

Kathryn Strong Hansen, “Literature for Specific Purposes: A Literary Approach to Teaching Ethics in Science and Technology.”
Configurations 26.3 (Summer 2018): 337-343.

Abigail Droge’s review of Kathryn Strong Hansen’s article is designed to be read in conjunction with her review of Jessica Roberts, “Teaching Literature and History of Medicine in the National Health Service” (*Configurations* 26.3 Summer 2018), also in this issue.

What can literature do when it leaves the confines of an English Department and engages directly with students in scientific disciplines? Kathryn Strong Hansen offers compelling answers to this question through the development of her titular concept: “literature for specific purposes”. As an “interdisciplinary approach to teaching science and technology” (338), “literature for specific purposes” injects the humanities into new classroom environments, “primarily through the targeted selection of literary texts, direction of subsequent discussion, and construction of assignments to meet discipline-specific learning outcomes” (337-338). Using ethics instruction, particularly for engineering students, as a case study, Hansen demonstrates the power of her methodology on multiple levels. First, at the level of the lesson-plan, literature in science education can provide “nontechnical skills” (337), encourage “intellectual and logical experimentation” (340), and enlarge the “understood experience” (341) of students new to the field. Further, on the level of institutional structure, “literature for specific purposes” can inspire cross-disciplinary collaborations between faculties, as they share expertise across departmental boundaries (338-339). The practice can also strengthen justifications for the humanities in collegiate education by establishing “more overt connections” (342) between the study of literature and the non-literary jobs in which such study can help you to excel.

Hansen speaks from the perspective of “a scholar trained in literary criticism but who works at a technical university” (Chalmers University of Technology in Sweden), which allows her to give an engaging account of her first-hand experience translating the humanities into “what are often viewed as radically disparate areas of study” (338). Hansen sees her approach emphatically as a “*supplement*” to “the extant liberal arts methods of teaching literature”, making clear her reluctance to “*replace*” traditional modes of literary analysis (342, emphasis in original). In this response, however, I would like to push a bit farther, suggesting ways that an embrace of “literature for specific purposes” could fundamentally reframe literary research and pedagogy. Writing about the impact of bringing literature to science students, Hansen comments that an unfamiliar discipline can ultimately shed light on one’s own, allowing an engineering classroom, for instance, to “capitaliz[e] on the plurality of student perspectives” through literary analysis and “contribute to a nuanced and communally built discussion of disciplinary norms and ethical principles” (340). I think we can usefully turn this equation around, allowing us to reflect on how engagements with other fields can ultimately prompt a “discussion of disciplinary norms and ethical principles” from within the humanities, as well.

I draw here from my own experiences in a recent class that I taught in the English Department at the University of California, Santa Barbara (UCSB), called “Reading with Scientists: How to Export Literature”. In many ways, the class inverts

the central premise of Hansen's work. Rather than teaching literature in a different disciplinary setting, such as engineering, "Reading with Scientists" brought the concerns of STEM pedagogy into a literature department. Students hailed from a variety of majors, including both humanities and science backgrounds, which gave us a helpful range of expertise in the class. The majority, however, were English majors. When placed in dialogue with "literature for specific purposes", "Reading with Scientists" can be seen as an attempt to integrate the ethos of application back into the study of literature as such. In other words, what implications might the use of literature by other disciplines have for our home discipline of literary study?

Each week, "Reading with Scientists" paired literary and scientific texts, with the goal of finding connections between them. For instance, we read Mary Shelley's *Frankenstein* (the 2017 MIT Press edition, which is annotated for scientists and engineers and edited by David H. Guston, Ed Finn, and Jason Scott Robert), in conjunction with selections from multiple fields, such as genome engineering, artificial intelligence, and data mining (particularly in the context of Facebook's data policies). Since my training is in nineteenth-century British literature, I found Victorian narratives particularly generative for making interdisciplinary links. We examined H. G. Wells's *The Time Machine* in the context of environmental science and read Arthur Conan Doyle's *The Lost World* alongside selections from Darwin's *Journal of Researches*, a report about the role of science and technology in the US Agency for International Development, and a textbook on Biotechnology. The syllabus also included twentieth-century science fiction, as well. We paired Isaac Asimov's "Runaround" with a discussion of driverless cars, used Ursula Le Guin's "The Ones Who Walk Away from Omelas" to launch a conversation about the inequalities of big data, and read Ted Chiang's "Story of Your Life" in relation to literature and medicine programs and medical textbooks such as Harrison's *Principles of Internal Medicine*.

I purposefully chose some of our scientific excerpts from textbooks that were concurrently being assigned in science classes at UCSB, which gave me a chance to foreground the immediacy of connections for students. Two such excerpts, both oriented around ethics, came from *Artificial Intelligence: A Modern Approach* (Third Edition, Stuart J. Russel and Peter Norvig) and *Ethics, Technology, and Engineering: An Introduction* (Ibo Van De Poel and Lamber Royackers), which we paired with *Frankenstein*. This pairing is particularly interesting in the context of Hansen's idea that "one key way to transfer fiction-based ethical discussions to discussions of professional ethics involves the use of real-world ethics codes in lieu of literary theory in interpreting fictional texts" (341). Hansen describes an exercise for engineering students as follows:

[S]tudents could answer questions such as: "Does the novel's main character violate this aspect of the Institute of Electrical and Electronics Engineers' code of ethics: 'be honest and realistic in stating claims or estimates based on available data?' Why / to what extent? Or why not?" (341-342)

In "Reading with Scientists", my students engaged in a very similar exercise, comparing the codes of ethics laid out in our textbook excerpts to the behavior of Victor Frankenstein, which helped us to analyze the protagonist in a new way and to imagine how his actions might be viewed if translated into the present (how might we judge Frankenstein if he created his monster when employed by a biotech firm, for instance?). Our discussion also shed light on how such ethics textbooks might be read as literature themselves. In *Ethics, Technology, and Engineering*, for instance, we paid attention to

the ways that the textbook already relied upon storytelling, often providing narrative examples of scientists' lives and achievements in order to showcase certain behaviors. This helped us to see the fabric of ethics discussions as inherently interdisciplinary, even within a strongly scientific context. In *Artificial Intelligence: A Modern Approach*, we looked at where ethics fell within the larger narrative arc of the textbook as a whole (at the very end!) and considered how instruction might change if ethics were differently placed. Encouraging English students to see scientific writing as having literary qualities like a plot, characters, and a point of view was a helpful way of making such textbooks, otherwise intimidating, into accessible pieces that could be engaged from a humanities perspective.

The subtitle of our class, "How to Export Literature", was meant as a prompt to consider different ways in which literature might be most effectively communicated to scientific audiences. One of our assignments, the "Lesson Plan", particularly resonates with the interdisciplinary modes of application central to Hansen's piece. In this exercise, students had to propose ideas for teaching literature in a non-literary setting, essentially performing imaginatively what Hansen's career demonstrates in reality. In teams, students were tasked with designing an activity targeted towards a particular scientific audience at any level of their choosing, from college freshmen to advanced professionals. Each team also had to choose a literary text, a clear issue that they wanted to address with their audience, and a set of learning goals. The assignment allowed students to be creative and resourceful. Ideas included presenting Lewis Carroll's *Alice's Adventures in Wonderland* to Biochemistry college students to discuss the ethics of prescribing psychedelic drugs as therapy treatment; asking a group of Exxon Mobil executives to read *The Lorax* by Dr. Seuss in the context of eco-management; teaching the poetry of William Wordsworth and Percy Shelley to a college class of Environmental Engineers as a way of understanding personal and social meanings of nature; discussing George Orwell's *1984* with Facebook employees to address questions of internet privacy; and reading Isaac Asimov's short stories with NASA and SpaceX engineers to frame a discussion of preserving Earth's resources.

The success of this assignment, and the power of Hansen's methodology, both hinge on a single question: how can you read a text while keeping a different reader (not you) in mind? Specialization tends to create readers in its own image: when analyzing a text in an English Department, one is most often encouraged to think through the terms in which other humanists have encountered that text. But attention to the potential applications of a work of literature in unfamiliar disciplinary contexts can also re-energize literary study from within. Our pairings of literature and science throughout "Reading with Scientists" helped us to see the literature with new eyes as much as it prompted new dialogue about technological innovations or scientific ethics. Hansen's work thus encourages us to reframe application as a fundamental value for all literature classrooms, not just those in technical universities.

Abigail Droge
University of California, Santa Barbara