Metapatterns and Big History

Advanced Honors Seminar Spring 2019
AHSEM-UA.259 / ENVST-UA.300
Wednesdays 4:55–7:35 p.m.
618 Silver

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In the instructor’s book Metapatterns Across Space, Time, and Mind, metapatterns are defined as functional patterns or principles common across a variety of “things” and have consequence in both biology and culture. About Big History, Lowell Gustafston, president of the International Big History Association (IBHA), says, “One of the great human achievements has been the development of an evidence based account of the entire known past that has moved through stages from the Big Bang until today.” The instructor’s recent book, Quarks to Culture: How We Came to Be, develops a new big history of stages as a series of fundamental levels from physics and chemistry to biological evolution, and also to the exciting new field of cultural evolution. In this course, students will have an opportunity to work with the instructor and conduct original research that seeks to apply metapatterns to Big History and the fundamental levels developed in Quarks to Culture. Specifically, metapatterns include binaries, borders, layers, alphabet-like systems, arrows in time, and breaks and cycles in time. Students will develop findings, based on these works and their individual interests and major. Topics can include the nature of physical laws, patterns of life from physical trees to evolutionary trees, animal societies, language, music, symbols, architecture, mental phenomena (i.e., the time-patterns of thoughts), politics, philosophy, and a wide spectrum of environmental issues. For a sense of the material, see the instructor’s book Metapatterns Across Space, Time, and Mind; the instructor’s papers about metapatterns available from this website (http://metapatterns.wikidot.com/members:tylervolk; for example, Volk and Bloom (2007)); the instructor’s trio of YouTube videos on metapatterns (search “professortylevolk” and “metapatterns”); the review of Q2C by a board member of the IBHA in Science (http://blogs.scientemag.org/books/2018/01/16/quarks-to-culture/); and web material about the IBHA. This course is cross-listed with Environmental Studies as ENVST-UA254.001, and for ES students, this course can count towards the major.

Tyler Volk is Professor of Biology and Environmental Studies and a recipient of the University’s Distinguished Teaching Award. He is the author of books and papers that point to common functional principles across different scales. Several relevant papers can be accessed at http://metapatterns.wikidot.com/members:tylervolk. Volk conducts research on the global carbon cycle and Earth’s future.
**Your work:** This is an active, project-based course, in which you be guided facilitated into independent thinking and then research, in addition to the required reading. There will ongoing classroom presentations, using powerpoint and other media (the board, handouts, etc.). The classroom becomes a workshop for developing new understandings of patterns in the development of the universe from physics and biology to the complexities of culture.

**ANTICIPATED FLOW OF WORK:** One major project, with several presentations of readings and personal comments along the way, on topics that are asked to be “responses” to material being presented in the readings and discussions. The major project will be the focus of the course from week 10 onward, with several presentations of concepts in focus groups and to the overall class. Focus groups will serve as review panels and engage peers in the topic of comparing and contrasting metapatterns and their applications to the ongoing research of each student.

**Week by week topics:**

Week 1. Introduction to metapatterns, Big History, and the fundamental levels of quarks to culture, from physics to psychology. Could there be a science, or a study, of everything? What does Big History say about this? What has the instructor said about this question in his books? Would the phenomena being studied involve pattern itself? In an overview lecture, we will develop this question. Readings for everyone and responses by 3 students will be assigned for the following week.

Week 2. Seminar discussion of readings from Origin Story. Handouts of chapters 1-3 of Metapatterns.


Week 4. Continued seminar discussion of readings from Origin Story (if needed) Start discussion of chapters 1-6 of Metapatterns. The book Quarks to Culture will be given out at this time. Handouts of chapters 7-10 of Metapatterns.

Week 5. Continued discussion of chapters 1-6 of Metapatterns, and start discussion of chapters 7-10 of Metapatterns.

Week 6. Start of more formal presentations on topics of your choosing. Finish discussion of chapters 7-10 of Metapatterns and start of discussion of Quarks to Culture.

Week 8. Presentation of ideas for final projects, and continued discussions. All students make brief presentations of a proposal for a final project, which applies ideas about metapatterns to the models or scenarios proposed by Q2C and Big History. All students get feedback from class discussion about their individual proposals. All students turn in an annotated list of readings they did for this proposal. An assignment to refine their project ideas will be given for the following week, as well as instructions to read journal papers relevant to their proposals (and turn in a second annotated list of those readings).

Week 9. Students present findings from additional readings they have done relevant to their proposed final topic.

Week 10. Each student makes a second brief presentation of a proposal for a final project, modified from their plans from the previous week, taking into account prior class “workshop” feedback, in which each applies ideas about metapatterns to the models or scenarios proposed by Q2C and Big History. All students get a second round of feedback from class discussion about their individual proposals. All students turn in an annotated list of readings they did for this proposal. An outline for the rest of the semester will be developed, in collaboration with students, including short works-in-progress presentations, and at least one major presentation, as well as the final paper.

Week 11. During these final weeks 11-15, the seminar is a fully-dedicated working group, in which students lead discussions based on what they are reading and thinking about, building on what they have previously presented. Everyone is now up to speed with the fundamentals: basic levels of dynamics, including physical, biological, and cultural (including mental) as pattern-generating realms; types of metapatterns that occur in those realms and across basic levels; aims of Big History and its current definition of the thresholds. Students present original work and get feedback in the seminar.

Week 12. Students present original work and get feedback in the seminar: (as in Week 11, continued)

Week 13. Student present work. Everyone submits preliminary papers (introduction, and at least main figures and preliminary or anticipated findings) for a round of peer review by others.

Week 14. Submission of reviews of papers and general discussions about connections among the papers (at least 2 papers will be reviewed by every student)

Week 15. Final presentations (if required for some), final discussion, submission of final papers.

**Grading:**
Course attendance and participation (10%)
Oral reports on the assigned readings and short papers (2-3 pages) corresponding the oral reports (15%)
Two presentations of ideas for final projects (2 x 7.5% each = 15%)
Two, 2 page reviews written of preliminary papers of others (10% total)
Reading lists developed during preliminary presentations of ideas for final projects (5%)
Final project, including final presentations and final paper (15-25 pages): (10% + 35% = 45% total)
Total = 100%
(Oral presentations will be graded based on (1) thoroughness of preparation and understanding of readings, (2) clarity and organization of ideas, (3) professional development of ppts or handouts, and (4) interest generated in classroom discussions. Durations for the oral reports and follow-up times allotted to general classroom discussion about reports will be adjusted based on the class size and requirements of the topic; usually I find that reports tend to be well-prepared and therefore more time is usually welcomed.)

Required, core readings:

Course books:


Course papers:


**Total pages of required reading** for weeks 1-9, about 800 pages. In addition, when students get into their own projects, I anticipate about 200-400 pages of individually-developed reading will be required (mostly journal articles and parts of books) for that final third of the course.

Main website: [http://metapatterns.wikidot.com](http://metapatterns.wikidot.com)
**Additional articles by the instructor as supplementary reading:**


**Other possible readings of interest, as supplementary reading or perhaps directly useful in projects:**


Mesoudi et al. (2006) Toward a unified science of cultural evolution. *Behavioral and Brain Sciences*, 29, 329-383. (selections from; available online from NYU Libraries.).


**Academic Integrity**
Academic Integrity, Plagiarism, and Cheating (adapted from the website of the College of Arts & Science, https://cas.nyu.edu/content/nyu-as/cas/academic-integrity.html):
Academic integrity means that the work you submit is original. Obviously, bringing answers into an examination or copying all or part of a paper straight from a book, the Internet, or a fellow student is a violation of this principle. But there are other forms of cheating or plagiarizing which are just as serious — for example, presenting an oral report drawn without attribution from other sources (oral or written); writing a sentence or paragraph which, despite being in different words, expresses someone else’s idea(s) without a reference to the source of the idea(s); or submitting essentially the same paper in two different courses (unless both instructors have given their permission in advance). Receiving or giving help on a take-home paper, examination, or quiz is also cheating, unless expressly permitted by the instructor (as in collaborative projects). Students are expected to know and understand the policies on academic integrity, including University and CAS policies. The instructors of this course will not tolerate cheating or plagiarism. When academic dishonesty is suspected, it will be dealt with seriously in adherence to these policies.

**Diversity and Inclusion**
The instructors of this course share NYU's commitment to “building a culture that respects and embraces diversity, inclusion, and equity”. We aim to create a learning environment in which every student feels included, supported, and respected. We will hold students (and ourselves) to the CAS Honor Code's pledge to "behave with decorum and civility, and with respectful regard" for others.

**Accommodations for Students with Disabilities**
Academic accommodations are available for students with disabilities. The Moses Center website is www.nyu.edu/csd. Please contact the Moses Center for Student Accessibility (212-998-4980 or mosescsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.