Part 1: Thinking and Reflecting

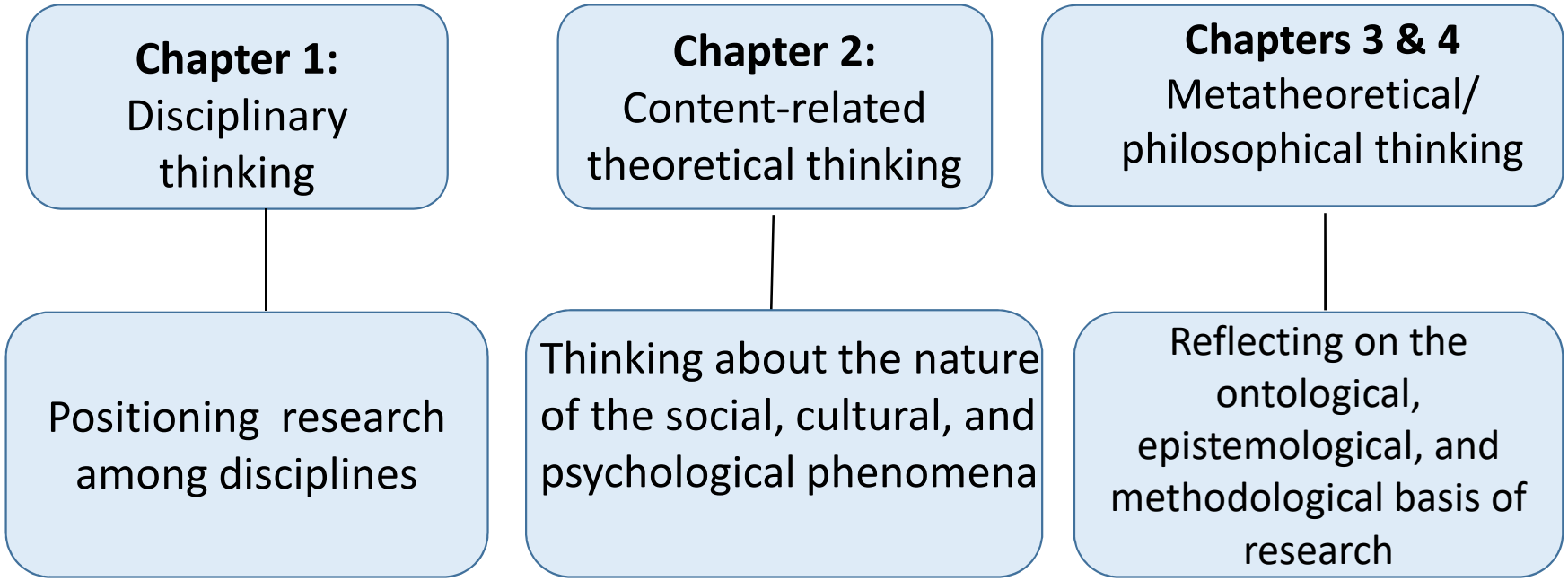
Chapter 3
Philosophical thinking: Induction, Deduction, and Positivism

Fundamentals of Research on Culture and Psychology: Theory and Methods

Valery Chirkov

Created by Valery Chirkov to accompany Chirkov: *Fundamentals of Research on Culture and Psychology*, 2016, Routledge/Taylor & Francis

Part 1: Thinking and Reflecting about Research



Chapter 3: Introduction
Philosophical Thinking

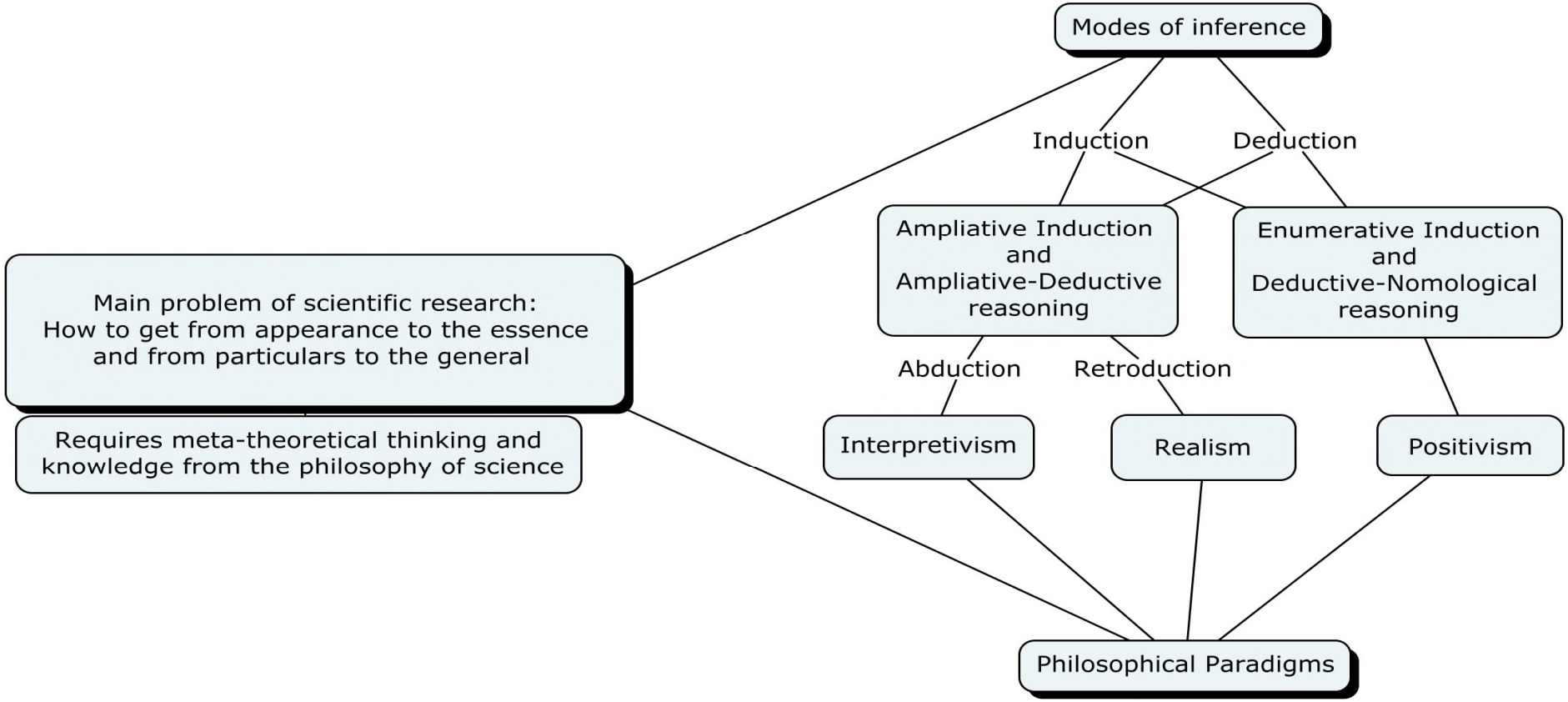
Philosophical thinking is related to the *philosophy of science*, which means a theorizing about the *ontology*, *epistemology*, and *methodology* of a research and its objects.

Ontology addresses questions about the nature and structures of the realities under investigation;

Epistemology provides assumptions about the nature and sources of knowledge that a scholar is planning to discover;

Methodology answers the questions about the main ways of obtaining knowledge about these realities.

Chapter 3: Introduction
Philosophical Thinking



The ultimate goals and challenges of scientific research

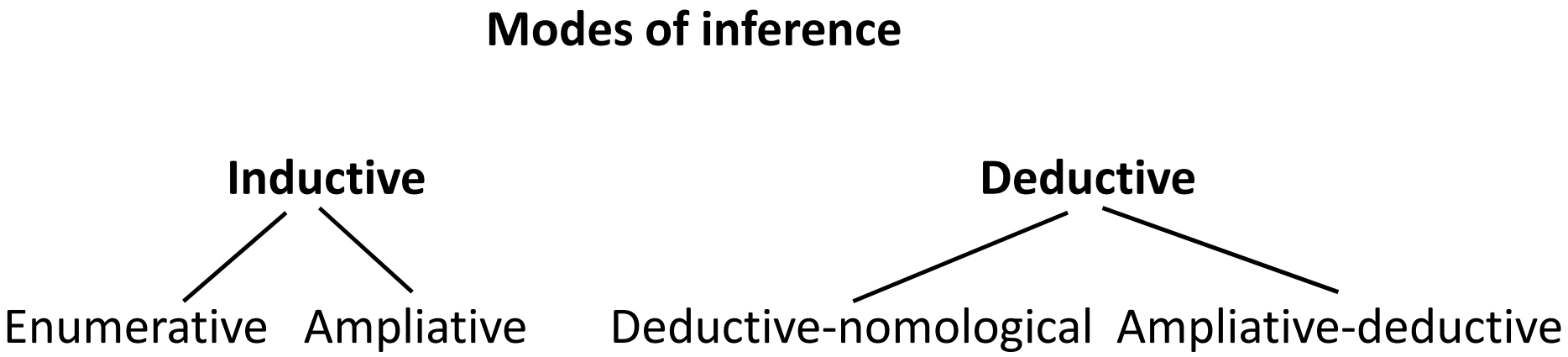
The problem of any scientific research is how to get from appearances to the essence and from particulars to the general

Two main constituents of philosophical thinking about research

Modes of inference prescribe how to reason about the main steps and final goals of a scientific inquiry.

Paradigms embrace particular modes of inference and provide the basis for resolving the above problem of scientific research by answering ontological, epistemological, and methodological questions about an inquiry.

Two main constituents of philosophical thinking about research



Induction and its forms

Induction encompasses "bottom-up" thinking from particulars to generals. It is a form of reasoning comprised of making inferences from a limited number of observed or experienced instances to general propositions.

Elaborated by:

Sextus Empiricus (c. 160–210 AD)

Roger Bacon (1220–1292)

Francis Bacon (1561–1626)

David Hume (1772–1772)

John Stuart Mill (1806–1873)

Induction and its forms (continued)

Enumerative or naïve induction: researchers observe a limited number of instances and then induce and generalize to a larger number of similar instances that have not been observed.

Typically, the goal is to discover empirical regularities like "If A, then B" and generalize them to a larger number of participants (enumerate them).

Weakness:

This form of induction does not generate new knowledge over and above what has already been empirically discovered. It does not allow researchers to make a breakthrough toward the essence of things beyond the empirical regularities established in a sample.

"For the induction which proceeds by simple enumeration is a childish thing, its conclusions are precarious, and it is exposed to the danger of the contrary instance; it normally bases its judgment on fewer instances than is appropriate, and merely on available instances" (Bacon 1620/2000, p. 83).

Induction and its forms (continued)

Many philosophers and researchers, again starting with Bacon, believe that only **ampliative induction** has value for scientific research because, unlike enumerative induction, it increases our knowledge about the worlds (McMullin, 1992; Peirce, 1960; Skyrm, 1999; Urbach, 1987). Ampliative induction allows researchers to generate new knowledge that is not given in the premises.

"But the induction which will be useful for the discovery and proof of sciences and arts should separate out a nature, by appropriate rejections and exclusions; and then, after as many negatives as are required, conclude on the affirmatives" (Bacon, 1620/2000, pp. 83–84).

JN9

Induction and its forms (continued)

Problem of induction: conclusions are always inconclusive and falsifiable.

Major contributors:

David Hume and **Karl Popper**

Slide 11

JN9 This page looks naked, with only one line. Is there anything else you can add? Any quotations or examples?
JN, 9/14/2015

Context of discovery and context of justification

The *context of discovery* is concerned with the logical, psychological, social, and historical factors that lead to finding new knowledge about how the worlds operate and about the structures and mechanisms that explain empirical events and their regularities.

Researchers' focus within the *context of justification* is an assessment of the validity and truthfulness of discovered theoretical statements.

Typically, philosophers of science have been concerned with the justification of already discovered knowledge. But the method of making discoveries remains an enigma.

Empiricism and rationalism

Empirical: Any research that is based on collecting evidence from observations and direct experiences. This evidence may be presented in words or numbers and may be analyzed either by qualitative or quantitative techniques.

Empiricism is a philosophical epistemological doctrine that states that scientific knowledge should be based solely on empirical or sense data and the generalizations that are rooted in these data.

British empiricists, such as **John Locke** (1632–1704), **George Berkley** (1685–1753), and **David Hume** (1711–1776), were followed by the 19th century philosophers, where the most prominent was **John Stuart Mill** (1806–1873).

Empiricism and rationalism

Rational: Conclusions based on knowledge, logical inferences, conjectures, insights, and interpretations that bind empirical evidence into theoretically coherent wholes and allow researchers to make inferences about the essences and causes of things and events.

Rationalism is a philosophical epistemological doctrine that states that scientific knowledge should be based exclusively on reason and rational thinking. It is contrasted with empiricism. Rationalists believe that rational knowledge takes priority over empirical knowledge. In scientific research, collecting empirical evidence and rationally devising conclusions about it are two sides of the process of scientific discovery and justification.

Continental rationalists: **René Descartes** (1596–1650), **Baruch Spinoza** (1632–1677) and **Gottfried Wilhelm von Leibnitz** (1646–1716).

Deduction and its forms

Deductive reasoning moves from a general statement considered universally true to a conclusion about the present or future states of particular cases.

For example:

Premise 1 - empirical generalization or near-universal scientific law states: *Every morning the sun rises in the East.*

Premise 2 - a particular event is presented: *It is morning*.

Conclusion - a deductive predictive inference: *The sun will rise in the East.*

Deduction and its forms (continued)

Deductive-nomological mode of inference is based on deducing from empirical generalizations, which logical positivists consider to be scientific laws (or *nomos*). (Consider the example about the rising sun from the previous slide)

Ampliative-deductive mode of inference is based on deducing from the rational insights produced by ampliative inductive inferences. A researcher proposes a conjecture/hypothesis about a possible causal mechanism of a phenomenon based on an ampliative induction, and then hypothesizes that, if this conjecture is correct, particular empirical evidence could be observed.

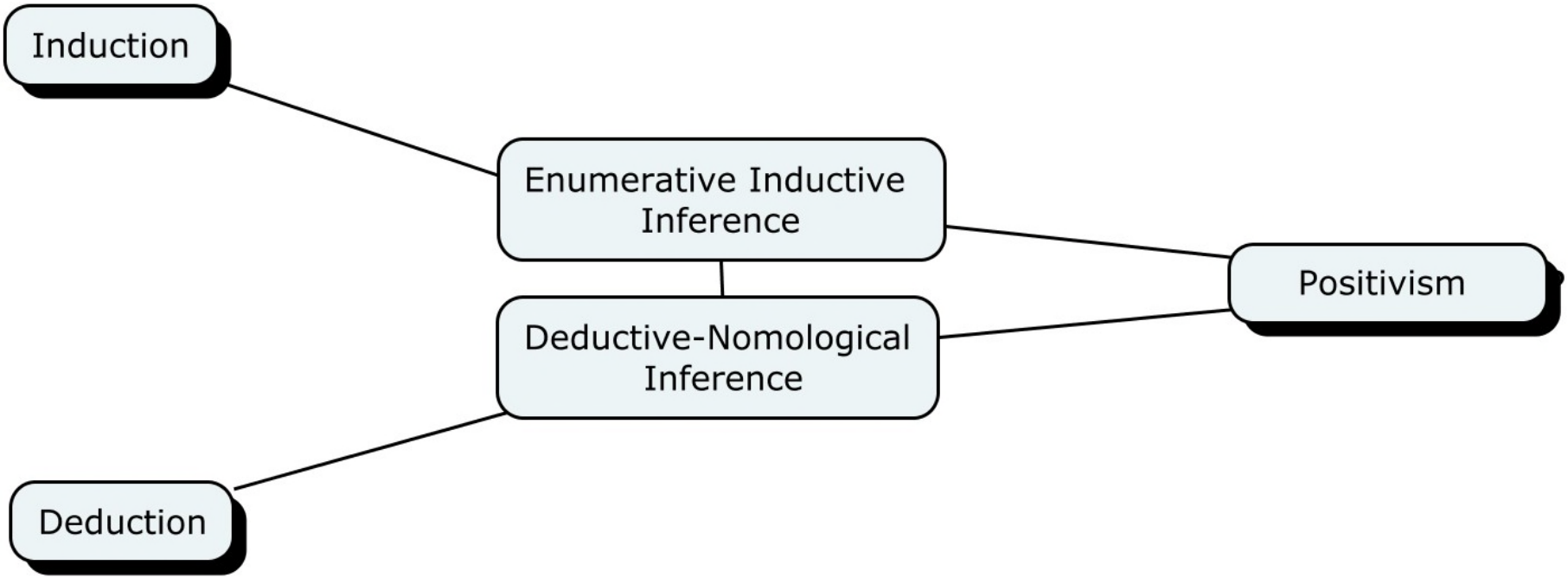
The positivist paradigm

Ontologically, the positivist paradigm follows shallow or naive realism, meaning that the reality for positivists is represented only by the sense data that correspond to the appearances or surface layers of the realities. Positivists deny the existence of unobservables.

Epistemologically, positivists rely on radical empiricism, believing that scientific knowledge is comprised of statements about empirical regularities among and generalizations about particular instances.

Methodologically, modern positivist researchers usually use variable-based approaches accompanied by various sampling procedures

The positivist paradigm (continued)



Possible applications of the positivist paradigm

1. Developing concepts and conceptual frameworks.

2. Establishing empirical regularities among variables that may lead to successful inferences about underlying causal mechanisms.

3. Utilizing enumerative induction may be useful for some types of social research.

4. Discovered empirical regularities may be used in some applied research.

A critique of positivism

1. Positivist research is not capable of generating new knowledge over and above empirical regularities.
2. Many positivists accept the radical empiricist approach that rejects the existence of unobservable generative powers and causal mechanisms.
3. For positivists the goal of science is an accumulation of statements about the patterns and regularities among variables JN24
4. Theoretical analysis is considered to be too metaphysical, the unnecessary luxury of exceptional scholars and a waste of time for regular research workers. JN25
5. The education of students within this paradigm is based on teaching the philosophy of positivism, the rules for operationalizing and measuring variables, and the statistical analysis of these data.

Slide 20

JN24 is to accumulate statements
JN, 9/14/2015

JN25 colon instead of comma
JN, 9/14/2015

A critique of positivism (continued)

6. In studying culture, positivists ignore its intentional, intersubjective and systemic nature. Positivist social researchers instead transform these realities into sets of variables (for example, individualism and collectivism) and make them measurable in a standard way across samples from different cultural settings.

The use of statistics within positivist research and its critiques

1. Statistical positivists try to quantify complex, multidimensional, and qualitatively heterogeneous phenomena that change across time and space and depend on the contexts where they happen and the histories of their bearers. Such phenomena cannot be reduced to numbers.
2. Statistical associations among variables do not represent causal relations and mechanisms: “Correlation does not mean causation”.
3. Statistical associations are based on inter-individual covariances; conversely, real generative mechanisms function within cases based on intra-individual or intra-sociocultural processes.
4. Statistical regularities are incapable of uncovering the systemic nature of sociocultural and psychological phenomena

The use of statistics within positivist research and its critiques

5. The language of statistics creates 'statistical reality' that exists separately and relatively independently from the reality where the phenomena under investigation exist and function.
6. Statistically-oriented researchers cannot handle exceptions and outliers that do not fit their models.
7. The obsession with statistics in student teaching leads to the substitution of creative insightful scientific thinking with semi-algorithmic statistical techniques.
8. Too often quantitative culture and psychology studies do not use probability-based and representative samples required by their statistical methodology.

The use of statistics within positivist research and its critique

9. Statistical positivists place too strong an emphasis on making conclusions about discovered regularities on significance testing.

Chapter 3: Conclusion

a. **Philosophical thinking** addresses first of all the fundamental problem of any research: how to get from the surface to the essence of things and from particulars to the general.

b. Two aspects of this thinking were outlined: modes of inference and philosophical paradigms.

c. Induction and deduction with their corresponding forms were discussed.

d. The positivist paradigm is comprised of enumerative induction and the ampliative deductive mode of inference.

e. A critique of this paradigm is provided.