

Creating Science
Article for Concordiensis
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Like many faculty, I harbor closet interests that rarely get expressed on campus. For example, I enjoy sitting down quietly in the evening and drawing silly cartoons that make fun of my family, friends and, of course, the dog, who remains my ultimate anti-hero. I get to relax, reflect on the day's happenings, and stretch my creative legs.

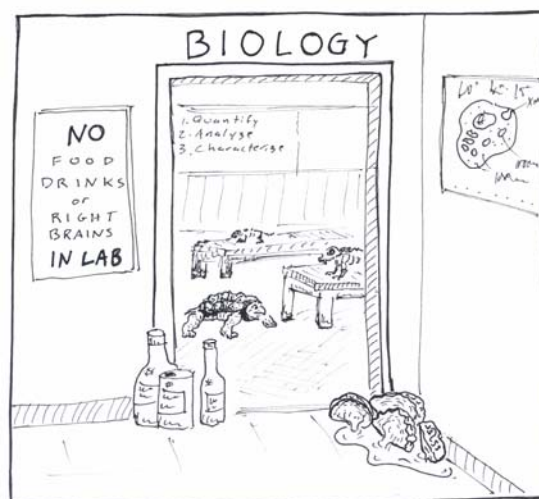
I am not alone. Many of my colleagues also lead seemingly dual lives where they engage with science during the day and music or performing, decorative or creative arts at night. Ask Profs. Olberg about percussion, Fleishman about pumpkin carving and LoGiudice to sing you a show tune. These folks don't abandon their creativity when they come to work, instead they exercise it regularly when designing, problem-solving, fabricating and synthesizing during the course of their research. The scientific process is a deeply and inherently creative one. It is only recently that I have begun to feel this way about my own research and to recognize that we fail to provide sufficient opportunities for science students to develop this appreciation for themselves.

No, no, don't give me that "left brain, right brain" thing about how science, engineering and math exercise one half of the brain and the arts and humanities the other. Although this distinction may help organize patterns of behavior and localize their origin to specific regions of the brain, overemphasizing this dichotomy leads to trouble. That is, it encourages us to self-identify with one set of traits to the exclusion of the other, with either rationality or creativity, order or spontaneity, objectivity or subjectivity, logic or intuition. Embracing the left brain—right brain distinction, justifies a polarized view of the world and permits us to associate strongly

with one set of approaches, often to the exclusion of the other.

In practice our pursuits draw upon each of these. They also blend comfortably together in scientific research as, I would argue, they also combine in art, music or poetry. I do not contend that all activities allow for equal expression of these traits, nor would I argue that we all possess an aptitude for them to an equal degree. Instead, I posit that such divergent pursuits share a need for practitioners with left-right brain synergy—those capable of tapping creative, intuitive, analytical and quantitative approaches. Indeed, we should celebrate the similarities of processes undertaken by people in different fields rather than emphasize their differences. Creativity, like analytical thinking, is intellectual common ground.

We seem to shelter our students from the creative aspects of science, resulting in the disinterest of some highly creative, potentially successful science students. Instead, we need to promote activities that stimulate both sides of the brain. Don't check your creativity at the door when you enter a science class and don't fail to consider how understanding science or technology adds value to your art. We all need to fill our toolboxes with implements that leverage creative, analytical and creative thinking and carry it with us at all times.



I was talking to a student about science and creativity last week and he suggested that webpage design effectively brought together the creative and technical as it combined graphic design and computer programming. Fine, but let us move beyond those definitions. Graphic design, like all artistic expression, is limited by technological and material constraints. Understanding where and how these bind the design process will often lead to novel approaches that enhance the finished product. Similarly, computer programming is not merely a raw, technical exercise. The best programmers are insightful and make creative use of program structure and known algorithms within the confines of rules developed within the language. Both activities—the design and the programming—are formal and structured, both have a representational language that needs to be mastered, and both benefit from creativity and innovation.

I am not the only one thinking this way on campus; have you seen the flyer for Prof. Ghaly's course entitled "Artistic Engineering" or Prof. Orellana's course on "Digital Art", both offered next term? These sound like perfect opportunities for students to engage in boundary crossing activities. However, we need to go beyond these "safety zones". My hope is that these courses will serve as portals where students learn the value of a toolbox full of creative, analytical, quantitative tools and springboard to other courses where they continue their use. Of course, faculty need to recognize and appreciate the value of broad training in creative as well as analytical approaches and organize their courses to allow fuller use of these diverse, intellectual tools. This is especially true in our culture that embraces rapid technological and cultural change where creative innovators become leaders in social, economic, scientific and arts arenas.