

First-Year Seminar 52c: Tree
Fall 2025 Harvard College

Instructor: William (Ned) Friedman, Arnold Professor of Organismic and Evolutionary Biology

Course Description

Short:

Have you hugged a tree lately? How about grown one? Photographed one? Drawn one? Written about one? Imagine a semester devoted to connecting two organisms: a person (you) and a tree (not you). Interacting with a single tree, you will explore its individual history, evolutionary history, life cycle, leaves, bark, roots, flowers, cones, and architecture.

Complete:

To wander about among a vegetation which is new to one is pleasant and instructive. It is the same with familiar plants as with other familiar objects: in the end we cease to think about them at all. But what is seeing without thinking? (Goethe, Italian Journey)

In an age of environmental destruction and outright murder of our biological brethren, there is something deeply troubling about humanity's relationship with nature. Technology has left us with mere facsimiles of nature—pixilated abstractions of biodiversity through satellite imagery, decoded strings of DNA—and we, as a species, have become fundamentally disconnected from actual nature and the magnificent organisms with which we share the earth. In this seminar, we will work to understand and give agency to trees as individual organisms, literally rooted in the ground, and evolutionarily rooted in deep time. Topics to be covered include the evolutionary origin of arborescence, human relationships with non-sentient organisms, the case for legal rights for natural objects, reading a twig, the unseen world of roots, and finding human meaning in the longevity in trees. Each student will also work with an individual tree in the living collections of the Arnold Arboretum of Harvard University and observe (*see*) this organism throughout the entire semester through the creation of images (photography, drawing), journaling, and other forms of representation. The goal of this seminar will be to initiate a personal and lifelong connection with the “other,” the vast and variant organisms with which we share the planet.

Readings: Readings for each class are listed on the syllabus and will be available on the Canvas course site.

Weekly reaction statements: Every week, you will submit on Canvas by 9:00 am on the day of class a synopsis of what you discovered in the readings, what you thought was interesting about the readings and a general reaction to the readings. The goal is to develop your abilities to write about ideas and create interesting narratives and queries about the readings. Except for the last class meeting, each reaction statement should be a single-spaced page of text.

Weekly tree documentations: Each week, before class, you will submit two annotated images (photographs/drawings, journal entries) of your tree with a caption that describes your observations. There is no single “right” way to observe a tree or any other organism. But, to take

in another organism does require that you begin by pledging to avoid making that organism a mere extension of *your* self. Over the course of the semester, you can hope that by getting to know another organism you will experience joy, delight, mystery – indeed, a wide range of personal reactions and emotions. After all, you are a sentient being.

So, how to observe? There are two ways of proceeding. First, you need to record and reflect on your tree every week. You can photograph, draw or sketch, write in a journal, record sounds; in essence anything goes. Rest assured that you will get better at all of these approaches to giving standing to your tree as the semester proceeds and you become a better, keener observer. Second, you must decide what you are going to observe. This can vary from week to week and need not be planned. Indeed, it may be best to simply arrive at your tree and let it guide you to a set of observations and personal reflections. There is the whole tree, its architecture and stature. There are the organs of the tree, its seeds and fruits, leaves, buds, bark. There are colors, textures, processes (senescence, for example in the fall; growth and the creation of new organs in the spring and summer). Allow yourself to obsess while you are observing your tree.

To complete each week's interaction with another organism, in the evening of the day when you have visited your tree, you should devote time to reflection. Look at your photographs, drawings, writing, recordings. Frame your images, refine your writing, resketch. Think. Ponder. Go online and look things up. Think. Ponder.

Your recorded observations will form the basis of your class projects. Throughout the semester, we will make time in class to view and discuss your images together.

End-of-semester reflections: During the last two meetings, you will prepare a powerpoint presentation of the semester's observations and personal reflections on your tree. This presentation should be eight minutes in length. For the last reaction statement of the semester, you will submit a five-page essay (double-spaced) that covers the entirety of the semester and reflects on what you have learned and experienced through the readings and your personal experiences with growing and observing a tree.

Weekly meeting time: 3:00–6:30 PM on Mondays

Class locations: Meeting locations for class will vary from week to week. We will meet at several locations in the Arnold Arboretum of Harvard University in Boston and at the Harvard University Herbaria on campus. Please review the syllabus carefully each week for the correct meeting place.

How do I get to the Arnold Arboretum? When class meets at the Arnold Arboretum, transportation will be provided in the form of rideshares from campus to the class location. You will receive instructions on where to meet and how to use the phone app at the beginning of the semester. Alternatively, you can bicycle to the Arboretum (map to be provided)! Far better for the environment and you.

Class Schedule

Week 1 – September 8

Topic: Course overview; Introduction of the teaching team; What is a tree? Can the essence of a tree be defined?

Meet: Meet at 125 Arborway, Arnold Arboretum

Read: Tudge C. (2005) *What is a tree?* In: *The Tree: A Natural History of What Trees Are, How They Live, and Why They Matter*. New York: Crown Publishing Group. Pages 3–12, 15-20.

Kress, W. J. (2024) *What is a tree?* In: *Smithsonian Trees of North America*. New Haven: Yale University Press. Pages 2-8.

Friedman, W.E. 2021. Seeing life: re-engaging with nature. *Harvard Magazine* March-April: 36-43.

Arboretum experience: A walk on the grounds

Week 2 – September 15

Topic: Birth of the concept of an arboretum; birth of the Arnold Arboretum

Meet: Meet at 1050 Centre Street, Dana Greenhouses

Read: Loudon, J., & Strutt, J. (1840) *The Derby arboretum containing a catalogue of the trees and shrubs included in it, a description of the grounds and directions for their management, a copy of the address delivered when it was presented to the town of Derby, by its founder, Joseph Strutt, esq., and an account of the ceremonies which took place when it was opened to the public, on Sept. 16, 1840*. London: Longman, Orme, Brown, Green & Longmans. Pages 7–10 & 71-85.

Hay, I. (1994) George Barrell Emerson and the Establishment of the Arnold Arboretum. *Arnoldia* 54(3). Pages 12-21.

Friedman W.E., Dosmann, M.S., Boland, T.M, Boufford, D.E., Donoghue, M.J., Gapinski, A., Hufford, L., Meyer, P.M., and Pfister, D.H. (2016) *Developing an Exemplary Collection: A Vision for the Next Century at the Arnold Arboretum of Harvard University*. *Arnoldia* 73(3). Pages 2-18.

Submit: One-page reaction statement to reading & two annotated images of your tree

Arboretum experience: Tour of plant propagation; planting a tree and the miracle of a tree seed

Week 3 – September 22

Topic: Intertwining trees and families

Meet: 1300 Centre Street, Boston, Weld Hill Lecture Hall

Read: Powers, Richard. (2018). Nicholas Hoel. In: *The Overstory*. New York: W.W. Norton & Company. Pages 5-23.

Kimmerer, Robin Wall. (2013). The Council of Pecans. In: *Braiding Sweetgrass*. Pages 11–21.

Miles, Tiya. (2021). Ashley’s seeds. In: *All that She Carried*. New York: Random House. Pages 193-223.

Submit: One-page reaction statement to reading and two annotated images of your tree

Arboretum experience: American chestnut trees and pecan trees

Week 4 – September 29

Topic: The origins of arborescence: an evolutionary historical perspective

Meet: Harvard University Herbaria 125

Read: Lucretius Carus, T., & Copley, F. (2011) Book V. In: *On the Nature of Things*. New York: W.W. Norton. Pages 126 (line 596) – 134 (line 924).

Stein, W., Berry, C., Morris, J., Hernick, L., Mannolini, F., Ver Straeten, C., ... Leake, J. (2020) Mid-Devonian Archaeopteris roots signal revolutionary change in earliest fossil forests. *Current Biology* 30: 421–431.

Submit: One-page reaction statement to reading & two annotated images of your tree

Cambridge campus experience: A visit with fossil trees long gone in paleobotanical collections

Week 5 - October 6

Topic: Roots, the unseen half (architecture and symbioses)

Meet: Weld Hill Lecture Hall

Read: Perry, T. (1989). Tree roots: facts and fallacies. *Arnoldia*, 49(4), 2-21.

Lyford, W.H. and B.F. Wilson. (1964). Development of the root system of *Acer rubrum* L. *Harvard Forest Paper* No. 10.

Check out this amazing website on roots:

<https://images.wur.nl/digital/collection/coll13>

Submit: One-page reaction statement to reading & two annotated images of your tree

Arboretum experience: Excavating a root system with an air spade

October 13, University holiday

Week 6 – October 20

Topic: Bonsai

Meet: Meet at 1050 Centre Street, Dana Greenhouses

Read: The Larz Anderson Bonsai Collection, *Arnoldia* 64 (2-3), 2006.

Submit: One-page reaction statement to reading & two annotated images of your tree

Arboretum experience: In the bonsai collection with bonsai master and manager of plant production

Submit: One-page reaction statement to reading & two annotated images of your tree

Week 7 – October 27

Topic: Autumn colors: the ongoing mystery of why?

Meet: 1300 Centre Street, Boston, Weld Hill Lecture Hall

Read: Lee, David W, & Gould, Kevin S. (2002). Why leaves turn red. *American Scientist* 90: 524-531.

Renner, Susanne S, & Zohner, Constantin M. (2019). The occurrence of red and yellow autumn leaves explained by regional differences in insolation and temperature. *New Phytologist* 224: 1464-1471.

Have a look at this website:

<https://vtcostudies.org/blog/abscission-and-marcescence-in-the-woods/>

Healy, N. (2022). Diptych: Abscission and Marcescence. *Scientific American* October 2022: 24.

Submit: One-page reaction statement to reading & two annotated images of your tree

Arboretum experience: A walk on the grounds to experience peak fall colors

Week 8 – November 3

Topic: Trees move! Global migrations of temperate trees

Meet: Harvard University Herbaria 125

Read: Selected correspondence between Asa Gray and Charles Darwin on disjuncts.

Yih, D. (2012). Land Bridge Travelers of the Tertiary: The Eastern Asian-Eastern North American Floristic Disjunction. *Arnoldia*, 69(3), 14-23.

Lord, B. (2015). The great forest migration. *Northern Woodlands*, Spring Issue, 26-33.

Davis, M.B. and R.G. Shaw. (2001). Range shifts and adaptive responses to quaternary climate change. *Science* 292: 673-679. **Don't read, just look at figure 1.**

Check out these gif animations for last 20,000 years of pollen records of North American trees: <https://www1.ncdc.noaa.gov/pub/data/paleo/pollen/viewer/animated-gifs/>

Botany Libraries experience: Charles Darwin and Asa Gray correspondence on plant biogeography

Week 9 – November 10

Topic: Should trees have legal standing?

Meet: 1300 Centre Street, Boston, Weld Hill Lecture Hall

Read: Stone, C. (2010). Introduction and Should Trees Have Standing? In: *Should Trees Have Standing: Law, Morality, and the Environment* (3rd ed.). Oxford University Press. Pages xi – xvi and 1 – 31.

McCullers, C. (2005). A tree, a rock, a cloud. In: *The ballad of the Sad Café and Other Stories*. Boston: Houghton Mifflin. Pages 141-152.

Submit: One-page reaction statement to reading & two annotated images of your tree

Arboretum experience: A walk on the grounds

Week 10 – November 17

Topic: How to read a tree and contemplating the meaning of tree longevity

Meet: 1300 Centre Street, Boston, Weld Hill Lecture Hall

Read: Core, E.L. & Ammons, N.P. (1958) Woody plants in winter. In: *Woody Plants in Winter*. pp. 1–15.

Hitch, C. (1982). Views: Dendrochronology and Serendipity: An astronomer's simple but ingenious technology failed in its original objective but achieved unforeseen and astounding successes. *American Scientist* 70(3): 300-305.

Liu, J., Yang, B. & Lindenmayer, D. (2019) The oldest trees in China and where to find them. *Frontiers in Ecology and the Environment* 17(6): 319–322.

Wagoner, D. (1999). Stump speech. In: *Traveling light: Collected and new poems*. Urbana: University of Illinois Press.

Have a look at these websites:

<http://www.rmtr.org/oldlist.htm>

<http://dendro.cnre.vt.edu/olds/oldlist.cfm>

<https://cypress.uark.edu>

Submit: One-page reaction statement to reading & two annotated images of your tree

Arboretum experience: Dissecting buds, reading twigs, and coring a tree

Week 11 – November 24

Topic: What is *a* tree? Student presentations

Meet: 1300 Centre Street, Boston, Weld Hill Lecture Hall

Week 12 – December 1

Topic: What is *a* tree? Student presentations

Meet: 1300 Centre Street, Boston, Weld Hill Lecture Hall

Submit: Five-page (double spaced) reflection on a tree and the course