Spatial Thinking Across the College Curriculum

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Spatial" thinking, at its very basic level of the use of location or position, distance, directions, and movements, is fundamental for human activity and reasoning. Comprehending aspects of shape, size, orientation, and pattern underlies our ability to read, write, and perform math. Yet the very constancy and pervasiveness of spatial thinking in our lives has led to its "background" status, overlooked by educators in all but a few situations. Explicit attention over the last decade has largely been from the STEM disciplines, as spatial thinking and STEM success are increasingly linked. We now know that some modes of spatial thinking (mental rotation, figure disembedding, etc.) can be taught and learned (see the recent Uttal et al. meta-analysis, and the work of Sheryl Sorby, among others), and this raises other questions and ideas. We still have much to learn about skill transfer, individual and group differences, and learning progressions. NSF-funded efforts like the Spatial Intelligence Learning Center are excellent first steps, and their linking to educational efforts, across all ages and levels, is critical. As is continuing their efforts at outreach and making research-practice bridges.

Meanwhile, we find ourselves at a point where many academic and professional disciplines have taken a "spatial turn," each defining and implementing their ideas about this in different ways. In the social sciences and humanities, place, space, and scale have become explanatory variables, or at least contributing factors worthy of consideration. “Place” is de rigueur. Maps as a universal form of information-rich representation are at a peak of popularity, in part for the new digital formats that leverage location-based services and our hand-held devices. This coincides with the humanities taking its own digital turn, and mapping-based projects are both common and central. We say that by merging narratives and numbers, we yield insights and offer novel ways of interpreting a story. In the natural sciences, spatial approaches are a natural no-brainer. And we can look to remarkable growth of interest from professions such as business, law, and medicine, among many others. The end result is that the term “spatial” is popping up all over universities. Sometimes people on the same campus are even using GIS technology to ask similar questions about patterns, distributions, and relationships—albeit with very different objects or phenomena of interest—but their academic worlds exist in different realms and they don’t even know each other. Spatial analyses can be a marvelous common denominator, but only when we find ways to bridge our traditional silos.

And then there’s geography, with its maps, spatial perspectives, and intrinsic attention to space, place, and scale. Has the interest in “spatial” spawned a growth in academic geography? No, not really. Some, in fact, strive to distance themselves from geography by calling their practices “neo-geography”—or by shunning the term altogether, perhaps in favor of “spatial sciences,” as USC recently did.
Across higher education, this conflation of “spatial” and “geography” and “GIS” both confuses and bemuses. At best, the conflation either makes little difference, or might even drive some to stop and read when they otherwise wouldn’t. Sometimes it is unintentionally propagated by an institution’s marketing, public relations, and communications departments, whose staff are charged with describing Centers, publications, projects, and events about which they understand little. University Presidents have also been known to throw around the terms with reckless abandon. At worst, the conflation aggravates some academicians, misleads students, and undermines funding efforts, an audience for whom the differences truly matter. But in the end, it matters little what some call it. People have interesting ideas, with questions that involve location, position, place, or space, and they find approaches, methods, and tools designed to help them understand and answer those questions.

The University of Redlands is working to establish and nurture a “spatially-infused learning community.” Our commitment to this is long-term, and we believe that the outcome will be dynamic, academically noteworthy, and worthwhile. Many people on campus do appreciate the differences between spatial, geography, and GIS, and that knowledge informs our research and practices. We are attempting to be systematic about this endeavor, and think through learning outcomes and assessment approaches that will accommodate the diverse ways in which different faculty, students, departments, and offices are engaging with the initiative. Like other “Across the Campus” initiatives, this one requires a thoughtful management plan for its care, implementation, direction, and maintenance. The broad administrative support we experience is in our favor, but that also drives expectations.