

into the surrounding wild landscape, following routes where ecologists have identified existing animal activity. “Along the edges of these corridors we proposed to fell existing pine trees that have been affected by the pine beetle [a prolific pest],” Zoli explains. “The felled trees are then arranged along the edge of the corridor to serve as both habitat and as a natural obstruction, eliminating the need for conventional fencing.”

MVVA, Van Valkenburgh says, was “essential in merging the imperatives of structural design with the imperatives of ecological systems.” In particular, his firm “provided the landscape framework for the structure developed by HNTB, found low-impact ways to accommodate the grade change on both sides, and created the appropriate conditions for plants and trees to thrive and grow.” MVVA had not designed a wildlife bridge before, he says, but is often called upon to build landscape connections across infrastructure, minimize environmental impact, and work creatively within ecological parameters: “The unusual part was that these concerns were much more in the foreground, whereas the social and cultural use of the landscape, which is usually very important to the projects we undertake, was not really a determining factor.”

Outwardly, the five final designs looked strikingly similar. But the winning proposal, one juror wrote, “is not only eminently possible; it has the capacity to transform what we think of as possible.” Specifically, Waldheim says, the HNTB design “prioritized the flora and fauna over the other considerations, yet the transportation engineering was equally strong and thoroughly integrated—you didn’t see a compromise in which wildlife was secondary to bridge design, or vice versa. The outcome was greater than the sum of individual components.”

—JANE ROY BROWN

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PROS OF PROPINQUITY

The “Water Cooler” Effect

CHATTING around the water cooler may yield more than office gossip; it may help scientists produce better research, according to Harvard Medical School (HMS) investigators.

The benefits of collaboration are well accepted in the scientific world, but researchers with the HMS Center for Biomedical Informatics wondered whether physical proximity affects the quality of those collaborations: Do scientists who have more “face time” with colleagues produce higher-impact results? To test the hypothesis, they examined data from 35,000 biomedical science papers published between 1999 and 2003, each with at least one Harvard author. The articles appeared in 2,000 journals and involved 200,000 authors.

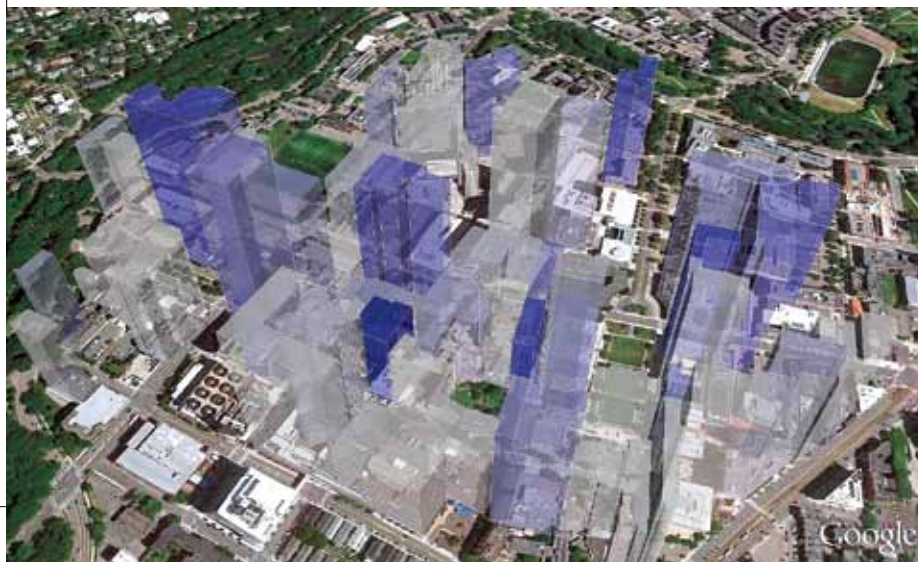
After analyzing the number of citations each paper generated (a standard way to gauge article quality) and the distances between coauthors, they concluded that personal contact, especially between an article’s first and last authors,

still matters—even in an age of e-mail, social networking, and video conferencing. (Their analysis, “Does Collocation Inform the Impact of Collaboration?” appeared in the online journal *PLoS ONE* in December.)

“Our data show that if the first and last authors are physically close, they get cited more, on average,” says research assistant Kyungjoon Lee. As that distance grew, citations generally declined. (Typically, the first author is a graduate student or postdoctoral fellow and the last is a more senior faculty member; they are often affiliated with the same lab, but do not necessarily work closely together.) The effect didn’t hold true for other author combinations, such as first and third; in fact, the middle authors normally don’t interact much on a project, Lee notes. The team also found that, on average, a paper with four or fewer authors based in the same building was cited 45 percent more than one with authors in different buildings—“So if you put people who have the potential to collaborate close together,” he says, “it might lead to better results.”

Lee was first author on the study; the principal investigator was center co-director Isaac Kohane, the Henderson professor of pediatrics and health sciences and technology. Kohane had long suspected that proximity promotes collaboration, despite a lack of hard evidence, so he secured funding

In this 3D representation of the relationship between collaboration and mean citation impact in the Longwood Medical Area, each building’s height reflects the number of citations of papers originating in the building, while the color gradient (from gray/low to blue/high) represents the proportion of publications originating from that building in which both first and last authors work in the building.



and recruited Lee and others for the study.

Gathering data was much harder than Lee expected. A team of 15 undergraduates used floor plans, staff directories, and their feet to track down the specific office and laboratory addresses of the



Visit harvardmag.com/extras to see a map of collocation and collaboration at Harvard Medical School.

7,300 Harvard authors across several Harvard campuses and Massachusetts General Hospital, as well as addresses for the non-Harvard scientists included in the

study. Then they built a three-dimensional image of authors' locations, calculated the distances separating them, and evaluated the relationship between citations and distances.

More research is needed to explain why proximity seems to enhance scientific productivity, the group says, but Lee knows firsthand the difference it can make. Early on, he worked on the fourth floor of Countway Library, while Kohane was one flight above. Eventually, Kohane moved to Lee's floor, and the two wound

up chatting a lot in the center's kitchenette. "I became more active in exchanging ideas because of this experience," Lee recalls. "Science is all about communicating your ideas so others can build on them."

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MINING "WHOOSH" MOMENTS

The Dilemma of Choice

IN HERMAN MELVILLE'S *Moby Dick*, Captain Ahab pursues a great white whale that years earlier bit off his leg. Ahab, says Sean Dorrance Kelly, is on a monomaniacal quest to answer an existential question: Did the "inscrutable" whale act unthinkingly, or with calculated malice? Caught up in "monotheistic fanaticism," Ahab wants to know if there is purpose behind what happened to him—and, by extension, in the universe. But Ahab is asking the wrong kind of question, Kelly believes: the kind that can never be answered.

Kelly, chair of Harvard's philosophy department, is embarked instead on a project to understand how, in what he characterizes as a largely post-monotheistic world, one can live a meaningful life. In a society without widespread belief in God, and increasingly without a shared set of common cultural values, he sees the potential for nihilism, the rejection of all religious and moral principles to the point that noth-

ing matters. "The contemporary threat of nihilism is different from the one faced by nineteenth-century Victorians," he says, because never before have people had so much individual autonomy. Until relatively recently, shared culture largely dictated how people would live their lives: there was a system of beliefs, reinforced by so-

cial hierarchy, that meant people had very few, if any, existential choices to make. But today, the burden of choice has been thrust upon the individual. The problem is how to choose in such a way that one constructs a worthy life.

Kelly believes it is possible to train our characters to respond reflexively during meaningful moments in life. His first book for a lay audience, *All Things Shining: Reading the Western Classics to Find Meaning in a Secular Age*, draws on the traditional canon of Western literature, from Homer to Dante to Melville, as a means of laying out a solution to the problem of contemporary nihilism: the cultivation of a knowledge or understanding so deep that when the need to choose is called for—however unexpectedly—its possessors will act correctly almost without thinking, drawing from their community or cultural heritage the knowledge of what to do. One of the few such sacred or "whoosh" moments (as Kelly calls them) left in modern life occurs, he says, when a crowd rises spontaneously to cheer a great play in a sports arena. Most people can identify with that reaction, and he hopes awareness of this visceral understanding can lead to the development of other kinds of consequential, shared experiences.

"We're a bit like Melville's Ishmael," Kelly says of his coauthor, Hubert

