

## **The Imprecise Wanderings of a Precise Idea: The Travels of Spatial Analysis**

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Spatial analysis is the use of a formal vocabulary to reduce complex geographical patterns to simpler relations, permitting identification of an underlying causal structure. The purpose of this paper is to provide an account of both the travels of spatial analysis as a distinct epistemology, and the difference that those travels made to it. In doing so, the paper is as much concerned with history as geography. Travelling, after all, is a movement from one place to another over time. Following a brief review of different frameworks for understanding travelling knowledge, the paper begins with the early Greek (possibly Hellenised Egyptian) geographer, Claudius Ptolemy (63-181 CE). It was with his eight-volume *Geographia* that spatial analysis, *geos*, started on its various journeys. That volume was variously lost and refound in a series of travels over the next thousand years or so. It finally gained permanence when printed on engraved wood blocks in Bologna, Italy, in 1420. In the 1640s in Amsterdam Bernhardus Varenius read a version of that book, by now printed on moveable type face, and on that basis wrote his version of spatial analysis as *Geographia generalis* in 1650. Varenius's book was read by Isaac Newton at Cambridge who taught geography there, and he arranged for the publication of yet more editions of *Geographia generalis*. Consequently, during the nineteenth century when Geography was institutionalized in Western Europe as a university subject, spatial analysis became part of the conceptual furniture of the discipline, represented by compulsory undergraduate courses in mathematical geography, geodesy, and surveying. By the mid-1950s, spatial analysis began to break away, separating itself from other parts of geography. Conceptually it ratcheted itself up by adding new, often statistical and mathematical techniques. Spatial analysis became for some at least *the* disciplinary method. However, to make this move, spatial analysis travelled. There was some travelling from Europe to America, as well as within America itself. Then from the 1960s there was travel from America to Europe. It was not only people that travelled, but also books, journals, discussion papers, mimeographs, even machines. But there was also a friction of distance, and by the early 1970s, travel slowed. It could have been the beginning of the end for spatial analysis. It turned out, though, that it was only a pause while technology caught up, and which gave spatial analysis a whole new lease of life as GIS. Subsequently, spatial analysis travelled more rapidly and widely than ever before. It went global.