

SC255 - The Design of Science: Organizing Principles in Pre-Modern Scientific Literature

Fall semester 2022: Mondays and Wednesdays, 10:45 a.m.-12:15 p.m.

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Office Hours: Mondays at 12:30-13:30 or by appointment

Course Description

This course will examine the structural tools employed in selecting, aggregating, classifying, formatting, and organizing technical texts in order to gain an insight into the literary qualities of pre-modern scientific writing. Moving from Aristotle, who is credited as the father of taxonomy with his systematic approach to biological classification, through medieval Islamic and Latin traditions, we will consider how numerous principles that governed their organization influenced the design of scientific discourse and led to novel combinations of concepts. A central goal of this course is to look at the forms of putting technical material into proper arrangement according to the author's understanding of the relationship between various themes. We also give particular attention to the written tools incorporated in scientific texts to categorize, visualize, retrieve, or preserve data, like star inventories, computational tables, diagrams, maps, and tree charts. Through primary texts (in English translation), students will be introduced to the different models that scholars have advanced for documenting, storing, and processing information to represent the extratextual reality. This course helps us better comprehend thinking practices of the past, and the interaction between word and concept, to arrive at a richer understanding of modalities of systematization and of authorial activity in pre-modern scientific literature.

LEARNING OUTCOMES

- To problematize terms such as authorship, education, visualization and textbooks
- To gain awareness about the connectedness of learning science and textual formats
- To get acquainted with current studies of pre-modern science education
- To gain knowledge about histories of intercultural scientific and technological transmission
- To develop critical skills with regard to the reading of pre-modern primary and secondary literature on sciences

Requirements

There are four requirements for successfully completing the course:

1. Academic Integrity

Bard College Berlin maintains the highest standards of academic integrity and expects students to adhere to these standards at all times. Instances in which students fail to meet the expected standards of academic integrity will be dealt with under the Code of Student Conduct, Section 14.3 (Academic Misconduct) in the Student Handbook.

2. Attendance

Attendance at all classes is a crucial part of the education offered by Bard College Berlin. To account for minor circumstances, two absences should not affect the participation grade or require documentation. Bard College Berlin does not offer credit for any course in which a student has missed more than 30% of classes, regardless of the reasons for the absences. The full Bard College Berlin attendance policy can be found in the Student Handbook, Section 2.8.

Failure to be present at more than three meetings without prior permission or satisfactory or acceptable excuse or reason results in the grade: “insufficient”. Note that you are expected to have read the materials for each week, to bring them to class and to engage in group conversation. Presence and active participation will weight 30% of the final grade.

SPECIAL CONSIDERATIONS FOR FALL 2022: Some students may need to begin the semester remotely due to travel restrictions caused by the pandemic. In addition, all students and instructors must refrain from in-person attendance if they are feeling ill. Instructors should make efforts to offer alternatives to in-person attendance where needed, including remote participation or asynchronous options.

3- Assessment

Class presentations: One or several primary or secondary sources are studied during each seminar meeting. Depending on the number of participants you are required to take responsibility for at least one seminar presentation of about 20 minutes (more details below) for each semi-semester (seven weeks). If the number of participants is relatively small, you may accept more than one presentation. A respondent will be appointed for each presentation and s/he will ask questions or discuss points about the presentation for about 10 minutes. After that the discussion will be opened to the whole class. Note that in case of “no-show” for your presentation without acceptable reasons, 1.0 will be subtracted from your final grade. You are required to report the absence as early as possible by means of email or if necessary by phone).

4- Assignment

Writing a paper: You are required to write a paper on a subject of your choice, relevant to the theme of the course, and selected in consultation with the instructor. A first version of the paper must be submitted as a Word document (attachment to r.mousavi@berlin.bard.edu), no later than October 14th at 12:00 p.m. Within three weeks (that is to say, no later than November 4th) the paper will be returned with critical comments and suggestions. The final revised version must be submitted within four weeks to the instructor, no later than December 13th at 12:00 p.m.

Your paper will be graded according to (not necessarily in order of importance): Creative originality, academic rigor, richness of sources used, reflection of what has been discussed during the course, and form (including accuracy and formal academic style).

REQUIRED WORD COUNT: 6000 words/15 pages.

FORM: Title page contains title, author, student number, course name, instructor name, study programme, date of submission, number of words. Your work also requires to start with an Abstract of 300-400 words. Other formal considerations: Line spacing 1,5; Min. font 10 - max.12.

Policy on Late Submission of Papers

Essays that are up to 24 hours late can be downgraded up to one full grade (from B+ to C+, for example). The instructor is not obliged to accept essays that are more than 24 hours late. Where the instructor agrees to accept a late assignment, it should be submitted by the new deadline agreed upon by both parties. Thereafter, the student will receive a failing grade for the assignment. Grades and comments will be returned to students in a timely fashion. Students receive mid- and end-of-semester grades for their seminar work. They are entitled to make an appointment with an instructor to discuss seminar participation, or may be asked to meet with the instructor at any stage in the semester regarding class progress.

Grade Breakdown

- 1- Presence and active participation: 30% of the final grade (15% for weeks 1-7 and 15% for weeks 8-14).
- 2- Class Presentation: 30% of the final grade (15% for weeks 1-7 and 15% for weeks 8-14).
- 3- Paper: 40% of the final grade (15% for the first version and 25% for the final version)

Essay Deadlines

- Deadline for the first version of your paper: No later than October 14th at 12:00 p.m. (details above).
- Deadline for the final revised version: No later than December 13th at 12:00 p.m. (details above).

Schedule

Fall 2022 classes start on August 29 and runs until Friday, December 16, with fall break planned from Monday, October 24 – Sunday, October 30. Completion week is from Monday, December 12 through Friday, December 16. You are required to be on campus during the completion week. Scheduled class times will be available online under the relevant course heading:

<https://berlin.bard.edu/academics/courses/>

You are supposed to read and prepare the recommended texts for each session and to bring them to class according to the following schedule. The instructor will provide all the readings to the students at the beginning of the semester:

s e s s i o n	Date	Issue	Readings, Tasks
1	Mon. 29 Aug.	Introduction	Key concepts for discussion: 1- What is the relationship between science and text? 2- Why and how literary tools are instrumental in technical writings? 3- Influential factors in the formation of a scientific text.
2	Wed. 31 Aug.	Organization Theories	Robert J. Glushko, “The Discipline of Organizing”, in <i>The Discipline of Organizing: 4th Professional Edition</i> (online publication), pp. 29-45.
3	Mon. 5 Sept.	Oral vs. Written Knowledge	Charles Bazerman, “What written knowledge does: Three examples of academic discourse”, in <i>Shaping Written Knowledge, The Genre and Activity of the Experimental Article in Science</i> (Madison: University of Wisconsin Press, 1988), pp. 18-34.
4	Wed. 7 Sept.	Oral vs. Written Knowledge	Jens-Uwe Hartmann, “From words to books Indian Buddhist manuscripts in the first millennium CE”, in <i>Buddhist Manuscript Cultures: Knowledge, Ritual, and Art</i> , eds. Stephen C. Berkwitz et al. (London: Routledge, 2009), pp. 95-105.
5	Mon. 12 Sept.	Oral vs. Written Knowledge	Gregor Schoeler, “Oral Torah and Ḥadīṭ: Transmission, Prohibition of Writing, Redaction”, in <i>The Oral and the Written in Early Islam</i> ed. James E. Montgomery and trans. Uwe Vagelphol (London: Routledge, 2006), pp. 111-41.
-	Wed. 14 Sept.	NO COURSE	
6	Mon. 19 Sept.	Science and Memory	Mary Carruthers, “Memory and the Ethics of Reading”, in <i>The Book of Memory: A Study of Memory in Medieval Culture</i> (Cambridge, 2008), 195-233.
7	Wed. 21 Sept.	Genres of Scientific Books	Fabrizio Speziale, “Persian Treatises on Āyurveda: The Shaping of a Genre”, <i>Journal of South Asian intellectual history</i> 3 (2020), pp. 89-122.
8	Mon. 26 Sept.	Science, Literature, and Art	Z. Longxi, “Parallelism and Antithesis: Structural Principles in the Mind and in Literature from a Chinese Perspective”, <i>European Review</i> , 29 no. 2 (2021), pp. 274-84.

9	Wed. 28 Sept.	Science, Literature, and Art	Sonja Brentjes, "The Interplay of Science, Art and Literature in Islamic Societies before 1700", in <i>Science, Literature and Aesthetics</i> , eds. A. Dev, & P. Bhadury (New Delhi: Centre for Studies in Civilizations 2009), pp. 453-84.
-	Mon. 03 Oct.	PUBLIC HOLIDAY	
10	Wed. 05 Oct.	Circles	Mary Douglas, <i>Thinking in Circles: An Essay on Ring Composition</i> (New Haven, CT: Yale University Press, 2007), pp. 1-16.
11	Mon. 10 Oct.	Lists	Roman Alexander Barton, et al. "Introduction. Epistemic and Artistic List-Making", in <i>Forms of List-Making: Epistemic, Literary, and Visual Enumeration</i> (London: Palgrave Macmillan, 2022), pp. 1-24.
12	Wed. 12 Oct.	Diagrams	S. Krämer and C. Ljungberg (eds), <i>Thinking with Diagrams: The Semiotic Basis of Human Cognition</i> (Berlin: De Gruyter, 2016), pp. 1-19.
13	Mon. 17 Oct.	Diagrams	Ahmet T. Karamustafa, "Cosmographical Diagrams" in <i>The History of Cartography</i> , Vol. 2, Bk. 1: <i>Cartography in the Traditional Islamic and South Asian Societies</i> , eds. J. B. Harley and David Woodward (Chicago: University of Chicago Press, 1992), pp. 71-89.
14	Wed. 19 Oct.	Diagrams	Michael Marrinan, "On the "thing-ness" of diagrams", in <i>Thinking with Diagrams: The Semiotic Basis of Human Cognition</i> , eds. S. Krämer and C. Ljungberg (Berlin: De Gruyter, 2016), pp. 23-56.
-	Mon. 24 Oct.	FALL BREAK	
-	Wed. 26 Oct.	FALL BREAK	
-	Mon. 31 Oct.	REGIONAL HOLIDAY	
15	Wed. 02 Nov.	Classification Methods	Ayelet Even-Ezra, "The Form: Chronological, Linguistic, and Cognitive Perspectives", in <i>Lines of Thought, Branching Diagrams and the Medieval Mind</i> (Chicago and London: The University of Chicago Press, 2021), 15-49.
16	Mon. 07 Nov.	Classification Methods	Orly Goldwasser, "What is a horse? Lexical Acculturation and Classification in Egyptian, Sumerian, and Nahuatl", in <i>Classification from Antiquity to Modern Times: Sources, Methods, and Theories from an Interdisciplinary Perspective</i> (Germany: De Gruyter, 2017), pp. 45-65.
17	Wed. 09 Nov.	Classification Methods	Katharina Sabernig, "The Tree of Nosology in Tibetan medicine", in <i>Systems of Classification in Premodern Medical Cultures: Sicknes, Health, and Local Epistemologies</i> , ed. Ulrike Steinert (London & New York: Routledge, 2021), pp. 233-53.
18	Mon. 14 Nov.	Geometric Diagrams and Symbols	Meekyung Ruth MacMurdie, "Proven Recipes: Geometry and the Art of Arabic Medicine" in <i>The Diagram as Paradigm: Cross-Cultural Approaches</i> , eds. Jeffrey F. Hamburger (Harvard University Press, 2022), pp. TBA.
19	Wed. 16 Nov.	Geometric Diagrams and Symbols	Sara Kuehn, "The Eclipse Demons Rāhu and Ketu in Islamic Astral Sciences", in <i>In Umbra: Demonologja kak semiotičeskaja Sistema (Demonology as a Semiotic System)</i> , eds. D. Antonov and O. Khristoforova (Moscow: Indrik, 2016), pp. 203-35.
20	Mon. 21 Nov.	Maps and Cartography	Elly Dekker, <i>Illustrating the Phaenomena: Celestial Cartography in Antiquity and the Middle Ages</i> (Oxford: Oxford University Press, 2013), pp. 1-26.

21	Wed. 23 Nov.	Maps and Cartography	Yossef Rapoport and Emilie Savage-Smith, "The Nile, the Mountain of the Moon, and the White Sand Dunes" in <i>Lost Maps of the Caliphs: Drawing the World in Eleventh-Century Cairo</i> (Chicago and London: The University of Chicago Press, 2018), pp. 101-24.
22	Mon. 28 Nov.	Visualisation and Female contribution	Jeffrey F. Hamburger, "Texts Versus Images: Female Spirituality from an Art Historian's Perspective", in <i>The Visual and the Visionary: Art and Female Spirituality in Late Medieval Germany</i> (Zone Books, 1998), pp. 13-34.
23	Wed. 30 Nov.	Tabular Knowledge	Dror Weil, "Translating Medical Experience in Tables: The Case of Eleventh-Century Arabic <i>Taqwīm</i> Works", in <i>Premodern Experience of the Natural World in Translation</i> , eds. Katja Krause et al. (New York & London: Routledge, 2022), pp. 230-49.
24	Mon. 05 Dec.	Astronomical Tables and Star Catalogues	1- José Chabás and Bernard R. Goldstein, "Chronology" in <i>A Survey of European Astronomical Tables in the Late Middle Ages</i> (Leiden & Boston: Brill, 2012), pp. 13-8. 2- Emilie Savage-Smith, "The Most Authoritative Copy of 'Abd al-Rahman al-Sufi's Tenth-century Guide to the Constellations" in <i>God Is Beautiful and Loves Beauty: The Object in Islamic Art and Culture</i> , ed. Sheila Blair and Jonathan Bloom (New Haven: Yale University Press, 2013), pp. 122-55.
25	Wed. 07 Dec.	Constellations	Godefroid De Callataÿ, "The Knot of the Heavens", <i>Journal of the Warburg and Courtauld Institutes</i> 59 (1996), pp. 1-13
26	Mon. 12 Dec.	Final Discussion	Individual presentations of the papers