
**FINAL Tuesday, December 18th
1:30pm-3:30pm HZF 0106¹**

- **Part I:** Choose 8 out of 10 terms to define (@ 5 pts apiece = 40 pts total). For full credit, each will require at least a few simple sentences, but should be no more than a concise paragraph. “Just the facts, ma’am,” in other words. **No critical discussion or essay! You should spend no more than 30 minutes on this section.** The terms will be subdivided as follows:

<i>Section</i>	<i>Directions</i>
A) Topics before midterm exam	Choose 3 from 4 terms
B) Topics after midterm exam	Choose 5 from 6 terms

You must choose terms from each category for maximum credit! In other words, your score from each subsection cannot be added to the score of the other subsection. For example, if you choose to do all 6 terms in B) **I will grade the best 5 from those 6.** However, if you choose only 2 from the previous section A) I won’t add points from the extra term you did in section B). Of course, if you choose to do all 10 I’ll grade the best 3 from the 4 in A) as well as the best 5 from the 6 in B). **However, due to time constraints, I do not recommend this strategy!** You will gain nothing if you answer many in an incomplete or slipshod manner.

- **Part II:** Choose a total of 3 out of 5 essays to write (@ 20 pts each = 30 pts total). The essays will be subdivided as follows:

<i>Section</i>	<i>Directions</i>
A) Topics before midterm exam	Choose 1 from 2 essay questions
B) Topics after midterm exam	Choose 2 from 3 essay questions

You must choose essay questions from each category for maximum credit! In other words, your score from each subsection cannot be added to the score of the other subsection. For example, if you choose to do all 3 essays in B) **I will grade the best 2 from those 3.** However, if you choose to do no essay in section A) I won’t add points from the extra essay question you did in section B). Of course, if you choose to do all 5 I’ll grade the best 1 from the 2 in A) as well as the best 2 from the 3 in B). **However, due to time constraints, I do not recommend this strategy!** You will gain nothing if you write many essays in an incomplete or slipshod manner.

¹ Same classroom as one we regularly meet in.

You should allow approximately 30 min. per essay (but no more). Though not like a term paper, in which (an) introductory and (a) concluding paragraph(s) are required, **thorough exposition and critical analysis is required for full credit.** Read each question carefully and make sure to answer *all* points that asked, but *no* more. The grading on exposition and critical discussion will be divided depending on the nature of the question (some 15/5, others 10/10). **To organize your thoughts it's best to write the expository portion first, and then the critical discussion, instead of interspersing expository with critical discussion sentences/paragraphs.**

- **Part III: (Bonus)** Simple question concerning Luke Conlin's presentation (requiring no more than several sentences) worth 10 pts.

Part. A) STUDY TERMS²:

- a.) Methodological/logical [a/]symmetry
- b.) Posterior/Prior Probability
- c.) Ontology
- d.) Methodology
- e.) Scientific Realism
- f.) Paradigm. **Aside from giving a concise definition (1-2 sentences) list what is encompassed by this concept, as described explicitly by Kuhn³.)**
- g.) Anomaly/crises (Aside from defining both in a simple sentence or two, state in 1-2 sentences their relation)
- h.) Empirical adequacy (Both the "informal sense" and van Fraassen's notion)
- i.) Retrorecognition⁴
- j.) Models/Conceptual change (Aside from defining both in a simple sentence or two, state in 1-2 sentences their relation⁵)

Part. A) ESSAY STUDY QUESTIONS:

1.) Explain briefly what Longino meant by 'cognitive' versus 'contextual' values, and what relation they have (if any) with Kuhn's notions as discussed in his essay on Values and Theory-Choice. Make sure you give (at least) a brief mention of what Kuhn meant by 'background.' List Kuhn's five criteria (without explaining them in depth) and Longino's criteria of 'transformative criticism' (without explaining them in depth). Make sure you state in a sentence or two whether (or not) Kuhn or Longino believe objectivity in theory-choice is a process that is irrational or logically regimented. Then, in a paragraph or two, argue either: a) Kuhn against Longino: I.e. who do think provides a more effective account of objectivity/theory choice and why? or b) Neither K nor L: I.e. argue that both attempts fall seriously short either because (on one extreme)

² The text has a glossary, but you'll also find these terms cited frequently and defined throughout the Lecture Notes. Most (but not all) of the above quotes are found therein. **Note however I may ask you to specify instances/examples given for the term as coined by the authors in your readings (you'll see this explicitly asked)**

³ Hint: See quote from SSR in **Lecture XIII** notes.

⁴ See **Lecture XIV** and/or the Lightman & Gingrich article

⁵ According to Nersessian.

objectivity is untenable or (another extreme) there are reliable procedures in place to secure such notions (i.e. inductive logic).⁶

2.) Explain briefly what is meant by the problem of conceptual change and how Popper, Kuhn, and Laudan sought to deal with it. For the latter, simply give a brief description without explaining in depth their ‘takes’ or programmes. Feel free to use any convenient analogy concerning how the ‘ontology’ of their variously fundamental explanatory notions fit together. Then, in a paragraph or two, argue either: a) Why one of the above three has the most effective approach and why, or b) Why all of them fall short in significant ways. Feel free to mention (without explaining in much detail) whether or not you feel Giere/Nersessian have a better ‘take’ and why (or why not, i.e. that you believe the problem of conceptual change is insurmountable).

3.) Explain briefly what is meant by scientific realism versus scientific anti-realism. Just give a few brief sentences here, without listing all of their garden varieties. Then, in the case of realism, state briefly (without explaining in depth) what Boyd’s essential take is (i.e. what underwrites Boyd’s “*Lex Orandi Est Lex Credenti*”) and Arthur Fine’s essential take. In the case of anti-realism, describe without explaining in depth what Bas Van Fraassen’s (BVF’s) position is. Then, in a paragraph or two: a) Either argue for anti-Realism (wherein you may or may not agree with BVF⁷ or for realism (where you’re welcome to defer to Boyd or Fine and point out briefly why you think their arguments prove the most effective. b) Argue against the realism/anti-realism in which you defend Fine’s NOA stance and mention why you think McMullin’s criticisms against Fine are unjustified.

Part. B) STUDY TERMS⁸:

- a.) Research tradition: In addition to specifying some of its essential characteristics, state in a sentence or two what distinguishes it from a *theory*.⁹
- b.) Mental Model (in Nersessian’s sense): In addition to specifying some of its essential characteristics, state in a sentence or two the role an *analogical model* plays in conceptual change.¹⁰
- c.) Relevance criterion of confirmation
- d.) Events (Mutually exclusive versus independent): In addition to clearly defining what is mutual exclusivity and independent, give an example of two events that are dependent and aren’t mutually exclusive.¹¹
- e.) Empirical Completeness.¹²
- f.) Inference to Best Explanation
- g.) Catch-all hypothesis¹³:
- h.) Swamping of prior probabilities¹⁴:

⁶ If you choose this option, you need not explain in any depth what inductive logic is. Just give 1-2 sentences giving the gist of its aims.

⁷ If you disagree with BVF, make sure you at least mention in passing McMullin’s criticism against BVF

⁸ The text has a glossary, but you’ll also find these terms cited frequently and defined throughout the Lecture Notes. Most (but not all) of the above quotes are found therein. **Note however I may ask you to specify instances/examples given for the term as coined by the authors in your readings (you’ll see this explicitly asked)**

⁹ See Laudan readings and/or **Lectures XIII, XIV.**

¹⁰ See Nersessian readings and/or **Lecture XV.**

¹¹ See **Lecture XV.**

¹² See Achenstein reading and/or **Lecture XXb**

¹³ See W. Salmon’s “Tom Bayes Meets Tom Kuhn” and/or **Lectures XVI, XVII.**

- i.) Explanans/Explanandum: In addition to stating clearly what they are, mention *who* first coined such terms.
- j.) Explanatory Store¹⁵
- k.) Le bon sense¹⁶: In addition to specifying the term in several sentences, explain why this notion of Duhem has lead some to argue that he is a ‘qualified falsificationist.’ (in the Popperian sense)
- l.) Necessitarian versus regularity theory¹⁷
- m.) Bridge Law
- n.) Component anti-realism/causal powers¹⁸
- o.) Domain-combining versus domain-preserving reduction: In addition to specifying the distinction in a sentence or two, explain in a sentence or two why the latter isn’t considered explanatory.¹⁹
- p.) Supervenience. State definition as a necessary condition.²⁰
- q.) Regular limit/perturbation. In addition to stating succinctly in terms of **Schema R**, show by way of Batterman’s toy example involving the quadratic equation.²¹
- r.) Explanatory extension. Make sure you explain in the definition what Kitcher doesn’t think it qualifies as some global rule, but takes into account Kuhn’s notion of scientific practice.²²

Part B. ESSAY STUDY QUESTIONS

1.) (15/5) Explain clearly what is meant by the Quine-Duhem thesis of underdetermination, according to Donald Gillies. Make sure you clarify, in a sentence or two, the distinction between semantic versus methodological holism. In the latter case, present a simple logical schema illustrating Duhem’s methodological holism. Explain in a paragraph or two Laudan’s critique of Gilles. Make sure you clarify Laudan’s distinction between Humean versus Quinean underdetermination. Argue in a succinct paragraph if you think Laudan’s criticisms are warranted.

2.) (15/5) Explain clearly (in a few sentences) what is meant by *monotonicity* in classical deductive logic. Provide a toy example of such monotonicity in the token ‘argument’ instance $p \rightarrow q$.²³ Discuss in a paragraph (or two) Hempel’s problem of epistemic ambiguity and why it’s not a problem for DN but it a problem for IS explanations. Illustrate by way of a simple exmple how epistemic ambiguity presents itself as a problem for an IS schema. In the latter case, say in a sentence or two why this shows that inductive logic is nonmonotonic. Briefly explain Hempel’s proposed solution (requirement of maximum specificity-RMS). Do you think the RMS successfully resolves the issue? Argue in no more than a paragraph why you do or not think so.

¹⁴ See W. Salmon’s “Tom Bayes Meets Tom Kuhn” and/or **Lectures XVI, XVII.** You don’t need to write Bayes’ formula here, but explain the strategy.

¹⁵ See Kitcher reading and/or **Lectures XIX, XX.**

¹⁶ See Duhem reading and/or **Lecture XXI.**

¹⁷ See **Lecture XXIII.**

¹⁸ See Cartwright reading and/or **Lecture XXIV**

¹⁹ See Nickles reading and/or **Lecture XXVI.**

²⁰ Example: *B* supervenes on *A* whenever any change in *B* can occur **only if** a change occurs in *A*.

²¹ See Batterman reading and/or **Lecture XXVII.**

²² See Kitcher “1953 and all that” reading and/or commentary and/or **Lecture XXVIII.**

²³ See n.8, p. 2 **Lecture XXVI.**

3.) (12/8) Briefly state in a few sentences what is the ‘problem of incommensurability.’ (You don’t need to launch into a story about Kuhn here, just state succinctly what the central worries are.) State how it influenced Feyerabend’s ‘replacement view’ of theories, and what Nickles and Nagel think is wrong with Feyerabend’s view. Discuss in a paragraph or two how Nickles’ objections relate to some of the realists’ objections to anti-realism, regarding this issue of incommensurability.²⁴ Then, in a paragraph or two succinctly argue either for or against the thesis. If you’re arguing pro incommensurability, you should invoke aspects of Quine’s meaning holism. If you’re arguing against it, you can invoke Laudan’s criticisms against Quine.

4) (15/5) Briefly state in a sentence or two the distinction between *intension* and *extension*.²⁵ Give a toy example like Frege’s famous illustration ‘Hesperus/Phosphorous’ –or something in similarly simple terms. Explain in a paragraph how this distinction informs the **inference problem** concerning the status of laws, and why this presents a problem for the necessitarian. Then discuss this issue concerning inhomogeneous reductions (a’ la Nagel). You should illustrate a hard case concerning different or possibly even disjunct extensions²⁶ Then, since intertheory reduction involves reduction of *laws*, in a paragraph argue why you think (or do not think so) that if one is a regularity theorist or a skeptic like Cartwright, the problem of inhomogeneous reduction is (or isn’t) deflated.

5.) (12/8) Explain in a paragraph what are the central claims of Bayesian confirmation theorists. Specifically explain how Salmon argues Kuhn’s criteria of selection can be placed in a Bayesian framework. (You don’t need to enumerate Kuhn’s criteria, nor provide an exhaustive summary of Salmon, just mention the main issue concerning his device of ‘swamping of the prior’ probabilities. Then, in a paragraph or two, argue why you do or do not think his scheme works in the ‘hard case’ of anomalies. If you argue in favor of Salmon, explain the role of *H* as discussed critically in Glymour. If you’re arguing against Salmon, mention aspects of Glymour’s basic critical claims, relevant to your counter-claims.

²⁴ See n. 10, p.3 **Lecture XXVI.**

²⁵ See n. 10, for instance, p. 3 **Lecture XXIII.**

²⁶ Recall the cases discussed in **Lecture XXV.**