

# RESEARCH AND DEVELOPMENT IN SCHOOL ATLASES: A FRAMEWORK FOR INTERNATIONAL COMPARISONS

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Atlases are widely regarded as typifying geography education. They are essential reference tools at home and at school, often represent a sizeable investment of educational resources and play a key role in shaping children's view of the world. Yet we know very little about how they are developed or the basis on which their cartographic content is determined. This may be partly because the number of people involved in the development of maps and atlases for young people is very small in proportion to the potential number of users. Schoolbook research in geography (e.g. Graves, 2001; Marsden, 2001) is generally restricted to the use and analysis of materials already published (often in a historical context) but rarely encompasses the process of development itself and usually largely excludes reference to maps and atlases. Nevertheless, many of the themes that pervade textbook research (such as selectivity, bias, presentation, implicit pedagogy and match with student aptitude) are equally, if not more, relevant to maps. It seems likely that geography education would be enhanced by a better understanding of how maps and atlases are made as well as the principles, assumptions and evidence on which their development is based. The intention of this paper is to stimulate a debate between the producers of cartographic materials and the 'end users' (i.e. school students and teachers). Insights into the development of educational cartography products would seem likely to reveal assumptions about the ways children use and interpret maps. Making some of these assumptions explicit and questioning the basis of editorial decision making may help identify productive lines of research enquiry.

A number of exemplars of 'participant observation' in the conceptualisation and production of maps and atlases already exist. Petchenik's (1977) memoir of the development of the Atlas of Early American History illustrates the interrelationship between inputs from academic historians and the cartographic editor. Her personal reflections allow readers to access the rationale behind elements of map design. Similarly, Griffiths' (1989) account of the National Atlas of Wales reveals the role of individuals in initiating and sustaining the project through to publication. Far less frequently there are glimpses into the operation of cartographic publishing houses such as that by Willett (1991) on George Philip.

Discourse on the development of educational maps and atlases reflects the smallness of the field. Sorrell (1974) attempted to distil some principles of map design starting with children's preferences and Gerber (1993) derives some guidelines for authors based on evidence from children's own maps. Bandrova and Deleva (1998) go further, involving children themselves in the design and trialling process. Petchenik (1987) takes a sample of school atlases and reflects that their authors seemed to be proceeding from very different sets of assumptions. Some of these assumptions are made more or less explicit in the attempts to model the process of developing classroom cartography by Petchenik (1985), Marcotte and Tessier (1987), Carswell and de Leeuw (1987) and Wiegand (1991). The advent of digital atlases aimed at children has presented an emerging opportunity for developmental accounts (see for example: Anderson, Carriere, and Le Sann, 2001; Targino, Monteiro and Paganelli, 2001).

Koláčný (1969) asserts that mapmaking starts with 'the cartographer' making a selection from the real world yet Petchenik (1985) sees it as 'a service enterprise which exists to create products that meet human needs' (p.42). Keates (1996) claims that in most cases, maps are not initiated by cartographers at all but by map users themselves or some body or institution representing their interests. The social aspect of educational materials development is probably an important clue to understanding process and product. Expertise in both cartography and cognition (Gerber, 1993) is required but where is the expertise located in the project and how is it coordinated? Monmonier refers to school atlases as one of a class of 'establishment atlases' (1981, p195) and notes that their traditional mission as 'uniform cartographic depositories of information' makes them resistant to innovation. If so, how does this happen and how can it be prevented? The detail of map design for children also often remains elusive. On what basis are colours, line weights, type faces and symbology selected? What coverage is appropriate and at what scales? Some decisions may be made on map user research evidence but Petchenik urges us to enlarge the scope of enquiry to include 'the entire range of influences, individual and societal, that bear upon the creation . . . of maps' (1985, p41).



Figure 1: Extract from the Oxford Student Atlas, p. 54.

An attempt is now made to illustrate the process of school map development by reference to the Oxford Student Atlas (Wiegand, 2002) which is intended to meet the needs of 11-18 year old students in UK secondary schools.

Figure 1 presents an extract from a topographic map at scale 1:5M. How did it come to take this form? Of course, there are antecedents both from this publisher and others that predetermine purchaser expectations of some aspects of the appearance of topographic maps such as the layer tint colours. A deliberate compromise was chosen between a 'natural' and 'standard' legend for relief, following DeLucia and Hiller (1982). Univers was selected as the majority typeface on these maps although physical features and map titles were in Photina, added because it seemed to give both authority and freshness, qualities that were needed for a 'new' atlas but with a strong brand identity from a long established educational publisher. A previous atlas at this level had labelled place names in the local version first with the anglicised version in subordinate position. That decision had been taken following widespread discussion in the UK about the effect of ethnocentricity. By 2002, after more than 10 years of strong centralised control of education, the mood had changed and the anglicised version first was thought to chime more with the educational climate. The local version remains as subordinate in only a few instances. A full legend appears on every topographic page, as far as possible in the same location (a narrow column to the left of the map). It was thought important to familiarise young users with the standard legend format, even though a particular map would not contain the full symbol range. Applying this rule sometimes came at a cost borne by scale and coverage.

Figure 2 illustrates two thematic maps (from the British Isles 'quality of life' section, p37). The map content was determined by geography curriculum requirements. National Curriculum statutory orders and the syllabuses of examinations at age 16 and 18 frequently refer to the geographies of disease and crime. Burglaries and coronary heart disease were chosen to provide the basis for discussion of the traditional 'north-south divide' in the UK. Teachers need classroom 'stories' to tell and the interplay between wealth, health and deprivation seemed to offer good scope. Many representations of the British Isles in school atlases in the UK position the Orkney and Shetland island groups (to the north of Scotland) as insets. This achieves a significant gain in scale and results in a less elongated map area which offers more flexibility in page design. Following responses to competing products by Scottish teachers, the editorial team took the decision to accept some loss of scale in favour of correct relative location. The maps are enclosed in a rectangular frame but earlier draft designs incorporated free floating maps that also offered the possibility of each being represented at a larger scale. Teacher resistance to a more informal style was strong however. There is a deeply held view that maps must have a frame to reflect the way in which many teachers require students to draw maps as part of their course work. This type of feedback was obtained through a series of 'focus group' meetings held in several parts of the country at which teachers were invited to comment on design roughs and draft content throughout the development phase. These events were highly structured with teachers, usually in groups of 6-8, invited to discuss proposals in detail and then record their preferences on an elaborate questionnaire. The process yielded several surprises such as the unanimous demand for a double page spread of flags. Teacher input was considered vital in this project but even specialist geography teachers may have little experience of alternative cartographic representations

and to base content and style on teachers' current preferences runs the risk of creating a conservative resource. Some space was therefore deliberately set aside for innovative topics, not yet on the curriculum in the hope that availability of resource material would itself stimulate curriculum content. Some of this space was used for maps of internet users and traffic.

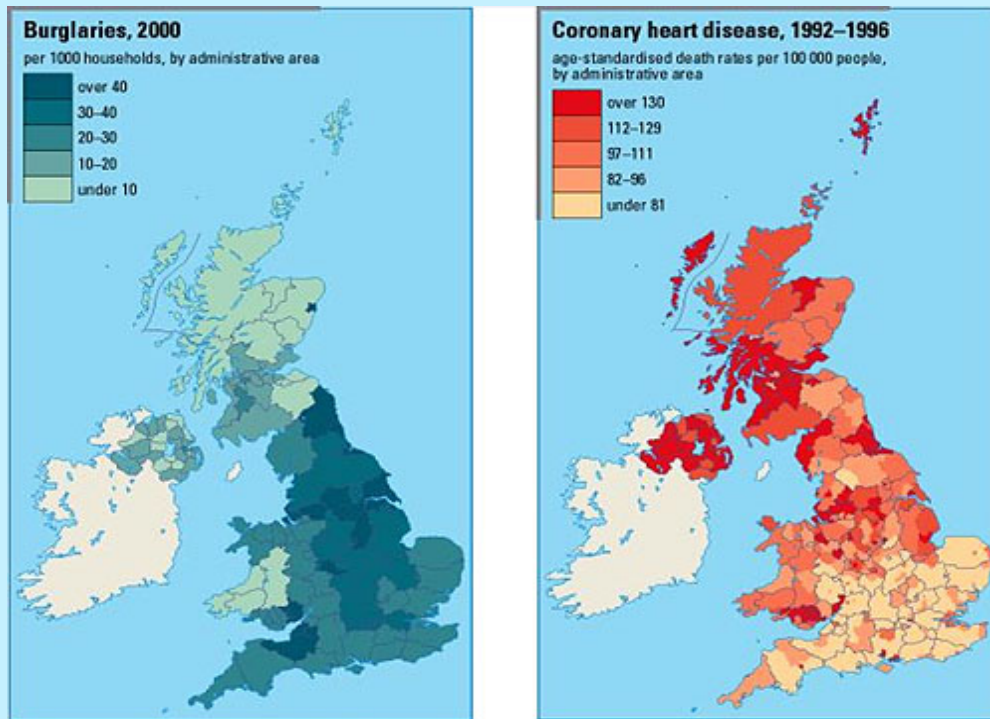


Figure 2: Extract from the Oxford Student Atlas, p. 37.

Many aspects of school atlas development remain unexplored in the literature. These include the form of the index and contents pages, comparator and locator maps, legends and scale statements. In many cases we have no hard evidence base on which to proceed yet some forms of representation are likely to be more effective than others. It is hoped that by making the process more explicit we may be able to make better maps for children.

#### References:

- Anderson, J., Carriere, J. and Le Sann, J. (2001) An internet atlas in the schools of Quebec: reality and ideals, Proceedings of the 20th International Cartographic Conference, Beijing: International Cartographic Association, 2944-2951.
- Bandrova, T. and Deleva, A. (1998) Contemporary cartography for children in Bulgaria, Proceedings of the Joint Seminar on Maps for Special Users, Wroclaw: International Cartographic Association, 69-76.
- Carswell, R.J.B. and de Leeuw, G.J.A. (1987) Curriculum relationships and children's atlases, *Cartographica*, 24(1), 135-145.
- DeLucia, A.A. and Hiller, D.W. (1982) Natural legend design for thematic maps, *The Cartographic Journal*, 19, 46-52.
- Graves, N.J. (2001) School Textbook Research: The Case of Geography 1800-2000, London: London University Institute of Education
- Griffiths, H.M. (1989) The National Atlas of Wales, *The Cartographic Journal*, 26, 7-14.
- Keates, J.S. (1996, second edition) *Understanding Maps*, Harlow: Longman.
- Koláčny, A. (1969) Cartographic information: a fundamental concept and term in modern cartography, *The Cartographic Journal*, 6, 47-49.

- Marcotte, L. and Tessier, Y. (1987) Applied research and instructional atlas design, *Cartographica*, 24(1), 101-117.
- Marsden, W.E. (2001) *The School Textbook: Geography, History and Social Studies*, London: Woburn Press.
- Monmonier, M. (1981) Trends in atlas development, *Cartographica*, 18(2), 187-213.
- Petchenik, B.B. (1977) Cartography and the making of an historical atlas: a memoir, *The American Cartographer*, 4(1), 11-28.
- Petchenik, B.B. (1985) Facts or values: basic methodological issues in research for educational mapping, *Cartographica*, 22(3), 20-42.
- Petchenik, B.B. (1987) Fundamental considerations about atlases for children, *Cartographica*, 24(1), 16-23.
- Sorrell, P. (1974) Map design - with the young in mind, *The Cartographic Journal*, 11, 82-90.
- Targino, T., Monteiro, N.C. and Paganelli, T.I (2001) Mapping Rio de Janeiro - the ways from the paper to the digital worlds, *Proceedings of the 20th International Cartographic Conference*, Beijing: International Cartographic Association, 3006-3012.
- Wiegand, P. (Ed.) (2002) *The Oxford Student Atlas*, Oxford: Oxford University Press.
- Willett, B.M. (1991) Cartography at George Philip, *The Cartographic Journal*, 28, 39-40.