requires inductive reasoning to arrive at the premises for the principle of inductive reasoning, and therefore the justification for inductive reasoning is a circular argument. Thus, as a simple instance posed by Hume, we cannot know with certainty by inductive reasoning that the sun will continue to rise in the East, but instead come to expect it to do so because it has repeatedly done so in the past. According to Hume these beliefs were to be accepted nonetheless because of their profound basis in instinct and custom. Ultimately, only mental objects, properties, events, exist – hence the closely related term subjective idealism. By the phenomenistic line of thinking, to have a visual experience of a real physical thing is to have an experience of a certain kind of group of experiences. This type of set of experiences possesses a constancy and coherence that is lacking in the set of experiences of which hallucinations, for example, are a part. As John Stuart Mill put it in the mid 19th century, matter is the "permanent possibility of sensation". As summarized by D. In his view logical and mathematical necessity is psychological; we are merely unable to conceive any other possibilities than those that logical and mathematical propositions assert. This is perhaps the most extreme version of empiricism known, but it has not found many defenders. This misses some key discussion concerning conditions under which such "groups of permanent possibilities of sensation" might exist in the first place. Berkeley put God in that gap; the phenomenists, including Mill, essentially left the question unanswered. In the end, lacking an acknowledgement of an aspect of "reality" that goes beyond mere "possibilities of sensation", such a position leads to a version of subjective idealism. Questions of how floor beams continue to support a floor while unobserved, how trees continue to grow while unobserved and untouched by human hands, etc. It fails to fully consider the structure and method of mathematical science, the products of which are arrived at through an internally consistent deductive set of procedures which do not, either today or at the time Mill wrote, fall under the agreed meaning of induction. But it came to be realized that there is no finite set of statements about actual and possible sense-data from which we can deduce even a single physical-object statement. The translating or paraphrasing statement must be couched in terms of normal observers in normal conditions of observation. There is, however, no finite set of statements that are couched in purely sensory terms and can express the satisfaction of the condition of the presence of a normal observer. According to phenomenism, to

say that a normal observer is present is to make the hypothetical statement that were a doctor to inspect the observer, the observer would appear to the doctor to be normal. But, of course, the doctor himself must be a normal observer. And if we are to specify in sensory terms that the second doctor is a normal observer, we must refer to a third doctor, and so on also see the third man. Logical positivism Logical empiricism also logical positivism or neopositivism was an early 20th-century attempt to synthesize the essential ideas of British empiricism e. Ayer , Rudolf Carnap and Hans Reichenbach. The neopositivists subscribed to a notion of philosophy as the conceptual clarification of the methods, insights and discoveries of the sciences. They saw in the logical symbolism elaborated by Frege " and Bertrand Russell " a powerful instrument that could rationally reconstruct all scientific discourse into an ideal, logically perfect, language that would be free of the ambiguities and deformations of natural language. This gave rise to what they saw as metaphysical pseudoproblems and other conceptual confusions. Any sentence that is not purely logical, or is unverifiable is devoid of meaning. As a result, most metaphysical, ethical, aesthetic and other traditional philosophical problems came to be considered pseudoproblems. In later years, Carnap and Neurath abandoned this sort of phenomenalism in favor of a rational reconstruction of knowledge into the language of an objective spatio-temporal physics. That is, instead of translating sentences about physical objects into sense-data, such sentences were to be translated into so-called protocol sentences, for example, "X at location Y and at time T observes such and such. By the late s, it had become evident to most philosophers that the movement had pretty much run its course, though its influence is still significant among contemporary analytic philosophers such as Michael Dummett and other anti-realists. Pragmatism[edit] In the late 19th and early 20th century several forms of pragmatic philosophy arose. The ideas of pragmatism, in its various forms, developed mainly from discussions between Charles Sanders Peirce and William James when both men were at Harvard in the s. James popularized the term "pragmatism", giving Peirce full credit for its patrimony, but Peirce later demurred from the tangents that the movement was taking, and redubbed what he regarded as the original idea with the name of "pragmaticism". Along with its pragmatic theory of truth , this perspective integrates the basic insights of empirical experience-based and rational concept-based thinking. Indeed, he concurred with the main ideas of rationalism, most importantly the idea that rational concepts can be meaningful and the idea that rational concepts necessarily go beyond the data given by empirical observation. In later years he even emphasized the concept-driven side of the then ongoing debate between strict empiricism and strict rationalism, in part to counterbalance the excesses to which some of his cohorts had taken pragmatism under the "data-driven" strict-empiricist view. To this, Peirce added the concept of abductive reasoning. The combined three forms of reasoning serve as a primary conceptual foundation for the empirically based scientific method today. The rationality of the scientific method does not depend on the certainty of its conclusions, but on its self-corrective character: First among these he listed the peripatetic-thomist observation mentioned above, but he further observed that this link between sensory perception and intellectual conception is a two-way street. That is, it can be taken to say that whatever we find in the intellect is also incipiently in the senses. Hence, if theories are theory-laden then so are the senses, and perception itself can be seen as a species of abductive inference , its difference being that it is beyond control and hence beyond critique" in a word, incorrigible. This in no way conflicts with the fallibility and revisability of scientific concepts, since it is only the immediate percept in its unique individuality or "thisness" what the Scholastics called its haecceity " that stands beyond control and correction. Scientific concepts, on the other hand, are general in nature, and transient sensations do in another sense find correction within them. This notion of perception as abduction has received periodic revivals in artificial intelligence and cognitive science research, most recently for instance with the work of Irvin Rock on indirect perception.

Chapter 6 : EMPIRICISM (Social Science)

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Personal use only; commercial use is strictly prohibited. Process tracing can be used both for case studies that aim to gain a greater understanding of the causal dynamics that produced the outcome of a particular historical case and to shed light on generalizable causal mechanisms linking causes and outcomes within a population of causally similar cases. This article breaks down process tracing as a method into its three core components: Three distinct variants of process tracing are developed, illustrated by examples from the literature. The analytical added value of process tracing is that it enables strong causal inferences to be made about how causal processes work in real-world cases based on studying within-case mechanistic evidence. But process tracing is a single-case method, meaning that only inferences about the operation of the mechanism within the studied case are possible because this is the evidence gathered through tracing the process in the case. Therefore, to generalize beyond the studied case, we need to couple process-tracing case studies with comparative methods to enable us to generalize about causal processes. Comparisons across cases make generalization possible because we can then claim that, as a set of other cases are causally similar to the studied one, we should expect similar mechanisms to also be operative in these cases. Process tracing can be used for either theory-building or theory-testing purposes. Process tracing as a method can be broken down into its three core components: What We Are Tracingâ€”Causal Mechanisms In theory-guided social science research, the ambition is to use causal theories to explain why something occurs either in a particular case or more broadly across a population of causally similar cases. This focus on causal explanations means that process tracing involves more than the production of detailed, descriptive narratives of the events between the occurrence of a purported cause and an outcome. Instead, process-tracing research probes the theoretical causal mechanisms linking causes and outcomes together. Yet causal mechanisms are one of the most widely used but least understood types of causal claims in the social sciences e. The essence of making a mechanism-based claim is that we shift the analytical focus from causes and outcomes to the hypothesized causal process in-between them. That is, mechanisms are not causes, but are causal processes that are triggered by causes and that link them with outcomes in a productive relationship. However, beyond this core point, there is disagreement about the nature of mechanisms. There are at least three distinct takes on the nature of mechanisms, each of which imply different research designs. The result of this ambiguity about the nature of mechanisms is that there is considerable confusion in the methodological literature about what process-tracing methods actually are tracing, and how we know good process tracing when we see it in practice. However, to make causal inferences about the effects of intervening variables IV requires empirical evidence in the form of variation across cases, measuring the difference that changes in the value of the IV have for values of an outcome, with all other things held equal Runhardt, ; Woodward, In this understanding of mechanisms, there is no such thing as within-case analysis. There are several challenges related to the experimental route. While actual experiments are possible, they are difficult if not impossible for many of the research questions in which case-study scholars are interested. Natural experiments are difficult to utilize because it is almost impossible to find two cases that are completely similar in all aspects except for the presence of the IV. And even more fundamentally, any form of experiment still does not tell us how the IV produces an effect, only that it does Illari, ; Dowe, ; Bogen, , p. Yet understanding how a causal process works is the very reason we decide to study a mechanism in the first place. Two assumptions have to hold to be able to make inferences about the IV based on evidence of difference-making within these subunits: However, when we disaggregate single cases into many cases, these two assumptions typically never hold. Additionally, assuming independence of these subunits is also highly problematic. An even more fundamental problem is that the goal of process tracing is to trace the workings of causal mechanisms as they operate within a case; shifting the analysis to another level subunits basically means that one is studying something different than what was

intended. Indeed, one can argue that assessing mean causal effects of the IV transforms the analysis into a form of variance-based comparative case study. Given all of these problems, the rest of the article does not include variance-based understandings of process tracing that discuss assessing the difference that values of an IV make for an outcome. Among case-study scholars who attempt to trace within-case causal processes using mechanistic evidence, two distinct takes on mechanisms can be identified in the literature: In minimalist understandings, the causal arrow between a cause and outcome is not unpacked in any detail, either empirically or theoretically. The closest she gets to unwrapping causal mechanisms is in the conclusion of the article where she mentions three plausible links between norms and nonuse: Yet these brief descriptions do not describe the causal process that links norms with nonuse. For example, how are individual moral convictions against nonuse linked to a decision to not use nukes in a situation where they could have been used? Do these individuals have to deploy normative speech acts to shame other actors? But after she found within-case evidence of a relationship, the natural follow-up would have been to probe mechanisms in more detail. In a systems understanding of mechanisms, the ambition is to unpack explicitly the causal process that occurs in-between a cause or set of causes and an outcome and trace each of its constituent parts empirically. In the systems understanding of mechanisms, a causal mechanism is unpacked into its constituent parts. Entities are the factors actors, organizations, or structures engaging in activities, whereas the activities are the producers of change or what transmits causal forces or powers through a mechanism. What the entities and activities more precisely are in conceptual terms depends on the type of causal explanation, along with the level at which the mechanism works and the time span of its operation. The activities that entities engage in move the mechanism from an initial or start condition through different parts to an outcome. The overall mechanism can be depicted as in Figure 1, where each part of the mechanism in-between a cause and outcome is detailed in terms of entities engaging in activities. The entities can be defined as nouns, whereas the activities can be depicted as verbs. Click to view larger Figure 1: A simple template for a two-part causal mechanism. The analytical value added of unpacking causal mechanisms in detail is twofold. By unpacking a causal process, we are better able to identify logical shortcomings in our theories and also critical links in causal stories that are particularly interesting to elaborate on. More logical scrutiny about causal logics results in better causal theories, other things being equal. Second, by explicitly theorizing the activities that are expected to leave empirical fingerprints for each part of the mechanism, the subsequent analysis should also study the workings of each part empirically. If evidence is found that each part worked as theorized, then a strong causal inference about the relationship is made possible. If evidence for one or more parts is not found, this should result in a theoretical revision of the mechanism, thereby producing more accurate theories of causal processes. Returning to the Tannenwald example, if we were to unpack a causal mechanism linking individual moral convictions and behavior, we would first have to develop what type of causal logic we are drawing on. This could be work on the constraining impact of norm-based speech acts. Using this logic, the mechanism could then be depicted as in Figure 2. Here we see two parts: Builds on Tannenwald This example shows the methodological value added of both making contextual conditions explicit and unpacking the mechanism into constituent parts composed of entities engaging in activities. First, trying to make the contextual conditions explicit tells us that this initial theorization is underspecified because we cannot answer questions like: How many members of the group have to believe in the taboo? Are all participants equal or does their relative standing in the group matter for how strong the taboo acts as a rhetorical constraint in the group? Second, by making the activities of entities explicit, this focuses our attention on the causally productive parts of the process, resulting in better theories and evidence of processes. On the empirical side, while Tannenwald uses taboo talk as evidence, by making the activities explicit, we would simply need to get more direct evidence because we would have to investigate the empirical fingerprints left by the interaction process whereby making taboo-based arguments are deployed and proponents of use are silenced afterward because they are deprived of rhetorical material for rebuttals. Merely finding taboo talk only tells us that norm-based arguments were deployed, but this does not shed any light on whether they actually had an effect, and if so, how. The

Analytical Uses of Minimalist and Systems Understandings of Process Tracing Despite the confusion that the two different understandings of mechanisms create in the literature on process tracing, it is actually helpful to view them as two distinct variants of process tracing because they are applicable in different research situations. The minimalist understanding can be used when engaging in process tracing relatively early in mechanism-focused research, when we are still unsure about what mechanisms link causes and outcomes together. Yet when we have little knowledge of which type of mechanism or mechanisms links a given cause and outcome, and under which conditions one or the other mechanism provides the link, it makes sense first to engage in a form of a process-tracing plausibility probe where mechanisms are not unpacked in any detail. In this situation, we first want to know which mechanism links a cause or set of causes and an outcome in a given context before we get to the question of learning about the inner workings of a particular mechanism. And after we have engaged in more intensive process tracing systems understanding of one or more cases, we can use a minimalist understanding to determine whether what we found in the studied case s also holds in other cases within the population of causally similar cases e. In contrast, the systems-understanding variant of process tracing can be deployed after we have a good idea about a plausible causal process. It is when we first have a reasoned belief that there might actually be something to trace that it makes sense to engage in the intensive theoretical and empirical work of unpacking each part of the mechanism and empirically tracing the observable manifestations left by the activities of entities. By tracing each part of the mechanism, the result is the production of a richer body of mechanistic evidence, thereby enabling stronger causal inferences to be made. Both understandings of mechanisms used in process-tracing methods share certain foundational assumptions relating to the types of causal claims being made. Here one would define a cause like democracy in terms of the attributes required for the concept to have causal properties i. There is often a large degree of misunderstanding in methodological debates about determinism because many conflate ontological and epistemological determinism. Probabilistic causal claims are about trends across populations of cases, whereas deterministic causal statements claim that under specified conditions, a given cause or set of causes will produce an outcome through a specified mechanism or mechanisms , but only within a small, bounded population of causally similar cases. Indeed, it can be argued that the intensive empirical tracing of mechanisms in a particular case is simply not very useful if we want to examine probabilistic causal relationships that will only manifest themselves as trends across a set of cases. In contrast, when making ontological determinate claims, we are forced to tackle head-on any incongruences and anomalies that we find when engaging in process tracing, instead of discounting them as being exceptions from an overall trend, as we would if we are studying probabilistic theoretical claims. If we do not find confirming evidence of any mechanism in a process-tracing case study where our theory told us that there should be one present, we do not just discount this as an exception to an otherwise strong trend across cases. Instead, we are forced to reappraise our theory, attempting to figure out why what we expected did not occur in the case Mahoney, ; Adcock, These failures of our theories are intensely interesting for case-based research and enable us to build better theories of causal processes, thereby learning more about how things work Andersen, The result of grounding process tracing on the assumption of ontological determinism is that our causal claims become progressively refined in an iterated process of empirical research, making our knowledge less and less wrong as we better understand how causal mechanisms work and the contextual bounds in which these relationships hold. They are not causally productive, but are merely conditions that have to be present for a relationship to work in a particular manner. This means that generalization of our claims about causal mechanisms from one case to other cases can only be done after it is demonstrated that the studied case is contextually similar to other positive cases where the relationship might be present. Using Within-Case Evidence to Make Causal Inferences about Mechanisms How can we make causal inferences about mechanisms when we only possess within-case mechanistic evidence provided by tracing causal processes in a case? In process tracing, we are not assessing the difference that changes in values of X make for values of Y. Instead, inferences are made using the correspondence between hypothetical and actual observable manifestations of the operation of

mechanisms within a selected case, what can be termed mechanistic, within-case evidence. At the core of the Bayesian approach is the idea that science is about using new evidence to update our confidence in causal theories. The amount of updating that new evidence enables is determined by both our prior confidence in a theory and the evidential weight of new evidence. For a longer, more technical introduction to Bayesian logic, see Bennett. Our prior confidence in a causal hypothesis matters because, if we already have a large amount of theoretical and empirical knowledge suggesting that a theory is valid, only very strong new empirical evidence can further increase our confidence in the theory. In contrast, and more typical for the situation in which we employ process-tracing case studies, when we know relatively little about a causal mechanism that potentially links a cause and outcome, even relatively weak confirming evidence can increase our confidence in a theory. As applied to process tracing, setting prior confidence requires an assessment based on the existing literature of how confident we can be in a hypothesized mechanism existing in a given case. This means that existing research is not necessarily very relevant prior knowledge for the selected case because there can be many contextual factors that might make the population-level trend not hold in the individual case. Therefore, unless we have good knowledge of these contextual factors and we usually do not that would enable us to have a qualified guess as to whether the population-level trends should hold in the selected case, Bayesian logic would suggest that we should proceed in a cautious fashion by setting our prior confidence for the selected case as relatively low. Central to Bayesian logic is the intense evaluation of what diverse types of empirical material can potentially tell us about the veracity of causal theories. In the application of Bayesian logic to process tracing, the literature tells us that we should focus on evaluating two questions in particular:

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Chapter 7 : Process-Tracing Methods in Social Science - Oxford Research Encyclopedia of Politics

A Rationalist Methodology for the Social Sciences David Sylvan and Barry Glassner. Blackwell, pp. \$

Rationalism is a theory that recognises reason as the unique source of true knowledge. Rationalism was one of two approaches that dominated 17th century Western philosophy, the other being empiricism. Descartes, Spinoza and Leibnitz are regarded as the triumvirate of classical rationalists. Rationalism is opposed to empiricism, which makes experience sensory perception, etc. Cartesian metaphysics underpins much rationalist thought. Later rationalists, such as Spinoza and Leibnitz, in their different ways, attempted to reconcile the dualism created by Descartes whilst retaining the centrality of reason and of god. Both these later rationalists proposed a world very different from the world of appearances. Types of rationalism Cartesian rationalism Cartesian metaphysics is the name given to the rationalist perspective developed by Descartes in the first half of the 17th century. Descartes maintained that mathematical logic was the exemplar that underpinned his new system of knowledge and that was applicable to all forms of science. Descartes following Bacon claimed to have revolutionised method. That is, in theory he calls into question all preconceptions. In practice, however, he never called into question his own preconceptions about the existence of God. The method of doubt ultimately casts doubt on all empirical observation about the external world as it may be the result of deceived senses, perhaps of dream. However, Descartes argued that there could be no doubt about his own existence as long as he thought he was something. This is the famous cogito ergo sum or je pense, donc je suis I think therefore I am. It comprises the radical separation of mind and matter and the assertion that the only tangible proof of existence is thought. Descartes takes this one stage further to argue that thought must be guaranteed by God. God therefore exists; because God exists Descartes thinks and because Descartes thinks Descartes exist; at the very least as a thinking being. That is, that which requires nothing but itself in order to exist. For Descartes, the only substance must be god, as supreme being, requires nothing else for its existence. However what this proof does not do is guarantee the material reality either of the earth, material objects or individuals. The Cartesian view is thus at variance with empiricism as it supposes that people can grasp general truths about reality independently of experience. It also provides for a differentiation between the concerns of secular science the study of the material world and those of religion the study of the spiritual, or realm of the mind. Radical unitary rationalism Radical unitary rationalism was an attempt to develop the Cartesian view of rationalism and to confront the dualism of mind and matter that Descartes had proposed. Spinoza, in developing rationalism, argued that the world was unitary, that the totality was in effect one substance and any apparent difference was merely a different facet of the substance. For Spinoza, the totality was a sort of fusion of nature and god. Further, god could not be separate from the world because that would make god finite rather than infinite which for Spinoza was irrational. Spinoza solves the Cartesian dualist problem, in effect, by denying its possibility. Everything is part of the one unitary substance that has an infinity of attributes. Of the infinity of attributes of the totality, Spinoza argued that only two are accessible, the rest is faith. The two accessible attributes are thought or consciousness and extension which are identifiable objects. Identifiable objects are simply temporary contours on the fabric of the totality. Spinoza, like Descartes has a circular argument of the existence of god, but he differs in asserting the unitary nature of all things. There is not much room for a common sense notion of freewill in this radical unitary approach to rationalism. Radical non-unitary rationalism Radical non-unitary rationalism is a rather strange idea for modern readers based on the idea that the world consists only of spiritual entities. Leibnitz argues that there is an infinity of spiritual items or souls called monads. These souls range from god through humans to the ultimate constituents of material things. It is thus mistaken to refer to matter as distinct from spirit or mind. It is all part of the same infinite realm of non-reducible elements. Anything that can be called matter can be further reduced to its simple spiritual elements. There is no mind-matter dualism for Leibnitz as all matter is essentially phenomenal; it is not real matter, if it exists it is mental in some form. Leibnitz explains what

appears to be causality by arguing that in the infinite array of monads each has perception of all the others and they do not interact but simply correspond. Thus there is a pre-established harmony in this mutual awareness of monads that proves the existence of god. There is then no need for notions of causality, as it is god who is doing everything all the time. This seems to inhibit any idea of freewill, but Liebnitz gets round this by suggesting that while god creates all monads and equips them for action they are perfectly self-determining. Rationalism is an approach to life based on reason and evidence. Rationalism encourages ethical and philosophical ideas that can be tested by experience and rejects authority that cannot be proved by experience. Because rationalism encourages people to think for themselves, rationalists have many different and diverse ideas and continue in a tradition from the nineteenth century known as freethought. However, most rationalists would agree that: There is no evidence for any arbitrary supernatural authority e. The best explanation so far for why the natural world looks the way it does is the theory of evolution first put forward by Charles Darwin. All human beings should have fundamental rights. Some rationalists and humanists go further and argue that animals should also have rights as they are living, sensate beings. Society is should be an "open society", where each individual is able to live "freely and equally practise their chosen life stance, and in which human potential is realised to the benefit of the individual and the community at large. Perhaps the best general description of rationalism is the view that there are some distinctive aspects or faculties of the mind that 1 are distinct from passive aspects of the mind such as sense-perceptions and 2 somehow or other constitute a special source perhaps only a partial source of knowledge.

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Chapter 8 : Rationalism - By Movement / School - The Basics of Philosophy

Rationalism may be understood as the philosophical position asserting a certain distinctive epistemic status for certain classes of claims – that asserts or supposes that there are a priori knowable truths.

A huge subject broken down into manageable chunks Random Quote of the Day: It is usually associated with the introduction of mathematical methods into philosophy during this period by the major rationalist figures, Descartes, Leibniz and Spinoza. Rationalism is any view appealing to intellectual and deductive reason as opposed to sensory experience or any religious teachings as the source of knowledge or justification. Thus, it holds that some propositions are knowable by us by intuition alone, while others are knowable by being deduced through valid arguments from intuited propositions. It relies on the idea that reality has a rational structure in that all aspects of it can be grasped through mathematical and logical principles, and not simply through sensory experience. Rationalists believe that, rather than being a "tabula rasa" to be imprinted with sense data, the mind is structured by, and responds to, mathematical methods of reasoning. Some of our knowledge or the concepts we employ are part of our innate rational nature: See the section on the doctrine of Rationalism for more details. Rationalism is usually contrasted with Empiricism the view that the origin of all knowledge is sense experience and sensory perception, and it is often referred to as Continental Rationalism because it was predominant in the continental schools of Europe, whereas British Empiricism dominated in Britain. However, the distinction between the two is perhaps not as clear-cut as is sometimes suggested, and would probably not have even been recognized by the philosophers involved. Although Rationalists asserted that, in principle, all knowledge, including scientific knowledge, could be gained through the use of reason alone, they also observed that this was not possible in practice for human beings, except in specific areas such as mathematics. It has some similarities in ideology and intent to the earlier Humanist movement in that it aims to provide a framework for philosophical discourse outside of religious or supernatural beliefs. But in other respects there is little to compare. While the roots of Rationalism may go back to the Eleatics and Pythagoreans of ancient Greece, or at least to Platonists and Neo-Platonists, the definitive formulation of the theory had to wait until the 17th Century philosophers of the Age of Reason. He believed that knowledge of eternal truths e. For instance, his famous dictum "Cogito ergo sum" "I think, therefore I am" is a conclusion reached a priori and not through an inference from experience. Descartes held that some ideas innate ideas come from God; others ideas are derived from sensory experience; and still others are fictitious or created by the imagination. Of these, the only ideas which are certainly valid, according to Descartes, are those which are innate. He believed that all aspects of the natural world including Man were modes of the eternal substance of God, and can therefore only be known through pure thought or reason. He believed that ideas exist in the intellect innately, but only in a virtual sense, and it is only when the mind reflects on itself that those ideas are actualized. He posited that although humans attain knowledge through ideas rather than sensory perceptions, those ideas exist only in God, so that when we access them intellectually, we apprehend objective truth. His views were hotly contested by another Cartesian Rationalist and Jesuit Antoine Arnauld, although mainly on theological grounds. These philosophers produced some of the most powerful and influential political and philosophical writing in Western history, and had a defining influence on the subsequent history of Western democracy and Liberalism. During the middle of the 20th Century there was a strong tradition of organized Rationalism represented in Britain by the Rationalist Press Association, for example, which was particularly influenced by free thinkers and intellectuals. However, Rationalism in this sense has little in common with traditional Continental Rationalism, and is marked more by a reliance on empirical science. It accepted the supremacy of reason but insisted that the results be verifiable by experience and independent of all arbitrary assumptions or authority.

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Chapter 9 : Empiricism - Wikipedia

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The theoretical foundations of modern philosophical empiricism are found in the works of John Locke, George Berkeley, and David Hume, and in the nineteenth-century philosopher William James. These philosophers inquired about the limits and scope of the human mind, and argued that experience itself is the primary source of all knowledge. Empiricism is thus a theory of knowledge that highlights the importance of experience. The term experience can be defined minimally, as in terms of the senses, or expanded to include all forms of consciousness. Locke argued that knowledge is restricted to ideas generated by objects that one experiences through the senses ideas of sensation or by reflection upon our mental operations on those ideas ideas of reflection. In this complex sense, knowledge and human understanding in general including unscientific beliefs such as justice originate in experience, as the origin of all ideas is in experience, which involves two logical levels, sensation and reflection. Berkeley argued in both *Principles* and *Dialogues* against the actual existence of matter, and claimed in his dictum "to be is to be perceived" or to perceive. This means that objects can never be understood independently of their ideas since, for Berkeley, the object and sensation are the same thing. Berkeley maintained that there are only ideas and minds, or the location where ideas occur. Thus a thing is understood as the sum of perceived qualities. Although for Berkeley it is impossible to think of anything except as it related to the mind, both Berkeley and Locke believed that all knowledge about the existence of things and the reality of matter depends on visual and sensory experience. In his work *Enquiry Concerning Human Understanding*, Hume claimed that human senses allow people to perceive, and these perceptions made up of impressions and ideas are the contents of the mind. The original thought itself, according to Hume, is an impression, and an idea is only a copy of an impression. The difference between the two is their vividness, for when one reflects upon these impressions one has ideas of them. In his metaphysics, James wrote in a tradition that focuses on the process of consciousness based in experience—a "process metaphysics. In this way, human consciousness consists of experienced relations a "stream of thought", which are themselves experienced affectively and effectively, as one both transforms and is transformed by these experiences. Absolute unity of reality, for James, is "ever not quite," as "fact" is based on experience, and the multiple experiences of experience itself. All of the aforementioned philosophers wrote in a tradition that opposes the rationalist view, represented most notably by the French mathematician and philosopher Rene Descartes, that humans enter the world with innate ideas built into the mind itself. Instead, these philosophers argue that persons must rely on experience itself to inform knowledge claims. Although a researcher may use empirical methods, it does not follow that he or she is a philosophical empiricist, and does not make one an empiricist per se. There are thus many forms of empirical research methods. Auguste Comte, a sociologist and philosopher, held that knowledge of the world arises from observation, and conceived of positivism as a method of study based on the strict use of the scientific method. He asserted that authentic knowledge or all true knowledge is scientific knowledge that is objective, predictable, and has logical structures. For logical positivists, all knowledge should be based on logical inference, justification, and verifiability through experience or observation. Meaningful statements fall into two categories for the logical positivist, a priori analytic knowledge necessary truths that are knowable prior to experience; for example, all circles are round and a posteriori synthetic knowledge or contingent knowledge that is verified by sensory experience; for example, it is raining outside. Quantitative methodology is a kind of scientific empiricism and refers to the compilation and analysis of numerical data, which for the social scientist is empirical in nature since it can be tested and verified validated or falsified by empirical observation. Moreover, quantitative methodology is positivistic since it relies on scientific and systematic observation and experiment, and can be thought of as the scientific approach to the study of sociocultural life. Nonetheless, although social scientists do not ask

underlying metaphysical questions about the actual existence of objects, they are indeed concerned with the experience of social objects and phenomena. For example, the first professor of sociology, Emile Durkheim, in his book *The Rules of Sociological Method*, enshrined this idea with his conceptualization of a "social fact," which is as objective as facts are in the natural sciences. For Thomas Kuhn, empirical methods are capable of elucidating and eradicating problems within paradigms during periods of "normal science. Social constructivism is a philosophical theory of knowledge that states that knowledge itself is contingent upon social experience, context, convention, and human perception. Some examples of socially constructed knowledge are gender feminine and masculine, sexuality, and racial categories. This theory of knowledge does not necessarily reflect any external "transcendent" metaphysical reality, and is instead based on a socially constructed reality as opposed to an ontological reality. However, the notion of experience is still important for a constructivist, as experiences between and among individuals differs within and outside of varying contexts, thereby allowing for different "realities," some of which are based in oppression for example, women, minorities, and homosexuals. Empirical methods have been used to study race, gender, sexuality, and religion, among a plethora of other social phenomena such as crime, deviance, attitudes, and beliefs. Considering race, there has been much research done in social science regarding migration, connections with class, connections to skin color, social surveys of self-image and self-regard among ethnic minorities, and measuring prejudice in terms of scales of social and ethnic "distance. Gender has been studied in the social sciences through the analysis of images of women in media and culture. These empirical studies of symbols and images range from studies of archaeological statues of goddesses to contemporary studies of how women are portrayed in film or advertisements. Discrepancies in gender stratification and sexism can be analyzed from a quantitative approach, as can the important issue of violence against women. Additionally, empirical studies of gender also inform analyses of family relations, employment patterns, and distribution of wealth, education trends, and politics. Using empirical methods to study sexuality, social scientists focus on topics such as sexual orientation, contraception, prostitution, gender identity, and attraction. Additional research can also be found on teen pregnancy, fertility, pornography, activist movements, sexual violence, sex education, and queer studies. One of the most important works in this area is *The Archaeology of Knowledge* by Michel Foucault. Religion has also been analyzed empirically in terms of socioeconomic status, the family, marriage patterns, social class, family violence, cohabitation, political affiliation, church attendance, opinions about religious matters, as well as feelings, beliefs, and behaviors pertaining to religion as measured by social surveys. Louis Althusser critiqued empiricism as a methodological stance and argued against the empirical process of knowledge, claiming that theoretical discourse is a "production," making empiricism itself ideological and dogmatic, and therefore not scientific. According to Althusser, "facts" of theoretical discourse are tied to theoretical practice, making knowledge itself a form of discourse.