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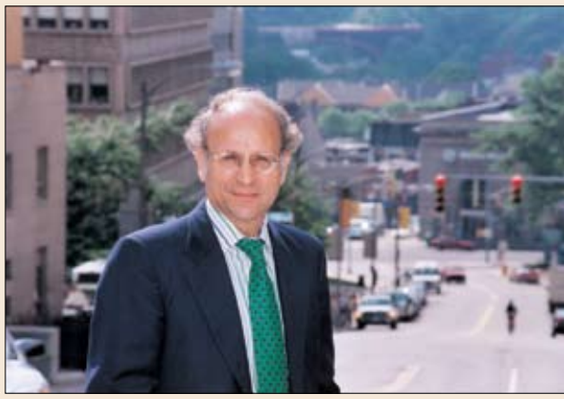
My fortieth year had come and gone and I still throwing the javelin.
—Samuel Beckett, "Horn Came Always"


JULIA MAROUS STRAUT

Playfulness in science is a notion that engages me. In recruiting students and faculty, I seek creativity, which seems to me to be encoded by a different gene than the one for intelligence—and an unlinked gene at that. As Steven Connor of the London Consortium has written, play is about creativity, an aesthetic idea, and about winning and losing, an athletic idea.

Creativity means making something out of nothing, or at least very little (imagination), and it is reflected in our perceiving similarities among disparate things. Great scientists make these connections freely, welcoming that intellectual tension, and they have a great capacity for metaphor and intuitive discovery. Looked at this way, it would seem profitable for granting agencies to spend as much time thinking about the *person* of the applicant as about his or her proposal. The history of the person who had the idea should be as interesting as the history of the idea.

A profile of Robert Lang in *The New Yorker* this past February captures this idea. Lang is a physicist and an origami master—perhaps this country's leading practitioner of that old art. He was given an origami book at age 6 by a teacher who could no longer keep Lang interested in arithmetic but who appreciated that paper folding involved principles of math as well as of art. From that time through his Caltech graduate studies and to the present, Lang has folded ever more complex structures, now involving hundreds of steps—making something out of nothing. His structures inform not only basic science (molecules such as proteins must fold and unfold in predictable and compact ways), but also applications such as a mesh heart support that is implanted in a patient with heart failure via a very thin catheter; when released from the catheter, it unfurls properly and elegantly around the heart. Origami appeals to Lang, and many others, for its simplicity and seemingly endless possibilities.

Now about the second element of play—games and sports, winning and losing. This involves individual competition. (And who would deny that research is hypercompetitive, especially now?) There is competition in the existential sense of illuminating or failing to illuminate nature. Winning or losing as a team, which characterizes much of contemporary biomedical research, is serious business. Even so, by the very definition of play, we are not *obliged* to do this. It is fun, as science should be. We know, however, that children who have no opportunity to play often have cognitive dysfunction, and that animals that are especially "playful" (e.g., ravens and Norway rats, as noted by Konrad Lorenz) have the greatest likelihood of survival in new habitats.

We seek these two elements of play—aesthetic and athletic—in our students because, confident in their ability to "think outside the box," they will make fine diagnosticians. We seek these qualities in our researchers because making something out of nothing is a risk-taking strategy involving winning and losing, and that's what great science is about. The greatest risk-takers in research are often the young, not constrained by dogma. It is that cohort in particular that we must protect in a time of granting-agency conservatism.

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