SCIENCE, TECHNOLOGY AND SOCIETY

Daniele Macuglia (马大年); Graduate Course, 2 Credits.

This document outlines the structure for preparing for the oral exam in this course.

Weekly, students create presentations based on a chosen question from each section. For the end-of-term oral exam, questions will be selected from the list provided. Given the course's broad range of topics, students should consistently review relevant material, particularly following each class, to maintain a current understanding of the course content.

The final oral exam, approximately one hour long, includes 4-5 questions spanning different sections. Master's students have the privilege of choosing their first two questions from their areas of preference. In contrast, Ph.D. students must be prepared for comprehensive discussions across all themes, as they lack the option to select their initial questions.

The following Chinese translations have been kindly curated by T.A. Wang Qingying (王清影) in 2024.

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SECTION 1: Structural Functionalism

(1) Within the theoretical framework of structural-functionalism, as conceptualized by pioneers like Talcott Parsons (1902–1979) and Robert K. Merton (1910–2003), how might the burgeoning trend towards the commercialization and privatization of scientific research influence the scientific ethos? Specifically, how is the Mertonian norm of communism (the communal sharing of scientific knowledge) affected by these market-oriented changes?

在塔尔科特·帕森斯（1902–1979）和罗伯特·金·默顿（1910–2003）等先驱构建的结构功能主义理论框架内，科学研究的商业化和私有化这一日益增长的趋势如何影响科学精神？特别是，其中默顿的公有性规范（科学知识的共同分享）如何受到市场导向的影响？

(2) Reflecting on the influence of structural-functionalism in contemporary sociological thought, how might the concept of "anomie," as originally posited by Émile Durkheim (1858–1917) and later expanded by Merton, be reinterpreted in the context of modern digital societies?

反思结构功能主义在当代社会学思想中的影响，埃米尔·涂尔干（1858–1917）最初提出并由默顿后来扩展的"失范状态"概念，在现代数字社会的背景下如何被重新解读？

(3) Considering the rise of science communicators and influencers on digital platforms, to what degree do you perceive that the fundamental norms of science, as delineated by Merton, particularly the norm of "organized skepticism," are being subjected to new challenges or interpretations? How does the digital age and its influencers impact the way these norms, which have long guided scientific inquiry and discourse, are perceived and practiced?

考虑到科学传播者和网络平台意见领袖的崛起，你如何看待默顿规定的科学基本规范，尤其是"有组织的怀疑"规范，可能面临新的挑战或解释？数字时代及意见领袖如何影响这些长期指导科学探究和论述的规范的感知和实践方式？

(4) Considering the principle of structural differentiation in functionalist theory, as discussed by Kingsley Davis (1908–1997) and Wilbert E. Moore (1914–1987), how does the increasing specialization and professionalization in scientific disciplines impact interdisciplinary research? From a structural-functionalist viewpoint, does this trend enhance or hinder the holistic understanding of complex scientific problems, particularly in the context of global challenges like climate change?

考虑到功能主义理论中金斯利·戴维斯（1908–1997）和威尔伯特·E·摩尔（1914–1987）讨论的结构分化原则，科学学科日益增长的专门化和专业化如何影响跨学科研究？从结构功能主义的角度看，这一趋势是增强还是阻碍了对复杂科学问题（特别是气候变化等全球性挑战）的整体理解？

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(5) How does the concept of "disinterestedness" interact with the contemporary trend towards data-driven and outcome-oriented research funding? In an era where tangible results and applicative benefits are highly prized, how might the intrinsic value of scientific inquiry for the sake of knowledge itself be preserved or compromised?

"无私利性"概念如何与当代面向数据驱动和结果导向的研究资助趋势相互作用？在一个高度重视有形结果和应用效益的时代，科学探究关于寻求知识的内在价值，如何被保持或妥协?

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SECTION 2: Stratification & Epistemic Diversity

(1) In what ways does the dynamic interaction between stratification mechanisms within the scientific community and the cumulative advantage hypothesis contribute to the solidification of hierarchical structures and the ongoing perpetuation of inequalities in scientific career trajectories?

科学共同体内部的分层效应与累积优势假说的动态互动，如何促进层级结构的固化，以及科学职业生涯发展不平等的持续存在?

(2) How do the entwined layers of stratification in the scientific realm, including disciplinary hierarchies and socio-economic, cultural, and political factors, impact the evolution of scientific inquiry and knowledge creation? Assess how entrenched power dynamics and resource distribution affect epistemic diversity and the potential marginalization of unconventional scientific approaches.

包括学科层次结构和社会经济、文化及政治因素在内的科学领域中交织的分层，如何影响科学探究和知识创造的演变？请评估根深蒂固的权力动态和资源分配，如何影响认知多样性，以及非传统科学方法的潜在边缘化。

(3) To what degree does the hegemonic elevation of Western scientific paradigms over indigenous or local epistemologies affect global strategizing and solutions for complex issues such as anthropogenic climate change?

西方科学范式对本土或地方知识体系的霸权式提升，在多大程度上影响了全球应对复杂问题（如人为气候变化等）的战略和解决方案?

(4) Discuss a theoretical instance where implicit gender biases might impact decision-making processes within a scientific environment. What strategies could be implemented by academic institutions to proactively mitigate such biases?

讨论一个理论实例，其中隐性性别偏见可能影响科学环境中的决策过程。学术机构可以实施哪些策略来主动减轻这种偏见?

(5) Explore the ramifications of the non-formalized aspects of Ph.D. programs on gender imbalances in the professional development within scientific disciplines. How could these institutions ensure equitable access to this informal educational process?

试探讨非正式博士项目对科学学科内专业发展中的性别不平衡的影响。教学机构如何确保学生可以公平获得这些非正式教育过程?

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SECTION 3: The Strong Programme

(1) In the context of the Strong Programme's foundational principles, critically analyze the differentiation between the notions of "impartiality" and "symmetry." Could you exemplify these distinctions through a case study that distinctly illustrates their divergences within the epistemology of science?

在"强纲领"的基础原则背景下，批判性地分析"公正性"与"对称性"概念有何差异？请通过一个在科学认识论中的案例作出具体、清晰的说明？

(2) Contrast the methodological divergences between the Strong Programme and Merton's paradigm of structural functionalism, with specific emphasis on their respective treatments of internalist and externalist epistemologies in the historiography and sociology of scientific knowledge.

请对比强纲领与默顿的结构功能主义范式在方法论上的差异，并重点指出它们对科学知识史学和社会学中内在主义和外在主义认识论的不同处理。

(3) Within the framework of the Strong Programme's emphasis on sociological determinants in the evolution of scientific knowledge and its advocacy of finitism, how can its tenets be synthesized with Kuhn's concept of scientific paradigms and paradigm shifts? Identify the points of convergence and divergence between these two intellectual constructs in the philosophy of science.

强纲领框架强调科学知识发展的社会影响因素，并主张有限论。这一原则如何与库恩的科学范式和范式转变概念相融合？请辨析这两种科学哲学知识建构的融合点和分歧点。

(4) Evaluate the extent to which the co-production model in supersymmetry theories comprehensively incorporates the dynamics of power, negotiation, and conflict as emphasized by the Strong Programme in the context of scientific knowledge generation and validation.

根据强纲领强调的科学知识产生和验证过程，请评估超对称理论中的共同生产模型在何种程度上综合了权力动态、谈判和冲突。

(5) How does the Strong Programme address the issue of scientific anomalies and controversies? Discuss the role of its principles in understanding and interpreting scientific disputes and anomalies within the context of historical case studies.

强纲领如何解决科学中的异常和争议问题？讨论其原则在理解和解释历史案例研究中的科学争议和异常的作用。

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(6) Critically evaluate the impact of the Strong Programme on contemporary philosophy of science and sociology of scientific knowledge. What criticisms has it faced, and how have these critiques contributed to its evolution or to the emergence of alternative approaches in STS?

批判性地评估强纲领对当代科学哲学和科学知识社会学的影响。它面临了哪些批评，这些批评如何促进了其发展，或促成了STS中替代方法的出现?

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SECTION 4: Agonistic Inquiry and Cultural Capital in Scientific Discourse

(1) In what manner does the paradigm of agonistic scientific inquiry manifest disparate characteristics across diverse scientific disciplines? Specifically, how do the competitive elements inherent in theoretical physics contrast with those in biomedical research, and in what ways might these variations contribute to the distinct epistemological constructs developed within each field?

在不同学科中，对抗性科学探究范式如何展现出各异的特征？具体而言，理论物理学中固有的竞争要素与生物医学研究中的竞争要素有何差异，这些变化又是如何促成各领域独特的认知结构的？

(2) How does the Einstein-Podolsky-Rosen (EPR) paradox act as a nexus for agonistic scientific exploration, particularly in underscoring the multiplicity of epistemic truths within the discourse of quantum mechanics? Critically examine the manner in which the debates and interpretative dialogues surrounding this paradox exemplify the process of negotiating and contesting scientific understanding, and elaborate on the consequent ramifications for conceptualizing the essence of scientific consensus within the realm of quantum physics.

爱因斯坦-波多尔斯基-罗森（EPR）佯谬如何作为对抗性科学探究的核心，特别是在强调量子力学话语中认识真理的多样性方面？分析围绕这一佯谬的辩论和解释对话如何示范科学认识的协商与争议过程，并讨论这对理解量子物理领域科学共识本质的影响。

(3) How does the interplay between Pierre Bourdieu's (1930–2002) forms of capital—cultural, social, and symbolic—affect the stratification of scientific knowledge and its dissemination within academic communities and the broader public? Critically analyze the extent to which the accumulation and conversion of these capitals among scientists and institutions not only shape research agendas and outcomes, but also influence the public's perception and acceptance of scientific findings, especially in controversial or emerging fields of study.

皮埃尔·布迪厄（1930–2002）所述的资本形式（即文化资本、社会资本、象征资本）的交互作用如何影响科学知识的分层，及其在学术共同体和更广泛的公众中的传播？分析这些资本在科学家和机构间的积累与转换，如何塑造研究议程和结果，以及如何影响公众对科学发现（特别是在争议性或新兴领域的科学发现）的看法和接受。

(4) To what extent is our perception of scientific legitimacy and credibility sculpted by the notion of cultural capital? Considering a specific scientific dispute or controversy as an example, assess the impact of the cultural capital associated with certain scientists or institutions in shaping public or academic perceptions regarding the issue.

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对于科学合法性和可信度的认知，在多大程度上受文化资本概念的影响？选取一个具体的科学争议或争论作为例子，评估特定科学家或机构相关联的文化资本如何影响公众或学术界对该议题的观点。

(5) What role does the notion of "boundary work" play in demarcating the legitimacy and authority of scientific disciplines? Explore how scientists and institutions negotiate and construct these boundaries, especially in interdisciplinary fields, and assess the impact of such boundary work on the evolution and acceptance of new scientific theories.

"边界工作"概念在界定科学学科的合法性和权威性中扮演何种角色？探讨科学家和机构如何协商并构建这些边界（特别是在跨学科领域），并评估此类边界工作对新科学理论的发展和接受的影响。

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SECTION 5: Social Constructivism

(1) How might critiques of social constructivism's potential to delegitimize the epistemological objectivity of scientific inquiry be articulated within an STS framework? Furthermore, what methodologies might social constructivism advocates employ to counter these critiques while maintaining the integrity of their perspective?

在STS框架内，如何表述针对社会建构主义可能破坏科学探究认识论客观性的批评？此外，社会建构主义的倡导者可能采取哪些方法来应对这些批评，同时保持他们观点的完整性？

(2) Within the STS discourse, to what degree is social constructivism able to explain the cross-cultural and context-independent validity of scientific theories like quantum mechanics or general relativity, which exhibit universal applicability irrespective of cultural variances?

考虑到量子力学或广义相对论无论文化差异如何都展现了普遍适用性，社会建构主义在多大程度上能够解释像这样的科学理论的跨文化有效性和情景无关有效性？

(3) In the formative phases of the World Wide Web, what roles did stakeholder dialogues—particularly involving technology corporations, state apparatuses, and scholarly bodies—play in its developmental trajectory and normative standardization?

在万维网的形成阶段，科技公司、国家机构和学术机构等利益相关者的对话，在其发展轨迹和规范标准化中扮演了什么角色？

(4) How does neo-Kantian emphasis on macro-level social and cultural epistemic structures align with, or diverge from, the micro-level empirical practices and dynamics in scientific knowledge creation, as emphasized by contemporary STS scholarship?

新康德主义对宏观社会和文化认识论结构的强调如何与当代STS学术研究强调的科学知识创造中的微观经验实践和动态相一致或相异？

(5) In what ways could the lens of "heterogeneous construction" recontextualize our understanding of scientific paradigm shifts, particularly in relation to Thomas Kuhn's (1922–1996) conceptual framework in *The Structure of Scientific Revolutions*?

"异质构建"视角下，如何重新构想我们对科学范式转变的理解，特别是与托马斯·库恩（1922–1996）在《科学革命的结构》中的概念框架相联系？

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SECTION 6: Feminist Perspectives in Epistemology

(1) Can you delineate the epistemological distinctions between feminist empiricists and traditional empiricists, focusing on the resultant implications for research methodologies and interpretative frameworks?

您能否阐述女性实证主义者和传统实证主义者在认识论上的区别，特别是这些区别对研究方法论和解释框架的影响?

(2) How can Donna Haraway's (born 1944) concept of "situated knowledges" be effectively integrated into technological advancements, particularly in algorithmic design for artificial intelligence, and what are the prospective advantages and limitations of such integration?

唐娜·哈拉维（1944年出生）的"处境知识"概念如何有效融入技术进步，尤其是人工智能算法设计中，其潜在的优势和局限性是什么?

(3) In what manner does Sandra Harding's (born 1935) theory of "strong objectivity" tackle the issue of unconscious biases in scientific inquiry, and is it compatible with the conventional scientific approach that strives for reduced subjectivity?

桑德拉·哈丁（1935年出生）的"强客观性"理论如何解决科学研究中的无意识偏见问题，它与追求减少主观性的传统科学方法是否相容?

(4) In the context of collaborative scientific projects involving diverse teams, how can standpoint theory be applied to ensure that multiple standpoints are genuinely integrated rather than merely tokenized?

在涉及多元团队协作的科学项目中，如何应用立场理论以确保多种视角得到真正的融合，而不仅仅是象征性地包容?

(5) How does difference feminism confront the gender-centric biases prevalent in historical scientific research, and is it capable of instituting corrective measures without introducing new biases?

差异女性主义如何应对历史上科学研究中的性别中心偏见，并且它能否提出不引入新偏见的纠正措施?

(6) While anti-essentialism refutes the notion of inherent group characteristics, could there be some biological or evolutionary justifications for certain gender-specific behaviors or propensities that should not be completely negated?

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虽然反本质主义反对固有群体特征的观念，但某些性别特定行为或倾向是否可能有生物学或进化学上的理由，不应被完全否定?

(7) Could you formulate a defense for the traditional notion of objectivity in light of the critiques presented by situated knowledges and anti-essentialism, and how might an advocate of feminist epistemologies respond to this defense?

您能否针对“处境知识”和“反本质主义”提出的批评，为传统的客观性观念提出辩护，并提出女性主义认识论的拥护者可能如何回应这种辩护?

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SECTION 7: Actor-Network Theory

(1) How does Actor-Network Theory (ANT), initially conceptualized by scholars such as Michel Callon (born 1945), Bruno Latour (1947–2022), and John Law (born 1946), through its tenet of relational materialism, interrogate and redefine traditional paradigms of causality within the epistemological frameworks guiding scientific and technological development? Additionally, what are the consequences of this redefinition for the methods and narratives in the historiography of science and technology?

行动者-网络理论（ANT），最初由米歇尔·卡隆（1945年出生）、布鲁诺·拉图尔（1947–2022年）和约翰·劳（1946年出生）等学者提出。它是如何通过其关系物质主义的原则，质疑并重新定义科学和技术发展的认识论框架内的传统因果关系范式的？此外，这种重新定义对科学和技术史学的方法论和叙事有什么影响？

(2) Within the framework of ANT's democratic ontology, how can one integrate the agency attributed to non-human actants with ethical considerations, particularly in contexts where technological advancements significantly influence human well-being?

在ANT的民主本体论框架内，如何将非人类行动者的能动性与伦理考虑相结合，特别是在技术进步显著影响人类福祉的情境中？

(3) In what ways does ANT's conferment of agency upon non-human entities pose a challenge to established sociological theories that emphasize human-centric notions of action and intentionality?

ANT将能动性赋予非人类实体的做法，对强调以人为中心的行动和意图概念的传统社会学理论构成了何种挑战？

(4) Critically assess the constraints of ANT in delineating the roles and attributes of human and non-human actors exclusively through the lens of their interconnections within a network. Does this analytical perspective risk an oversimplification of the intrinsic complexities of these actors by predominantly considering them as manifestations of their network interactions?

批判性地评估ANT在通过网络内的相互联系来界定人类和非人类行动者的角色和特征时的局限性。这种分析视角将行动者视为网络互动中的表现，是否有可能过分简化这些行动者的内在复杂性？

(5) How does ANT's concept of aligning the "interests" of non-human actors in a network enhance our comprehension of the agency of these entities, and what implications does this alignment hold for broader sociological theories?

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ANT中将网络内非人类行动者的“利益”对齐的概念如何增进我们对这些实体能动性的理解，这种对齐对更广泛的社会学理论又有何意义？

(6) In what manner does ANT's notion of "translation" challenge the prevailing theories of technological determinism and social constructivism in the history of science?

ANT中的“翻译”概念是如何挑战科学史中流行的技术决定论和社会建构主义理论的？

(7) Examine the influence of non-human actors in either reinforcing or undermining networks, as postulated by ANT.

探究非人类行动者在ANT所提出的加强或破坏网络中的作用。

(8) In light of ANT's concept of black-boxing, which tends to conceal the intricacies of scientific knowledge production, what strategies should researchers and educators employ to mitigate misunderstandings about the nature of scientific facts among students and the general public?

鉴于ANT中的黑匣子概念倾向于掩盖科学知识生产的复杂性，研究者和教育者应采取何种策略来减轻学生和公众对科学事实性质的误解？

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SECTION 8: Beyond the Linear Model and the SCOT Framework

(1) Investigate the bidirectional influences between technological advancements and scientific discovery. Discuss a case where a technological breakthrough primarily emerged from empirical application rather than direct scientific inquiry, yet substantially contributed to the development of scientific inquiry.

探讨技术进步与科学发现之间的双向影响。讨论一个主要源于实证应用而非直接科学探究，并对科学探究的发展做出了重大贡献的技术突破案例。

(2) Elaborate on the significance of implicit knowledge in both scientific and technological domains. Contrast the characteristics and roles of these two forms of implicit knowledge, highlighting their distinct contributions to their respective fields.

阐述在科学与技术领域中隐性知识的重要性。比较这两种形式的隐性知识的特点和角色，强调它们对各自领域的独特贡献。

(3) In the milieu of the symbiotic evolution of science and technology, provide a critical examination of the converging and diverging roles of engineers and technologists, especially considering the non-linear model of technological innovation.

在科学与技术的共生演化环境中，特别是考虑到技术创新的非线性模型，批判性地考察工程师和技术专家的融合与分歧角色。

(4) Analyze the concept of technological determinism in the context of historical or contemporary instances of technological failure, rejection by society, or technologies demonstrating “interpretive flexibility.” Evaluate how these scenarios contribute to our understanding of the relationship between technological development and societal dynamics.

结合历史或当代技术中，有关技术失败、社会排斥或展现出“解释灵活性”的技术的实例，分析技术决定论的概念。评估这些情境如何有助于我们理解技术发展与社会动态之间的关系。

(5) Are there any aspects of technological determinism that can be considered valid, or should this viewpoint be entirely dismissed as flawed in explaining the influence of technology on social structures and cultural norms?

技术决定论是否有可取之处，还是应该完全作为解释技术对社会结构和文化规范影响的错误观点而被抛弃？

(6) Explore the applicability of the Social Construction of Technology (SCOT) framework in understanding the diffusion and acceptance of green technologies within various socio-economic contexts.

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探讨社会建构技术（SCOT）框架在理解绿色技术在不同社会经济背景下的传播和接受方面的适用性。

(7) Assess the potential constraints of the SCOT model when applied universally across varied historical and cultural landscapes. Identify contexts in which SCOT may not completely elucidate the dynamics of technological development.

评估当SCOT模型在不同历史和文化背景下普遍应用时可能的局限性。识别出SCOT模型可能无法完全阐释技术发展动态的情境。

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SECTION 9: Laboratory Studies

(1) How does the concept of epistemic cultures, as articulated by Karin Knorr Cetina (born 1944), facilitate an understanding of the challenges in interdisciplinary research, especially in areas marked by distinct epistemic traditions? Explore how these epistemic cultures influence, converge, or clash within interdisciplinary frameworks.

卡琳·克诺尔·切蒂纳（1944年出生）所阐述的认识论文化概念如何有助于理解跨学科研究中的挑战，特别是在具有明显认识论传统的领域？探讨这些认识论文化在跨学科框架内如何相互影响、融合或冲突。

(2) Considering the role of manipulation and standardization in laboratories, analyze the dichotomy between the "unnaturalness" of laboratory settings and the quest for understanding natural phenomena. How does this tension reflect on the authenticity and applicability of laboratory-derived knowledge in the broader context of natural sciences?

考虑到实验室中操作处理和标准化的作用，分析实验室设置的"非自然性"与理解自然现象追求之间的二分法。这种张力如何反映在实验室衍生知识的真实性和在自然科学更广泛语境中的适用性上？

(3) In the context of indexical reasoning, evaluate the impact of tools and technologies on scientific inquiry. How does this perspective intersect with the principles of ANT, and what implications does it have for our understanding of scientific practices?

在索引性推理的背景下，评估工具和技术对科学探究的影响。这种观点如何与行动者网络理论（ANT）的原则相交叉，对我们对科学实践的理解有何影响？

(4) Analyze Thomas F. Gieryn's (born 1950) "boundary work" concept in laboratory studies, focusing on how scientists in contentious fields like climate change or genetic engineering differentiate "science" from "non-science." Examine case studies where boundary work establishes scientific authority, while potentially sidelining alternative methodologies or viewpoints.

分析托马斯·F·吉里恩（1950年出生）在实验室研究中提出的"边界工作"概念，重点关注在诸如气候变化或基因工程等有争议的领域中，科学家如何区分"科学"与"非科学"。探究在哪些案例研究中边界工作建立了科学权威，同时可能边缘化了替代方法论或观点。

(5) How does "tinkering" in scientific laboratories, characterized by its exploratory and improvisational nature, challenge and reshape conventional scientific methodologies, especially in fields that rely heavily on experimental flexibility and creativity?

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科学实验室中以探索性和即兴性为特征的“摆弄”如何挑战和重塑传统的科学方法论，特别是在那些高度依赖实验灵活性和创造力的领域?

(6) Investigate the concepts of “inscriptions” and “translations” in scientific practices as described by Latour and Steve Woolgar (born 1950) in their work *Laboratory Life*. Focus on the impact these processes have on shaping scientific facts, and critically assess the potential biases and limitations in creating and interpreting inscriptions.

研究拉图尔和史蒂夫·伍尔加（1950年出生）在其作品《实验室生活》中描述的科学实践中的“铭写”（inscriptions）和“翻译”（translations）概念。重点关注这些过程对塑造科学事实的影响，并批判性地评估在创建和解释铭写时可能存在的偏见和局限性。

(7) Explore how the sociotechnical imaginaries, as defined by Sheila Jasanoff (born 1944), shape the development and implementation of laboratory technologies. Discuss the role of these imaginaries in guiding scientific priorities and ethical standards within the lab environment.

探究希拉·贾萨诺夫（1944年出生）定义的社会技术想象如何塑造实验室技术的发展和实施。讨论这些想象在指导实验室内科学优先事项和伦理标准方面的作用。

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SECTION 10: Controversies

(1) Examine the influence of economic interests on technological controversies. Discuss the ethical dilemmas that emerge when financial incentives shape scientific outcomes. How can policy and practice be developed to counteract these influences and maintain scientific integrity?

探讨经济利益对技术争议的影响。当金融激励形塑科学成果时，讨论所引发的伦理困境。我们如何制定政策和实践来对抗这些影响并保持科学的诚信性？

(2) Select a historical or contemporary scientific controversy and explore the role of "reasoned disagreements" among scientists in its evolution and potential resolution. Discuss the interplay between scientific discourse and controversy dynamics.

选择一个历史上的或当代的科学争议，并探索科学家之间"理性分歧"的角色，及其在争议的发展和潜在解决过程中的作用。讨论科学话语与争议动态之间的相互作用。

(3) What are the challenges posed by experimenters' regress in scientific research? Discuss strategies that the scientific community could employ to navigate and mitigate the complexities associated with experimental validation and theory testing.

实验者退化在科学研究中带来了哪些挑战？讨论科学界可以采取哪些策略来应对和缓解与实验验证和理论检验相关的复杂性。

(4) Provide an example where the resolution of a scientific controversy was predominantly influenced by societal values rather than empirical evidence. Discuss the implications of this phenomenon for the scientific process and knowledge validation.

提供一个主要受到社会价值观影响，而非受到经验证据影响而解决的科学争议的例子。讨论这种现象对科学过程和知识验证的影响。

(5) How can local cultural dynamics influence the resolution of scientific controversies, and is it feasible to consider a scientific controversy as definitively "resolved" in the context of significant cultural differences in data interpretation? Discuss a significant example.

地方文化动态如何影响科学争议的解决？当关于数据的解释有重大文化差异时，我们是否可以认为一个科学争议已被明确地"解决"？请举例讨论。

(6) Examine the impact of science communication strategies in resolving scientific controversies. How do different modes of communication (e.g., mass media, social media, scientific publications) contribute to the escalation or de-escalation of these controversies?

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检视科学沟通策略在解决科学争议中的影响。不同的沟通方式（例如，大众媒体、社交媒体、科学出版物）如何对这些争论的升级或降级有所贡献?

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SECTION 11: Standardization & Objectivity

(1) While standardization is intended to reduce subjective biases, might it also inadvertently limit creativity and innovation in scientific and technological progress? What strategies could be employed to maintain a balance between the necessity for standardization and the pursuit of innovative and unorthodox methods and discoveries?

虽然标准化旨在减少主观偏见，但它是否也可能无意中限制科学和技术进步中的创造力和创新？可以采用哪些策略在标准化的必要性与追求创新和非传统方法及发现之间保持平衡？

(2) How do sociocultural dynamics shape the process of standardization in science and technology? Could you cite instances where cultural or social norms have significantly influenced standardization efforts?

社会文化动态如何塑造科学技术中的标准化过程？你能否举例说明文化或社会规范如何显著影响标准化的努力？

(3) Is it accurate to assert that the pursuit of "complete objectivity" in scientific endeavors stands in total opposition to the social constructivist viewpoint that is a central tenet in STS?

断言在科学努力中追求"完全客观性"与STS核心的社会建构主义观点完全对立，这样的说法准确吗？

(4) How does the concept of a "view from nowhere," as proposed by Thomas Nagel (born 1937), intersect with feminist critiques of science, especially those highlighting the significance of situated knowledge and the impact of social and cultural factors on scientific inquiry?

托马斯·纳格尔（1937年出生）所提出的"从无处看世界"概念如何与对科学的女性主义批评相交汇，特别是那些强调处境知识的重要性和社会文化因素对科学探究影响的批评？

(5) Assess the effects of "formal objectivity" on the power dynamics and authority structures within scientific communities.

评估"形式客观性"对科学共同体中权力动态和权威结构的影响。

(6) Considering the principle of interpretive flexibility in STS, what strategies could be implemented to integrate this concept into scientific methodology while ensuring the maintenance of methodological rigor and reliability?

考虑到STS中解释灵活性的原则，可以采取哪些策略将该概念系统地整合到科学方法论中，同时确保方法论的严谨性和可靠性？

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SECTION 12: Rhetoric

(1) How do rhetorical strategies in scientific publications shape the perceived credibility and authority of competing theories or interpretations? Provide an example demonstrating the impact of such rhetorical strategies on the acceptance or rejection of a scientific theory within the scientific community.

科学出版物中的修辞策略如何塑造竞争理论或解释的可信度和权威性？请提供一个例子，展示这种修辞策略在科学理论在科学界被接受或拒绝上的影响。

(2) Analyze the shift from modalized (probabilistic) to assertive (definitive) statements in scientific discourse. Discuss how this transition can obscure the inherently contingent and provisional nature of scientific knowledge.

分析科学话语中从模态化（概率性）到断言性（确定性）陈述的转变。讨论这种过渡如何可能掩盖科学知识固有的偶然性和暂时性。

(3) Critique the potential biases introduced by ANT's focus on non-human entities in scientific argumentation. How does this emphasis shape the construction and interpretation of scientific arguments?

批判ANT对非人实体在科学论证中的重视可能引入的偏见。这种重视是如何塑造科学论证的构建和解读?

(4) Evaluate the risks of echo chambers in scientific research, where arguments are predominantly reinforced within a network of like-minded peers. What strategies can be employed to mitigate this risk and promote a more diversified discourse?

评估科学研究中回音室效应（即争论主要在持相似观点的同行网络中得到加强）的风险。可以采取哪些策略来降低这种风险，促进更多元化的讨论?

(5) How do metaphors in scientific literature limit our understanding of complex scientific concepts? Provide specific examples where metaphors have constrained or misdirected scientific interpretation and discourse.

科学文献中的隐喻如何限制我们对复杂科学概念的理解？请提供具体例子，说明隐喻如何限制或误导科学解释和话语。

(6) Analyze how the rhetoric employed by scientists in framing their research reflects the gatekeeping norms within their scientific communities. What are the implications of this dynamic for fostering inclusive and interdisciplinary scientific discourses?

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分析科学家在构架其研究时所采用的修辞如何反映其科学共同体内的准入规范。这种动态对促进包容性和跨学科科学话语的发展有何影响?

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SECTION 13: The Natural and Unnatural in Science and Technology

(1) In the STS discourse, the ascription of scientific knowledge as "unnatural" seemingly contradicts its derivation from socio-historically contingent practices and cultural epistemologies, inherently "natural" to human existence. Please elaborate.

在STS的话语中，将科学知识归类为"非自然"的做法似乎与其源于社会历史条件下的实践和文化认识论——这些本质上对人类存在而言是"自然"的——相矛盾。请详细阐述这一点。

(2) How does the constructivist viewpoint perceive the "unnaturalness" embedded in the epistemology of scientific experimentation and theoretical abstraction? Please provide an in-depth analysis of the various facets through which this unnaturalness is manifested.

在STS领域内，建构主义观点如何理解科学实验和理论抽象中所蕴含的"非自然性"？请深入分析这种非自然性所体现的各个方面。

(3) Describe an STS-aligned approach that could effectively integrate local epistemologies into the overarching fabric of global scientific discourse, ensuring the preservation of their inherent contextual and cultural values.

描述一种符合STS的方法论，将地方性认识论有效地将整合进全球科学话语的整体结构中，同时确保其固有的情境性和文化价值得以保留。

(4) Evaluate the ethical dimensions associated with the transformation and delocalization of local knowledge, particularly in disciplines like ecology and climatology. Consider the significance of "situated knowledge" in these areas and how it affects the integrity and value of local epistemologies during the globalization process.

评估与地方知识的转化和去地方化相关的伦理维度，特别是在生态学和气候学等学科中。考虑这些领域中"处境知识"的重要性，以及它在全球化过程中如何影响地方认识论的完整性和价值。

(5) Investigate the concept of "epistemic imperialism," specifically how dominant scientific theories may subjugate or obliterate local and indigenous epistemologies. Provide pertinent historical or contemporary instances to support your analysis.

调查"认识论帝国主义"的概念，特别是主导性科学理论如何可能压制或消除地方和本土认识论。请结合相关的历史或当代实例进行分析。

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(6) Is there a conceptual space within STS where local knowledge is not inherently "situated," challenging the conventional alignment of these two constructs?

在STS领域内，是否存在一个概念空间，在这个空间中，地方知识本质上不是"处境化的"，从而挑战这两个构念的传统对齐方式?

(7) How does the co-constructivist view in STS inform our understanding of the artificial nature of technological systems and artifacts, emphasizing the mutual shaping between science and technology in their development?

STS中的共同构建视角如何帮助我们理解技术系统和人造物的人造本质，并强调在其发展过程中科学与技术之间的相互塑造?

(8) Differentiate between "historical contingency" and "path dependency" in their influence on technological development, using the development of the QWERTY keyboard as a case study.

以QWERTY键盘的发展为例，区分"历史偶然性"和"路径依赖性"在技术发展中的影响。

(9) How do the concepts of social construction, co-construction, and co-production differ in their approach to understanding the interplay between scientific knowledge, technological development, and societal factors?

社会建构、共同建构和共同生产这三个概念在理解科学知识、技术发展与社会因素之间的相互作用方面有何不同?

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SECTION 14: Public Understanding of Science

(1) Analyze the impact of the Dominant Model's communicative modalities on the hierarchical interplay between scientific hegemony and societal actors.

分析主导模型的沟通方式对科学霸权与社会行动者之间层级互动的影响。

(2) How does the Dominant Model solidify scientific hegemony, and what implications does this have for the agency of the public?

主导模型如何巩固科学霸权，这对公众的行动力有何影响?

(3) Explore the reconciliation of the Deficit Model with co-productionist perspectives, focusing on the interplay between the dissemination of scientific knowledge and the evolution of public perceptions and attitudes towards scientific paradigms.

探索赤字模型与共生产视角如何相协调，重点是科学知识传播与公众对科学范式态度和看法的演变之间的互动。

(4) In the realm of the Contextual Model, identify measures to mitigate the intensification of pre-existing inequities, particularly focusing on fostering inclusivity and representation of marginalized or underrepresented demographics in science communication.

在情境模型的范畴内，确定措施以减轻现有不平等的加剧，特别是在科学沟通中促进边缘化或代表性不足群体的包容性和代表性。

(5) Contrast the approaches of the Public Engagement with Science and Technology (PEST) Model and the Participatory Model in integrating public discourse into scientific deliberation, while addressing the potential for superficial representation or tokenism.

对比公众参与科学技术（PEST）模型和参与式模型在将公众话语整合进科学讨论中，同时解决表面代表或象征性参与的潜在问题的方法。

(6) What strategies can be implemented to maintain data authenticity in citizen science projects such as eBird, Foldit, and Zooniverse, while ensuring scientific rigor and fostering meaningful public participation in line with the Participatory Model?

在如eBird、Foldit和Zooniverse等公民科学项目中，可以实施哪些策略来维护数据的真实性，同时确保科学的严谨性并促进与参与式模型一致的有意义的公众参与?

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SECTION 15: Science Policies

(1) In the context of technoscience, how can the principles of deliberative democracy be effectively integrated into scientific governance structures to ensure that ethical, social, and political dimensions are adequately addressed?

在技术科学领域，如何有效地将协商民主原则融入科学治理结构，以确保充分解决伦理、社会和政治层面的问题?

(2) In cases where scientific consensus is contested or incomplete, what role should STS play in elucidating the negotiation processes between different forms of expertise (including local, indigenous, and professional scientific knowledge) in shaping policy outcomes?

在科学共识存在争议或不完整的情况下，STS在阐明不同形式专业知识（包括本地、原住民和专业科学知识）在塑造政策结果中的协商过程中应发挥什么作用?

(3) How can STS scholars effectively evaluate the impact of "civic epistemologies" on the integration of scientific expertise in policy decisions, particularly in contexts where lived experiences and local knowledge systems play a central role?

STS学者如何有效评估"公民认识论"对科学专业知识在政策决策中的整合影响，特别是在生活经验和本地知识体系在中心位置的背景下?

(4) What methodological frameworks within STS do you consider most effective for analyzing the construction and manifestation of civic epistemologies in contemporary science policy discourses?

你认为STS内部哪些方法论框架最有效于分析当代科学政策话语中公民认识论的构建和表现?

(5) How does ANT enrich or redefine our understanding of the agency of non-human actors in the formulation of science policy?

ANT如何丰富或重新定义我们对非人类行动者在科学政策制定中的能动性的理解?

(6) Investigate how the Danish Consensus Conference model addresses the challenge of integrating diverse, potentially conflicting, socio-cultural values and ethical considerations in shaping national science and technology policies.

探讨丹麦共识会议模型如何解决在形成国家科技政策时，整合多元、潜在冲突的社会文化价值观和伦理考量的挑战。

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(7) Reflect on how technoscientific democracies can balance specialized expertise with inclusive public participation, without compromising the technical integrity or democratic legitimacy of decision-making processes.

反思技术科学民主如何平衡专业专长与包容性公众参与，同时不损害决策过程的技术完整性或民主合法性。

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SECTION 16: Political Economies of Knowledge

(1) How does the knowledge economy's emphasis on intangible assets, such as data and expertise, disrupt traditional market structures and labor relations, as analyzed through an STS lens?

知识经济对无形资产（如数据和专业知识）的重视是如何通过STS研究的视角分析，打破传统市场结构和劳动关系的?

(2) What are the implications of treating knowledge as a critical economic asset within market economies, particularly in terms of its impact on social equity and information access?

在市场经济中将知识视为关键经济资产有何含义，尤其是其对社会公平和信息获取的影响?

(3) Discuss the broader implications of knowledge commodification in the knowledge economy, particularly in relation to the ethical challenges posed by privacy concerns, intellectual property rights, and equitable access to information.

讨论知识经济中知识商品化的更广泛影响，特别是与隐私关切、知识产权和公平获取信息的伦理挑战相关的问题。

(4) In what ways have global regulatory frameworks, shaped by neoliberal ideologies, influenced the trajectory of technoscientific innovations, and how does this impact the democratization of knowledge in both developed and developing countries?

受新自由主义意识形态影响的全球监管框架如何影响科技创新的轨迹，这对发达国家和发展中国家知识民主化分别有何影响?

(5) How do the frameworks of "knowledge economy" and "political economies of knowledge" diverge in their understanding of the impact of globalization on knowledge dissemination and cultural hegemony?

"知识经济"和"知识的政治经济学"框架在理解全球化对知识传播和文化霸权影响方面有何不同?

(6) Could you explain how political and economic systems and dominant powers might shape and influence public discussion and agreement in areas where science is debated? Discuss an example.

你能解释政治和经济体系以及主导力量，如何塑造和影响在受争论的科学领域中的公共讨论和共识吗？请讨论一个例子。

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