Spatial Thinking and Design Thinking
Similarities and Differences

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Spatial thinking underlies both geography and design. Both disciplines deal with the flows and interactions of people, goods, information, and ideas and envision them in two- and three-dimensional space. The two fields differ in the uses to which they put this spatial thinking. Geography, like science and social science in general, focuses on what is or what has been. It tracks interactions and flows largely to understand how and why things happen in the present and in the past. Designers in professions like landscape architecture, urban design, and planning draw heavily from geography and the other sciences and social sciences for their knowledge about what is and has been, but they use that information to develop scenarios about what doesn't yet exist, but that might be. Geographers think spatially about the past and present, and designers, about our spatial future.

Geographers and designers also share a preference for visual thinking. Computer-based visualization software such as GIS has become an essential tool in both geography and design, enabling us to see the patterns and relationships that emerge from large amounts of data. This, in turn, enables us to understand complex situations and settings more easily and to perceive changes and trends more readily. The two fields part ways in where that visual thinking leads them. Geographers use visualization tools to accommodate ever-larger amounts of data and to make ever-more-complex connections among phenomena. Designers, in contrast, use these tools more to communicate what could be, reducing complex realities into comprehensible alternatives for us to follow. Geographers use visual thinking to enhance our understanding, designers to prompt our action.

Geography and design also reason in concert. Both fields not only use inductive and deductive reasoning – working from particulars to draw general conclusions and working from general hypotheses to particular evidence – but also a third form of reasoning that the philosopher of science, Charles Sanders Peirce called abduction. As Peirce observed, "Deduction proves that something must be; Induction shows that something actually is operative; Abduction … suggests that something may be." Geographers and designers, however, use abductive thinking differently. Geographers use abduction to come up with new ideas that help us explain or deal with new facts and unexpected situations that arise from spatial analysis. Designers, in contrast, use it to "regulate our future conduct," as Peirce observed, creating the settings that reinforce our ideas about how we should live. Both geography and design involve creative responses to human activity in physical environments, but one uses abduction to explain and the other to bring something into existence.

The interaction of geography and design is both overdue and largely unexplored, and yet it has tremendous potential in enabling both disciplines to transcend their current boundaries in order to deal with some of the unprecedented problems we face around the

globe. Geography, with tools such as GIS, has excelled in helping us understand the nature and extent of dilemmas such as an exponentially growing human population, using finite resources at an unsustainable rate, damaging the natural environment at ever-rapid pace, and concentrating wealth and power among an increasingly small number of people. But geography, itself, cannot show us what to do about these problems going forward. Design, in turn, has excelled in helping us see possible futures and conceive of alternative scenarios to challenges like overcrowded cities, water conservation, habitat protection, and affordable housing. But designers too often imagine those futures without the data necessary to evaluate or implement their ideas.

An alliance of geography and design holds the promise of developing GIS into a projective tool as well as a superb analytical one. GIS offers a common base on which we can not only understand what is going on, given the complex flows of people and resources across the planets, but also envision what we could do better in the future, based on that knowledge, and how we might convey that to others in visual and spatial ways so that they can comprehend and act on it. The problems we face as a species present too grave a prospect for us to continue along the course we have followed in the past. With more sophisticated analytical and scenario-building tools at our disposal, we can begin to reshape our future in ways that will be more sustainable and more just for all who share this planet.