1. Epistemological Theories
1.1. Levels of epistemological theorizing

Domain-specific level: theories about *kinds* of knowledge (perceptual, inductive, mathematical, other minds, etc.)

Reasoning level: theories that apply to all/most of these kinds of knowledge (e.g. theories of reasoning)

Structural level: theories that describe how the various constituents of cognition fit together to provide justification/knowledge, i.e. how justification is structured (foundationalism, coherentism, and direct realism).

- P&C assume that this structure is going to be complex.

Analytical level: theories that explain why epistemic justification has the structure that it does (reliabilism, internalism)

- Analytical theories should provide general principles that select one structural theory over another, i.e. that unify the different constituents of cognition in a manner that delivers justification/knowledge.

1.2. Kinds of cognition

Epistemic cognition: an agent's thinking about what he/she/it should believe.

Practical cognition: an agent's thinking about what he/she/it should do.

Rational cognition: an agent's *correct* thinking about what he/she/it should believe/do.

Procedural accounts of rationality focus on whether certain procedures are rational or not. These might be contrasted with person-based accounts of rationality, outcome-based accounts of rationality, etc.

P&C will offer a procedural account of rational cognition as a basis for an analytical theory of justification.

2. Pollock and Cruz's Analytical Theory

A1.   A theory of human rationality is a competence theory of human cognition.

- *Recall*: competence with respect to an activity A is an idealized capacity to do A; performance is the actual doing of A. (Traditional internalist analytical theories have tended to focus on performance rather than competence.)

A2.   A belief is justified iff it is held in compliance with the cognizer's epistemic norms.

- Compliance with a norm = not violating the norm + being guided by the norm.
- Accordance with a norm = not violating the norm.
- Traditional externalist accounts don't require guidance, and hence focus only on accordance. See previous chapter.

A1 and A2 are naturalistic in that: (1) cognition consists of natural processes that must be discovered through empirical investigation, (2) epistemic norms are the norms that actually govern our cognition (not some idealized version of our cognition).

3. Naturalized Epistemology

Naturalized epistemology aims to make traditional epistemology responsive to empirical science.

Many epistemologists assume that only externalism is compatible with naturalism; P&C disagree.

But what is naturalism? Most epistemologists find *ontological naturalism* uncontroversial: epistemic terms such as knowledge or justification in terms of entities/properties studied by empirical science. In effect, this amounts to the modest requirement that epistemic entities/properties shouldn't be spooky or supernatural. The real sticking point is *methodological naturalism.*

3.1. Methodology of intuitions (traditional philosophical methodology)

Step 1: Propose a principle of reasoning: S is rational (in doing/believing x) iff y.

Step 2: Come up with thought experiments that are inconsistent with the principle of reasoning, i.e. cases in which either (1) S appears rational but y is not the case, or (2) S appears irrational but y is the case.

Step 3: If the thought experiments are consistent with (expert) intuitions, then propose a new principle and repeat Steps 1 and 2; otherwise accept the principle as a *conceptual* analysis of rationality (with respect to doing/believing *x*).

Expert intuitions are rooted in procedural knowledge, i.e. knowing *how* to cognize.

Sometimes, expert intuitions are sufficient (if not preferable) to experimental results: especially true when one is testing competences. P&C assume that the methodology of intuitions is the best methodology, but that it is also compatible with naturalism.

3.2.   Broadly methodological naturalism

M1.   Science offers the best resources for empirical inquiry into the details about of human beings' cognitive processes (their perception, inference, memory, etc.)

M2.   Epistemologists should study human beings' cognitive processes using the best resources for empirical inquiry.

M3.   ∴ *Methodological naturalism (broad conception):* Epistemologists should study human beings' cognitive processes scientifically (M1, M2).

• Compare M3 with P&C's definition: A theory of justification is naturalistic if it maintains that epistemology should either consist partly or wholly in empirical disciplines, or should be informed by the results of empirical disciplines.

3.3.   Quine's methodological naturalism

Q1.   Traditional epistemology should be accepted only if epistemological theories can be known *a priori.*

Q2.   Epistemological theories cannot be known *a priori.*

Q3.   ∴ Traditional epistemology is not viable. (Q1, Q2)

Q4.   If traditional epistemology is not viable, then we should replace normative questions (about how we ought to reason, when we should trust our senses, etc.) with descriptive questions (about how we do reason, when we trust our senses, etc.)

Q5.   *Quinean naturalism:* We should replace normative questions with descriptive questions (Q3, Q4)

All of the basic premises (Q1, Q2, and Q4) can be challenged. How do P&C challenge them? How would you challenge them?

3.4.   Compatibilist methodological naturalism

Core idea: we first generate a number different epistemological theories through traditional philosophical methodology, then narrow down the field according to "the realistic principle:" any epistemological theories that require "impossible demands on the cognizer" should be rejected. (P&C endorse compatibilism.)

Conee and Feldman's critique: normative standards aren't always human possible. (examples: an "A" in a tough course; norms in artistic excellence.) However, taken to the extreme, this leads to rampant skepticism.

3.5.   The bootstrapping conception

B1. If methodological naturalism is true, then *S* is justified in believing that *p* only if (a) *S* satisfies some criterion *C* with respect to *p*, and (b) scientists are justified in believing that *C is an epistemic criterion.*

B2. ∴ If methodological naturalism is true, then scientists are justified in believing that *C is an epistemic criterion* only if (a) scientists satisfy *C* with respect to their belief that *C is an epistemic criterion*, (b) scientists are justified in believing that *C is an epistemic criterion.* (B1)

B3. If scientists are justified in believing that *C is an epistemic criterion* only if (b) they're justified in believing that *C is an epistemic criterion,* then their reasoning is circular.

B4. Circular reasoning is always unjustified.

B5. ∴ Methodological naturalism is false (B2-B4).

3.6.   Naturalist responses to bootstrapping

1. If circular reasoning is always unjustified, then all of human inquiry must be subject to epistemological scrutiny all at once.
2. If all of human inquiry must be subject to epistemological scrutiny all at once, then skepticism is true.
3. Skepticism is not true.
~B4.   ∴ Circular reasoning is sometimes justified (e.g. on a coherentist epistemology).

4. Generic Rationality

Thus far, P&C have focused on *human* rationality. However, *generic* rationality is any solution to the design problem that also generates human cognitive architecture as a solution.

What's the design problem? Effective action, i.e. forming beliefs about the environment, that, when paired with desires ("conative dispositions") lead to behaviors that lead to the satisfaction of its desires. (P&C hint at broadly evolutionary considerations here.)

• This makes epistemic cognition subservient to practical cognition: "the role of epistemic cognition in rationality is to provide the factual background for practical cognition [i.e. rational action]"

4.1.   How do we evaluate generic (epistemic) rationality?

First proposal: an epistemically rational agent will believe *everything* that's true. *Problem:* the best way to do this is to believe *everything*.

Second proposal: an epistemically rational agent will believe *only* those things that are true. *Problem:* the best way to do this is to believe *nothing*.

Third proposal: an epistemically rational agent will believe *all and only* the truth. *Problem:* will result in us believing lots of pointless truths.

Fourth proposal: an epistemically rational agent will believe all and only those truths that advance her interests. *Problem:* some truths will advance her interests, but not be worth the trouble of figuring out.

P&C simply note what things different cognitive systems *can't* do, and how this will limit the kinds of environments in which they can survive. This underscores the importance of capacities and environments, and shows that *generically* rational agents will tend to have lots of overlap with *human* rational agents.

4.2.   The Oscars

Big picture: any rational agent that has basic evolutionary pressures will benefit from having fairly intuitive principles of human rationality: trusting their senses, reasoning deductively, reasoning inductively, feeling pain, being introspective and reflective about their pains and senses, and being able to distinguish appearance from reality using defeasible reasoning.

4.2.1.   Oscar I

Capacities:
• Sensory organs/detectors (external sensors)
• Beliefs based on sensory outputs, reasoning outputs
• Deductive and inductive reasoning based on beliefs
• Pain sensors/danger detectors
• Fight-or-flight responses elicited by pain sensors
• B-box for storing representations

Works effectively in simple environments with few threats.

Limitations:
• Can *respond* to pain-sensors, but cannot *predict* when pain-sensors will be activated.

4.2.2.   Oscar II

Capacities:

- All of Oscar I's capacities
- Pain-sensor sensors (internal sensors) that can provide outputs to reasoning, so as to generate predictions about "painful situations."
- Goals include not only avoidance of *immediate* pain, but also avoidance of *expected* pain.

Limitations:

- Cannot distinguish when sensory detectors are accurate vs. inaccurate/deceptive.

4.2.3.   Oscar III

Capacities:

- All of Oscar II's capacities
- Defeasible reasoning based on beliefs
- External-sensor sensors (which are internal sensors) that can provide outputs to reasoning, so that the distinction between accurate and inaccurate sensory outputs becomes possible.