



Photos courtesy of THE ACADEMY OF SCIENCE AND DESIGN

How did it feel to be a weaver in a 19th century textile mill? ASD Humanities II class visits the Tsongas Industrial History Center in Lowell, Massachusetts, for a hands-on demonstration of 19th century textile manufacturing in connection with a "History of Science and Technology" course.

Science

CONTINUED FROM | PAGE 3

(1) A "flipped classroom" encourages students to learn important content outside the classroom and use the majority of class time for interaction, practice and projects. (2) Self-directed and project-oriented classes encourage individual inquiry and risk-taking, engaging students as problem-solvers. (3) "Learning Studio" requires juniors to design, instigate and implement a project of interest requiring extensive research and collaboration across subjects. (4) All students develop academic skills along with keen global awareness and a commitment to improving the lives of others.

The core curriculum includes integrated biology and chemistry, aerospace, experimental physics, computer science and environmental science that work in tandem with creative writing and social studies courses like "History of Science and Technology." The overwhelming impression one gets upon visiting ASD is the remarkable lack of supervision, a learning environment in which students feel connectedness to peers and faculty and an overwhelming sense of purpose, interest, focus – there are no distractions from students who are disengaged. The key to creating this transformative learning environment is the full integration of the sciences with the arts and humanities.

At a time when knowledge is exploding exponentially at ever increasing speeds, academia has splintered into increasingly smaller worlds where specialized jargon keep subjects inaccessible to anyone except an insider, despite the fact that the human brain, indeed, Nature itself, argues against artificial walls between subjects. For decades, interdisciplinary studies have been isolated borderlands in specialized academia. But the times are changing, according to evolutionary biologist Edward O. Wilson. In *The Origins of Creativity*, Wilson explains how the humanities went wrong; where the sciences fell short; why the two are racing towards each other at ever increasing rates; and why that synergy is crucial to the future of the planet.



According to Wilson, the humanities have failed in their "anthropocentrism" – viewing the world by drawing meaning "exclusively in human terms" without regard for the thousands of species that make up the natural world. Through the eyes of an evolutionary biologist, the average human being is deaf, dumb and blind.

Deaf, in comparison to "the auditory geniuses of the animal world," from bats that navigate by radar to the complex language of elephants we cannot even hear. Dumb when it comes to our sense of smell. "Every ecosystem is an 'odorscape' of still unimagined complexity and brilliance" yet we humans have "almost no vocabulary for chemical reception." Blind in that we are primarily audiovisual, and see only a sliver of the electromagnetic spectrum that literally lights up the rest of the species on earth. In terms of scientific awareness, Wilson likens human perception and comprehension of what is around us to living in a 2-D world. The humanities need to embrace science, tell its stories, observe and learn and from the soundscapes and odorscapes of species that are all around us.

Yet the humanities remain of crucial importance. Wilson: "The humanities alone create social value. Their languages, buoyed by the creative arts, evoke feelings and actions instinctively felt to be correct and true ... (becoming) the preeminent source of moral judgment."

Meanwhile, STEM has become a symbol of American power. Wilson: "There seems almost nothing that technoscientific culture cannot accomplish in time – cure disease, create artificial body parts and organisms, produce unlimited food in vertical LED

illuminated hydroponic farms, desalinate seawater with solar or fusion energy." But Wilson argues, scientists are too often myopic. "The majority of scientists are journeymen. ... They can tell you almost everything known about, say, cell membranes or the megalomorph spiders... but not much in depth about anything else."

Wilson: "The human enterprise has been to dominate Earth and everything on it, while remaining constrained by a swarm of competing nations, organized religions, and other selfish collectivities, most of whom are blind to the common good of the species and planet. The humanities alone correct this imperfection. Being focused on aesthetics and value, they have the power to swerve the moral trajectory into a mode of reasoning, one that embraces scientific and technological knowledge."

Linking scientific humanities with humanistic science will literally change the way we think. "Like the sunlight and the firelight that guided our birth, we need a unified humanities and science to construct a full and honest picture of what we truly are and what we can become."

Wilson says this synthesis, this long view, leads to Philosophy. "As science and the humanities draw closer together, the synergy between them is accelerating. ... The philosopher's stone of human self-understanding is the relation between biological and cultural evolution. Why are human beings built and behaving in such and such a way and not some other?"

As Isaac Asimov reminds us: "There is an art to science, science in art; the two are not enemies, but different aspects of the whole."