20 Reginald Golledge

BIOGRAPHICAL DETAILS AND THEORETICAL CONTEXT

Reg Golledge was born in Australia in 1937. He completed his BA and MA in Geography at the University of New England, Australia, before taking up a lectureship in Geography at the University of Canterbury, Christchurch, in New Zealand. In 1964 he moved to North America, to take a position as a Research Assistant at the University of Iowa. Drawing influence from colleagues at Iowa (notably Harold McCarty), from geographers such as Julian Wolpert and Peter Gould and from psychologist Jean Piaget, Golledge's PhD (1966) combined learning theory and probabilistic modelling to analyse the marketing of pigs. After a year as an Assistant Professor at the University of British Columbia, Vancouver, in 1966 Golledge took up a post at Ohio State University, where he stayed until 1977. It was during his time at Ohio that he rose to prominence as a key proponent of behavioural geography, a perspective that holds to the idea that human activity can only be understood in relation to people's imperfect and partial knowledge of the world.

Always keen to collaborate with academics both within Geography and other disciplines, after arriving at Ohio, Golledge started to work with geographers such as Les King, Kevin Cox, Larry Brown and John Rayner, psychologists such as Paul Isaacs and Jim Wise, and mathematicians Joseph Kruskal and Doug Carroll (both at Bell Labs) on issues relating to the modelling of spatial knowledge, and specifically spatial choice and decision-making, a topic that has remained a consistent focus for his entire career. His first landmark paper, published with Briggs and Demko (1969), used multidimensional scaling to 'map' paired-comparison distance estimates, arguing that the resulting configuration provided a 'mental map' of how the city appears to people.

Over the next several years, Golledge developed a consistent and coherent theoretical framework to support his view that the best way to understand the geographical world was to understand how people cognized the world around them and made choices and decisions on the basis of such knowledge. This was accompanied by a sustained engagement with cognitive and experimental psychology and the adaptation of quantitative techniques (e.g. non-metric multidimensional scaling and hierarchical clustering). This emphasis on quantification led to Golledge's work being described as 'analytical' behavioural geography, as distinguished from a more phenomenological approach being developed by others (see Saarinen *et al.*, 1984). Nonetheless, Golledge was a key figure in the active promotion of a broad range of behavioural approaches through his writing, as well as through organizing conference sessions, taking part in debates and supporting behavioural work through his editorship of *Geographical Analysis* (1973–78) and *Urban Geography* (1978–84). This work resulted in the highly cited and influential edited collections, *Behavioural Problems in Geography: A Symposium* (1969, edited with Kevin Cox), *Environmental Knowing* (1976, edited with Gary Moore), *Cities, Space and Behaviour* (1978, written with Les King) and *Behavioural Problems in Geography Revisited* (1981,

edited with Kevin Cox). While the first of these arguably established behavioural geography as a mainstream approach in human geography, the latter were written at a time when behavioural geography was coming under attack from both humanists and structuralists. Through these works, Golledge thus became one of behavioural geography's staunchest defenders, providing strong rebuttals of critiques of the behavioural perspective (see Golledge, 1981; Couclelis and Golledge, 1983).

In 1977, Golledge moved to the University of California, Santa Barbara, where he has remained since. Again, quickly building new interdisciplinary links with psychologists, mathematicians and computer scientists, he started to build what was to become the Research Unit on Spatial Cognition and Choice, continuing his development of analytical behaviouralism. In 1984 he lost his sight. This impairment, which initially seemed to threaten his academic career (Golledge, 1997), instead started a remarkable collaboration with psychologists Jack Loomis and Roberta Klatzky which has continued up until the time of writing. Over a series of related projects, they applied what had been Golledge's work to date to visual impairment, seeking on the one hand to understand how people with visual impairments come to understand spatial relationships and use this knowledge to navigate, and on the other to apply their findings to the development of orientation and navigation systems, culminating in a Personal Guidance System, designed by Loomis, that combines the use of Global Positioning System (GPS) and a Geographic Information System (GIS), and uses a virtual auditory/sound interface as output. Continuing his defence and promotion of behavioural approaches, in 1987 Golledge published *Analytical Behavioural Geography*, updated in 1997 as *Spatial Behaviour – A Geographic Perspective*. He has been active in the National Centre for Geographic Information Analysis (NCGIA), organizing and participating in several themes that apply behavioural approaches to GIS. The recipient of many awards and honours, in 1999 Golledge became the President of the Association of American Geographers, using his presidential address to call for a policy-relevant geography underpinned by a behavioural approach (Golledge, 2002).

SPATIAL CONTRIBUTIONS

Golledge's key role in the study of place and space has been his contributions to the development of analytical behavioural geography. Behavioural geography developed throughout the late 1960s and early 1970s out of a dissatisfaction with the stereotyped, mechanistic and deterministic nature of many of the quantitative models being developed at that time, and a realization that not everyone behaved in a spatially rational manner. As such, it was a direct challenge to the seemingly 'peopleless' geographies of spatial science.

Behavioural geographers argued that space is not experienced and understood in a similar manner by all individuals. Instead, it was posited that each individual potentially possesses a unique understanding of their surroundings, and that this understanding is shaped by mental processes of information gathering and organization (Gold, 1980). Consequently, it was argued that it is misleading to analyse human spatial behaviour in relation to the objective, 'real' environment because people do not conceive of (and experience) space in this way. It was suggested that a more productive approach would be to focus on the way that people act in relation to how they cognize the world around them. Such a focus would explain why human behaviour did not fit the patterns sometimes anticipated in models of spatial science (see entries on **Haggett, Berry**). At its core then, behavioural geography is based upon the belief

that the explanatory powers and understanding of social scientists can be increased by incorporating behavioural variables, along with others, within a framework that seeks to comprehend and find reasons for overt spatial behaviour, rather than describing the spatial manifestations of behaviour itself (Golledge, 1981).

By the early 1970s, divisions within behavioural geography started to emerge as to how best to theorize and measure spatial behaviour, with on the one hand the development of a phenomenological-humanist approach (exemplified in research by Lowenthal, Seamon and **David Ley**) and on the other an analytical, scientific-positivist approach (of which Golledge was the chief proponent). While both approaches were united in believing that 'we must understand the ways in which human beings come to understand the geographical world in which they live' and that 'such understanding is best approached from the level of the individual human being' (Downs, 1981), increasingly their alliance fractured, so that by the end of the 1970s they had developed into largely separate ventures (see Saarinen *et al.*, 1984). In the humanist branch of behavioural geography, the search for scientific laws was replaced by an interpretative and reflective search for meaning and how humans come to understand and act in the world. Golledge rejected such conceptualizations, and in particular the subjective and unscientific nature of data collection and analysis. Instead, he advocated an analytical and scientific examination of the thoughts, knowledge and decisions that underpin human action (Golledge and Rushton, 1984), using questionnaires and adapting measures from cognitive psychology such as perceptual tests and rating scales as a means to measure people's ability to remember, process and evaluate spatial information. The findings from these studies were used to test models of spatial choice and decision-making in relation to issues such as way-finding, residential location, industrial agglomeration, tourist behaviour, migration, and so on. Here, geographic space is conceptualized as absolute and given (thus knowable and mappable), but analytically it is how this space is cognized that is considered most important.

Golledge's contribution to analytical behavioural geography cannot be underestimated. Over the course of his career he has developed a systematic programme of research that has consistently sought to deepen and strengthen the theoretical and methodological underpinnings and empirical scope of behavioural geography. So, for example, he has engaged in wider ontological and epistemological debates within the discipline of geography, seeking to tighten and advance behaviouralism's theoretical tenets and to promote it to a wider audience. He has developed a number of specific theories concerning the development and structuring of spatial knowledge, processes of spatial choice and decision-making (in different contexts – transportation, residential choice), and environmental learning with regards to different populations (adults, children, developmental disabilities, visual impairment, men/women). Some of these theories, such as the anchor-point model of spatial knowledge, have been widely engaged with by cognitive and environmental psychologists (see Couclelis *et al.*, 1987). He has pioneered, developed and tested a whole series of behavioural measures and analytical techniques including multidimensional scaling, psychometric testing, sketch maps, distance and direction estimates (see Golledge and Stimson, 1997, for review), and championed a move away from the (psychology) laboratory to real world environments, challenging psychologists in particular to model spatial behaviour in naturalistic settings. Finally, he has sought to apply his research findings to real world issues such as planning, transportation modeling, and, perhaps most successfully, the development of orientation and communication devices for people with visual impairments (notably tactile maps, a personal guidance system, and haptic soundscapes).

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KEY ADVANCES AND CONTROVERSIES

While some researchers have used Golledge's ideas to build up a large body of behavioural research (see Golledge and Stimson, 1997), and others have sought to extend his theoretical insights by making explicit links to cognitive science and environmental psychology (see Kitchin and Freundschuh, 2000; Kitchin and Blades, 2001), his work – and behavioural geography more generally – has come under a sustained critique from the late 1970s onwards. As a consequence, Cloke *et al.* (1991) described behavioural geography as a largely forgotten element of human geography. John Gold (1992) identified three reasons why behavioural geography has not been fully embraced by the geographic fraternity (especially in the UK). First, due to structural changes in the education sector in the late 1960s early 1970s, young behavioural geographers failed to secure posts and thus a critical mass failed to develop. Second, as social issues came to the fore during the 1970s, behavioural geography was perceived to be inappropriate for examining them. Third, the philosophical bases of behavioural geography, particularly of the analytical variety, were heavily criticized by other researchers from different traditions.

Both humanists and structuralists criticized analytical behavioural geography – and thus the approach being advocated by Golledge – for its positivistic allegiances. They argued that instead of offering a viable alternative to the positivistic, spatial science, behavioural geography just shifted emphasis so that many of the criticisms levelled at positivism still applied. As such, Cox (1981) argued that the emergence of behavioural geography was evolutionary rather than revolutionary. Further, both groups criticized analytical behavioural geography for overemphasizing empiricism and methodology at the expense of worthwhile issues and philosophical content (Gold, 1992). For example, Cullen (1976) argued that analytical behavioural geographers blindly borrowed from the scientific paradigm, which then determined the nature of the problems to be investigated, so that the independent–dependent variable format was overused. Ley (1981: 211) argued that the allegiance to the scientific paradigm led to a preoccupation with measurement, operational definitions and highly formalized methodology, so that 'subjectivity has been confined to the straitjacket of logical positivism'. As such, Golledge's work offered an inadequate and mechanistic understanding of human behaviour.

While structuralists critiqued the reduction of human spatial behaviour to cognition, thus failing to take into account the influence of wider social, economic and political factors on peoples' everyday geography (Cox, 1981), humanistic geographers disputed the dichotomy between subject/object and fact/value and argued that research which accepted these dichotomies would only provide clues to everyday life, failing to 'conceive of life in its wholeness or for that matter of individuals in their wholeness' (Eyles, 1989: 111). They argued that the subject and object could not be separated because of the intervening consciousness which imposes its own interpretations upon the objective world and thus affects behaviour (Cox, 1981). Subject/object, fact/value become infused and inseparable and need to be investigated as such, so that the methods used by analytical behavioural geographers are invalid as they assume that the investigator and investigated have the same meanings. Consequently, it was argued that Golledge's theorizing ignored the contours of experience and reduced individuals to crude automatons (Thrift, 1981), systematically detached from the social contexts of their actions, and thus meanings. Ley (1981) further argued that behavioural geography adopts a naturalist stance that sees no essential discontinuity between people and nature and gives

human consciousness little theoretical status.

In addition, Walmsley and Lewis (1993) cautioned that behavioural geographers needed to be aware of the dangers of psychologism; that is, the fallacy of explaining social phenomena purely in terms of the mental characteristics of individuals. By concentrating upon the individual, they noted that behavioural geography is susceptible to the trap of building models inductively, beginning at the level of the individual, so that outcomes can only be treated as the sum of parts (Greenburg, 1984). This is a particularly salient point because one of the main criticisms of behavioural geography has been its one-dimensional look at environmental behaviour at the expense of economic, political and social considerations. Indeed, Gold (1992: 240) has argued that the attempt 'to straitjacket *all* areas within a strictly psychological paradigm' is one of the fundamental reasons for the disillusionment with behavioural approaches.

This latter point is well illustrated in critiques of Golledge's (1993) work on disability. While acknowledged as pioneering, the use of behavioural theory to articulate a geography of disability drew fierce criticism from other geographers, notably Brendan Gleeson (1996) and Rob Imrie (1996). They attacked Golledge's vision in relation to his conception of disability, the ontological and epistemological bases of his research, and his lack of ideological intent. In relation to the first, they note that Golledge adopts a medical understanding of disability in which the problems facing disabled people are seen as a function of their impairment (rather than how society treats them). This in turn positions disabled people as subjects within the research, perpetuating the dichotomy between expert researcher and passive research subject. Moreover, it fails to acknowledge the exclusionary practices of society and the role of social, political and economic processes in the reproduction of disabling environments. Thus for Gleeson and Imrie, Golledge's geography of disability falls into trap of ablesm – the reduction of disability to functional limitations and an acceptance that if we can make disabled people more like able-bodied people, their problems will be significantly reduced. Golledge is accused of reducing the problems faced by disabled people to technical issues that can be solved with technical solutions, thus depoliticizing the problems that disabled people face. This decontextualizes disability, placing it outside of the historical and spatial transformations within which modern relations are embedded. Instead, Gleeson and Imrie suggest a more fruitful approach is to engage with disabled people in their quest for emancipation by exposing the oppressive structures of society.

Despite widespread criticism, Golledge has been fervent in his rebuttals of the perceived shortcomings of analytical behavioural geography (see Golledge, 1981, 1986; Couclelis and Golledge, 1983; Golledge and Stimson, 1997) and it is fair to state that behavioural geography continues to be widely practised within human geography, particularly in North America, where links with cognitive and environmental psychology have been forged (see Gärling and Golledge, 1993; Golledge, 1999; Kitchin and Freundschuh, 2000; Kitchin and Blades, 2001). That said, it is clearly no longer considered at the cutting edge of geographical theory and praxis, despite the efforts of Golledge to re-inspire a return to its ideas (Golledge, 2002).

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