

1. PHILOSOPHY AND EXPLANATION

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1

1a. NATURAL PHILOSOPHY

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2

Outline

1. Philosophy and science
2. Natural philosophy
3. 3-analysis
4. Why explanation matters



3

Philosophy and Cognitive Science

1. Philosophy is the attempt to answer fundamental questions about knowledge, reality, and morality.
2. Cognitive science is the interdisciplinary investigation of mind and intelligence, embracing psychology, neuroscience, linguistics, philosophy, anthropology, and computer modeling.
3. Possible relations: Philosophy is superior, inferior, continuous, or **interconnected?**

4

Approaches to Philosophy

1. Religious: philosophy serves religion (Aquinas).
2. Historical: philosophy discusses the past (Rorty).
3. A priori: philosophy discovers what must be true (Plato, Kant, Frege, Husserl, Kripke).
4. Analytic: philosophy clarifies concepts using logic and language (Moore, Russell < 1919, Wittgenstein, Williamson).
5. Naturalistic: philosophy is interconnected with science (Thales, Epicurus, Aristotle, Hume, Mill, Peirce, Russell > 1920, Quine, ...).

5

Philosophy Differs from Science

1. **Generality:** sciences ask specific questions (e.g. What is an atom?) whereas philosophy asks broader questions (e.g. What is matter? How do we know whether atoms exist?).
2. **Normativity:** how the world should be, not just how it is.

These are matters of degree, because excellent scientists encounter general questions, and applied science is normative.

6

Science Needs Philosophy

Cutting edge science invariably encounters general epistemological questions (e.g. what justifies a theory) and general metaphysical questions (e.g. what kinds of entities are real).

Human uses of science invariably encounter normative questions (e.g. how should science be used to improve society; how can people think better).

Science and philosophy are more than continuous: they are **interdependent**.

7

Natural Philosophy

1. Identify important general and normative questions about knowledge, reality, and morality.
2. Identify a range of answers to these questions.
3. Identify relevant scientific evidence and theory.
4. Select philosophical answers most coherent with science.

8

Thought Experiments

1. Use thought experiments to generate hypotheses and show contradictions in opposing views.
2. But thought experiments do not justify *a priori* truths:
 - a) Bad source of evidence
 - b) Circular
 - c) Philosophical intuitions are unreliable

Thagard 2014 "Thought Experiments Considered Harmful"

9

Conceptual Analysis

1. Based on empirically false theory of concepts, that they are definable using necessary and sufficient conditions (Murphy 2002, *Big Book of Concepts*).
2. Assumes that everyday concepts are philosophically legitimate.
3. Leads to metaphysical excess (Plato's forms, essences, possible worlds).
4. Leads to epistemological skepticism or obscurantism (Moore's good, Williamson's knowledge as primitive).

10

3-Analysis

1. Experimental evidence supports exemplar, typical feature, and explanation-based theories of concepts (Murphy 2002, *Big Book of Concepts*).
2. The semantic pointer theory of concepts provides a unified neural account of concepts (Blouw, Solodkin, Thagard, and Eliasmith (forthcoming)).
3. So, to analyze a concept, identify its:
 1. exemplars: standard examples
 2. typical features (prototype, stereotype)
 3. explanatory role: what it explains, and what explains it

11

3-Analysis of Philosophy

1. Exemplars: People, e.g. Plato, Aristotle ...
Questions: what is knowledge, reality, morality? Etc.
2. Typical features: generality, normativity, disagreement ...
3. Explanations:
 1. Philosophy explains why some questions are perennially hard to answer, etc.
 2. The practice of philosophy is explained by the psychological need for people to answer fundamental questions encountered in science and everyday life.

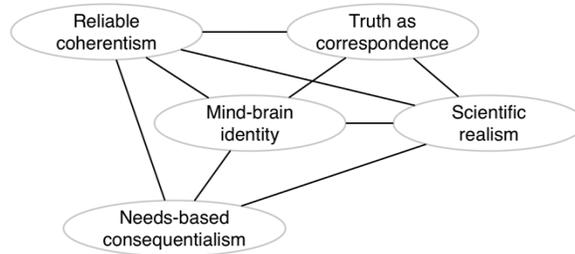
12

Discussion

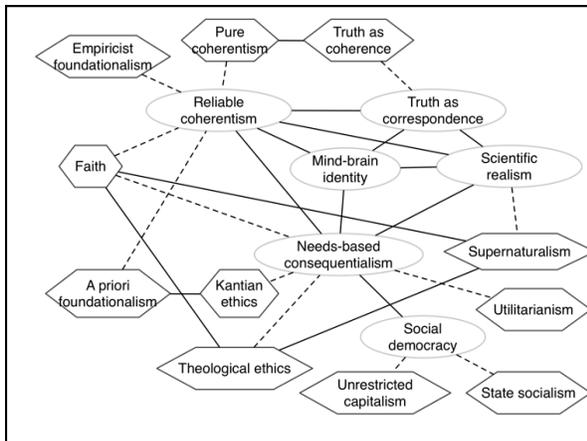
1. What view of philosophy (religious, historical, a priori, analytic, naturalistic) do you find most appealing?
2. Do a 3-analysis (exemplars, typical features, explanations) of some important philosophical concept, e.g. *know*, *real*, *good*.

13

The Coherence of Philosophy



14



Why Explanation Matters to Philosophy

1. Explanation is one of the goals of science, philosophy, and thinking in general. Other goals: truth and control. "Philosophy begins in wonder."
2. The best reasoning method is inference to the best explanation:
 1. Collect evidence by observation & experiment.
 2. Generate competing hypotheses that explain the evidence.
 3. Accept the hypotheses that are part of the most coherent general explanatory account.

16

3-Analysis of Explanation

1. Exemplars: Newton, Darwin, Pasteur, Einstein, rise of Chinese economy, etc.
2. Typical features:
 1. Puzzling facts to be explained.
 2. Explanatory pattern – various
 3. Resulting understanding – satisfaction
3. Explanation explains: puzzlement, pursuit, satisfying understanding. But what explains explanation?

17

Scientific Knowledge vs. Ordinary

1. Observational: science is systematic, experimental (manipulation), aggregative (effects), statistical, alert to confounding factors.
2. Theoretical: science is mathematical, mechanistic, comparative, precise entities, looks for *best* explanation.
3. Social: science uses peer review, pools evidence, considers competing hypotheses, pursues group goals (truth, explanation, control).

18

Styles of Explanation: Different Patterns

1. Explanation is telling a story that answers a question. Narrative, e.g. humans evolve?
2. Explanation is explaining away, elimination. E.g. soul.
3. Explanation is deduction from scientific laws. Deductive-nomological.
4. Explanation is showing how something results from a causal mechanism.

19

1a. Conclusions

1. Philosophy can thrive through interaction with cognitive science.
2. Generality and normativity continue to make philosophy crucial.
3. Explanation is important for philosophy.



20

1b. Narrative Explanation

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21

Outline

1. Examples
2. Features
3. Strengths
4. Weaknesses
5. Improvements



22

Narrative Explanation

Explanation is telling a story that answers a question.

Example: Why does the universe exist?

Christian narrative: God -> heaven & earth -> light -> waters & land -> plants -> animals -> humans

Chinese narrative: grand inception -> nebulous void -> qi -> heaven & earth -> yin & yang -> fire & water

23

Christian Narrative

1 In the beginning God created the heaven and the earth.2 And the earth was without form, and void; and darkness [was] upon the face of the deep. And the Spirit of God moved upon the face of the waters.

3 And God said, Let there be light: and there was light.4 And God saw the light, that [it was] good: and God divided the light from the darkness.5 And God called the light Day, and the darkness he called Night. And the evening and the morning were the first day.

25 And God made the beast of the earth after his kind, and cattle after their kind, and every thing that creepeth upon the earth after his kind: and God saw that [it was] good.26 ¶ And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.

24

Chinese Narrative

When Heaven and Earth were yet unformed, all was ascending and flying, diving and delving. Thus it was called the Grand Inception. The Grand Inception produced the Nebulous Void. The Nebulous Void produced space-time, space-time produced the original qi. A boundary [divided] the original qi. That which was pure and bright spread out to form Heaven; that which was heavy and turbid congealed to form Earth. It is easy for that which is pure and subtle to converge but difficult for the heavy and turbid to congeal. Therefore, Heaven was completed first; Earth was fixed afterward. The conjoined essences of Heaven and Earth produced yin and yang. The essences of yin and yang caused the four seasons. The scattered essences of the four seasons created the myriad things. The hot qi of accumulated yang produced fire; the essence of fiery qi became the sun. The cold qi of accumulated yin produced water; the essence of watery qi became the moon. The overflowing qi of the essences of the sun and the moon made the stars and planets. To Heaven belong the sun, moon, stars, and planets; to Earth belong waters and floods, dust and soil. Source: Wikipedia – Chinese creation myths

25

Narrative Explanation in Natural Science

1. Physics (cosmology): Big bang -> stars -> solar system -> earth
2. Chemistry (formation of elements by nucleosynthesis): hydrogen, helium, carbon, oxygen, magnesium, nickel
3. Biology (evolution): plants -> corals -> jellyfish -> fish -> reptiles -> birds, mammals -> primates -> apes -> humans
4. Medicine: infection -> body fluids -> Ebola

26

Narrative Explanation in Social Science

1. Economics (Chinese economy since 1979): reform -> clothing -> computers, autos
2. Politics (Western democracy): Magna Carta -> parliament -> universal voting
3. Sociology (capitalism): Catholicism -> Protestant reformation -> work ethic -> successful industry
4. Linguistics: evolution of languages
5. Anthropology: evolution of religions

27

3-Analysis of Narrative Explanation

1. Exemplars: mythology, cosmology, evolution, social change
2. Typical features:
 1. Puzzling facts to be explained.
 2. Explanatory pattern: story = coherent sequence of events
 3. Resulting understanding – satisfaction
3. Explanation explains: desire to know how situations develop

28

Discussion

How did you become a philosophy student? Outline and evaluate a narrative explanation.

29

Strengths of Narrative Explanation

1. Easy to understand. Stories are culturally ubiquitous.
2. Recognize historical development: the present comes from the past.
3. Emotionally satisfying. Velleman: emotional cadence: wonder -> resolution.
4. Provide (or assume connections) between events.

30

Weaknesses of Narrative Explanation

1. What are the connections between events? Necessity, probability, causality?
2. How can the connections be based on evidence?
3. How can competing narratives be evaluated?
4. Is satisfaction independent of scientific goals (truth, control)?

31

Improving Narrative Explanation

1. Establish causal connections between events using psychological and social mechanisms.
2. Compare alternative narratives using causal coherence and wide range of evidence.
3. Accept a narrative only by inference to the best explanation, not motivated or fear-driven inference.

32

Application to Consciousness

1. Religious narrative: minds created by God.
2. Evolutionary narrative: cells -> neurons -> brains -> big brains -> consciousness
3. Panpsychist narrative: consciousness always part of the universe

33

1b. Conclusions

1. Narrative explanations about in ordinary life, religion and science.
2. Narrative explanations are psychologically appealing.
3. But they are defective in objectivity and connectivity.



34

