MAPS AND THEIR GHOSTS

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Critiques of schooling and also alternatives developed by several organisations emphasise the importance of conceptual learning. This has challenged rote- learning and has tried to make learning interesting for students. NCF (National Curriculum Framework), 2005 legitimises and institutionalises this trend by placing the child at the centre of the learning process. Even as these emerge as valuable directions of change in Indian education, it is argued that this perspective alone would not do. We need to recognise the significance of social and historical contexts of knowledge and thereby question the logic of selection in curriculum making.This issue stands untouched especially in geography education.

Many debates in geography have revolved around 'geography as science' versus 'geography as social science'. This situation does not seem to have helped geography education in any way. A parallel can be drawn from contemporary debates on environment. Some people want environment to be protected without humans in it. So national parks and wildlife sanctuaries drive away tribal societies living in them. And others see such societies as part and parcel of environment. Even though these stands are connected to deeper politics emerging from production processes, it is remembered here as such reflections enter the geography curriculum. Even as we acknowledge that science and social science have different philosophies, methodologies etc that demarcate them as different areas of knowledge, the need for dialogue is becoming increasingly felt in education. If social sciences have been heavily influenced by the ways of science prominently in the mid twentieth century, there is a change in contemporary times. Today science education is voicing the need for looking at social contexts and the history and philosophy of science for a better understanding of the world.

Geography as a field of knowledge has built on both natural science and social science. But till around 40- to 50 years ago, even 'human geography' had followed the logic of natural science. The development of social geography is a relatively recent process and something from which school education does not seem to shape itself.

This article tries to examine how the social contexts of knowledge is sidelined or ignored in education. Matthews, a Marxist and science educationist noted that science education needs to incorporate the philosophies and histories of science in the curriculum. This also points out that the content of schooling ignores the importance of social and historical contexts; it seeks only the establishment of final products. This situation thus creates problems in the understanding of science and Matthews sees it as an important reason for the lack of development of science perspectives in society. Adding to this we can also find that when the learning materials contain only final products of knowledge, it hides the history and politics that goes in its making. It hides the contestations and negotiations that are inherent in knowledge construction. In this way it is able to carve out a false image of 'neutral' knowledge. The distance between science on one hand its history, philosophy etc on the other gets very distinctly constructed and maintained in education. Thus, by structure, the science student is guided to be aloof from social, political and philosophical processes inherent in

the making of science. And the hegemonic placing of science as that knowledge which controls and shapes the world adds strength to the aloofness.

The history of geography shows that much can be learned from it with regard to the above said arguments. But paradoxically these learnings do not seem to shape its education. The development of social geography and radical geography took off from rigorous critiques of the usage of natural science frames in understanding human geography. In the nineteen seventies several geographers critiqued the usage of Newtonian physics by geographers in their analysis of urban areas and of migration. And Stoddart (1986) had critiqued the piece- meal usage of Darwin in human geography. The last half a century or so saw the emergence of rich interpretations of space by geographers not merely as being physical, but as social- historical and political. But school geography has yet to acknowledge these developments.

A concrete illustration of these arguments would be presented below by reinterpreting a strong feature of geography curriculum- maps. The aims of maps in school text books and usually seen to be as follows:

1. Representation of themes to show locations. For instance, the location of capitals, rivers, agricultural areas etc.

2. Map reading which implies decoding of symbols, colours, direction and scale used in maps. What does different colours, and symbols represent? What are the ground distances represented by the map? The mathematical conversion of map distances to ground distances becomes an important exercise. The direction in maps follows a convention of 'north' being shown on the top part of the map.

3. The boundaries of the nation, of the states etc are also important inputs in map learning.

Reinterpreting maps

Geography is broadly identified as the study of the earth, signifying an inherent interest on the spatial dimension. Space has many conceptual and practical connotations including the physical, social, psychological and political. What we discuss as geography today is mostly an understanding of space that largely evolved to meet the demands of imperialism and European capitalism. But societies across the world in different historical and regional phases of development have evolved differing interpretations of and differing relationships with space. From subsistence livelihoods through fishing, hunting, gathering, cultivation etc, to settled river valley cultivations, there has been historic changes in both production and social relationships. Settled cultivation brought surplus production. The emergence of trade and trading centers and the beginnings of capitalism in different parts of the world brought in yet new spatial dealings and understandings. These processes and changes also brought about changes in the social spaces within societies, from subsistence ones like tribes to societies of surplus production. Social spaces changed from those of egalitarian relationships in the former to those of hierarchical power relationships in the latter like caste, gender, class etc.

Spatial relationships are not ever independent of social relationships. If we look at specific examples of map making, it can be seen that the social contexts and needs give rise to different types of

maps.For instance the Eskimo society of the Arctic region depended on fishing for their livelihood and they evolved knowledge of bays and inlets in spaces in which they operated. They created maps to be carried along on daily journeys to fish and then to go back home. These were intricately carved map (fig 1) on drift wood and has high utilitarian value and shows the creation of knowledge in those specific contexts. A comparable social and spatial context of societies in Marshall Islands in the Pacific has evolved maps that aid in their daily sea journeys to fish (Fig 2). Here information on high tide levels, on position of different islands etc are marked out using coconut palm sticks, shells, fibre etc.

Fig 3 shows another sort of map which attempts to record some historic incidence. This is a migration scroll of the Aztec community who lived in present- day Mexico in the 14th to 16th centuries. Legend says that they came from an island called Aztlan meaning 'white place' or the 'the place of herons'. The migration scrolls show them leaving Aztlan. In the 16th century when the Spaniards arrived in that part of the world, the Aztecs were one of the greatest powers in the Americas.

The migration scroll shows an entirely different sort of spatial representation. Here the context of the map is not to orient oneself correctly on ground, but it represents a statement that needed to be made of leaving a certain place and going on to another. In this social context, the main features of the map also changes. The spatial accuracy in terms of proportions and shapes of landscapes and ocean tides etc are not of significance here. The symbolisms and language of the map makes another sort of spatial representation that is historic and perhaps emotive. You can see that the journey by water is represented by a boat and the land travel represented by footsteps.

The historical evolution of kingdoms and monarchies had developed new spatial relationships. Territorial ownership, contestations through battles, recording of land details for effective taxation etc brought in new spatial developments. The baked clay tablet from Iraq (Fig.4) is possibly such a representation; it is a document of land records. Here the river, mountains and land details are shown by use of different symbols.

Imperialism and the co-construction of knowledge

In the seventeenth century, European maritime journeys to Africa, Asia, and America etc. evolved a new context for map- making. Map making entered a new era. Navigation routes, the ascertaining of latitudes and longitudes, creation of world maps etc defined new and specific objectives of map-making. Cartography became redefined by Europe (along with a high degree of intra-European competition) for access to and record of non- European world and its resources. The processes of territorialism, raw material extraction and the mode of production created new contexts for knowledge creation. Geography, through its spatial domain was adapted and shaped for the imperial agenda. These areas of mapping along with methodologies developed and standardization of representations etc marked what is generally called 'modern map making'. These were also developed to become effective tools in the contexts of modern wars: World wars 1 and 2 saw more map- making than what was made during peace time.

Modern map making has made a huge impact on the number of maps produced, the extent of land represented and mass production of prints through modern printing machines.But before the period

of European colonisation, the situation was not so. Raj (2006) examines the historical contexts of map- making in colonial India. The British had not come to India with an already refined and well-developed tradition of mapping. In fact the mapping traditions of both India and Europe were quite comparable. In the 1760s, when large-scale survey work was being undertaken in India, there was no unified detailed map of the British Isles with the notable exception of a map of Scotland. And prior to the nineteenth century there exists over two hundred maps, mainly of north western, central and western parts of South Asia, though there were no composite maps of the subcontinent. Many of the surveys that the British undertook in the region were conducted through the already existing techniques and person power of the region.

A certain degree of map literacy had emerged among the Mughal bureaucracy- and included in gazetteers and manuals used for administration, revenue collection etc. These provided systematic description of provinces and their subdivisions, noting their location and extent, though not meeting the function of country wide maps as we know them today.The astrolabe, produced by Muslim instrument makers in South Asia, was widely used by astronomers at least since the early fourteenth century to measure terrestrial and celestial co-ordinates (Raj, 2006; 71).

The circulation of Muslim instrument makers between Central and South Asia had made for the dissemination of skills from one region to another. Similarly coastal surveying from Britain was adapted for terrestrial surveying in India. Such many processes tell us that in specific contexts, several practices come together to create new forms of knowledge. 'One must assent to the claim that this knowledge was constructed by the willed activity of the colonizer over the colonized. Indeed, the kinds of knowledge discussed here could only have been constructed and sustained within a strong framework of formalized institutions with their imperatives of teamwork and a stratified division of labour' (ibid;93).This is especially with reference to the work of Survey of India whose most discussed Trigonometrical survey '…ran for 1600 miles up the length of the subcontinent; and on the inch- perfect accuracy of its plotted locations all other surveys and locations depended' (Keay,2000; xix).

The surveying of the highlands of Tibet, Mongolia and Central Asia deserves special mention as they represent specific social contexts as well as methodological ones. In the mid-nineteenth century, the British and the Russians vied for these highlands. And the British felt that they had to at any cost map and stabilize these regions that lie between them and Tsarist Russia (Raj, 2006; 185). After the rebellion of 1857, the Himalayan hill stations like Shimla and Darjeeling began acquiring strategic importance as political and military headquarters of British India.The people of the highlands were highly suspicious of intruders and spies and there were many cases when the English were killed. Hence mapping of the highlands was not an enterprise that the English could attempt as in the plains.

In the years 1865 to 1885 - Nain Singh and Kishen Singh were sent as explorers of these uplands by the Survey of India. They had to pass on as simple travelers to not attract suspicion. They carried rosary and prayer wheel, which not only helped to disguise, but also assured a distancing from others. And these disguises also became camouflaged means of recording:

'A bead was counted after a hundred paces, a large one reading a thousand...the prayer wheel was fitted to take long strips of paper on which they jotted their survey notes.' (Rawat, 1973; xvi).

It was not then ascertained whether Tsang-po River was the upper reach of Brahmaputra. In 1884-6, this difficult task was done by Kinthup who accompanied the Chinese Lama who was sent to 'throw marked logs into the Tsang-po ...having previously arranged for watchers to be stationed at the junction of the Dehang and Brahmaputra rivers, to ascertain whether the logs came down by the course and so to settle beyond possibility of doubt the identity of the Tsang-po with the Brahmaputra of Assam' (ibid, 181).

These people mapped the region with a very high degree of commitment and at the risks of their own lives. Raj elaborates how the titles like Pundit and Munshee was also a means to lend legitimacy to these native map makers. It is also remarkable that the measuring of distances through pacing which could not have been approved in the usual scientific and technical atmosphere was the accurate means by which it was done.

Similarly the large number of native persons undertook a feat that could perhaps not have been achieved without the combined work of the colonizer and colonized in the particular context of the Tibetan highlands. Raj observes (2006; 13):

'…the contact zone was a site for the production of certified knowledge which would not have come into being but for the intercultural encounter between south Asian and European intellectual and material practices that took place here.'

Topographical Maps

Topographical maps are some of the most detailed maps available of every part of the country and made by the Survey of India. This map- making was started by the East India Company in 1802 and taken over by the British Raj in 1857.Topographical sheets were prepared in France and in Britain by the military to assist in planning for battle and for defensive empowerments. It is today formally governed by the Ministry of Defence. The training of military personnel includes training in topographical map reading. These detailed maps show the land layout through the usage of contours. This shows the elevation, shape and slope of mountains, hills, plateaus etc. The maps also show forests, settlements, rivers, wells, tanks, springs, rail, road, mosques, temples, church etc.These maps are usually made at a scale of 1: 50,000 which means 1 cm on the map represents 50 km on ground, thus providing space for a fair amount of details to be shown on the map.On the ground you can orient the map correctly as per the orientation of the ground, by using a compass. You can place the map in such a way that its north can be made to synchronise with the north on ground. You can recognise those themes that are immediately seen on ground and also represented on the map. What you cannot see immediately can be read off from the map.

By 1980s computerised maps with very detailed and local information came up. Digital elevation models were compiled initially from topographical maps and three- dimensional interpretations of aerial photographs. These maps are today easily available in the public domain.

Maps and wars

Brown, in his book, 'The Story of Maps', gives a vivid description of map- making in the time of World War II. Cartography suddenly became a matter of great urgency – it was realised that the world does not have enough maps:

'The first rude jolt suffered by the U.S and her allies came when it was discovered that, alas, the world had not been mapped after all' and further 'the location and construction of war plants, the location and distribution of strategic materials, the mobilisation and movement of troops, all depended on maps that had not yet been compiled'

And today when maps as portrayal of the earth can be extended to satellite imageries, such technologies underpin new frontiers of war, which was well illustrated in the US war against Iraq.

Limits to standardisation

It is seen that maps have been made differently in different historic contexts. So there is no ultimate and one truth either on their form or on the technique of their making. The important truth is the different contexts themselves. That is why we today have more than 200 ways of making world maps. But all the same, there have been political stands on maps because they provide a 'world view'. For instance, the popularisation of Mercator's map as *the* world map for purposes of education, communication etc was challenged by Arnold Peter. The problem was that Mercator's map was taken out of context and wrongly attempted to show how the world looked. It was perfectly alright as a map for the sailor because it showed the correct directions. But in shaping the map for that purpose, it enlarged the sizes of the northern continents in comparison to the continents on and near the equator like Asia and Africa. So the map stands to be 'wrong' when compared with the globe. Peter made a world map in the 1970s that was closer to the globe in terms of the proportionate size of continents, thus correcting the 'world view' in which the powerful northern nations were spatially exaggerated.

A common context of map usage in western cities is provided through detailed road maps that have become part and parcel of everyday kit for daily movements in the city. So residents become very map- literate in that particular context of the term. This is very comparable to the creation and usage of maps in Eskimo society and in Marshall Islands etc described earlier.

NATMO (National Atlas and Thematic Mapping Organisation) recently brought out an atlas of freedom movement in India covering a period from 1850 to 1950. The book illustrates hundred years of events like the early European settlements in South Asia to the expansion of the British Empire, the various movements of resistance, etc up to the partition of the country. Here historic events become the context for map- making rather than the utilitarian objective of finding one's way back home. The objective of such map- making can be compared for instance, with the migration scroll of the Aztecs.

Maps in school education

When we look at history of geography and of maps in conjunction with the issues of education, we can see the following possibilities to extend meaning into map- interpretation for students of geography:

1. To examine the social, historical and political contexts in which different maps were made in different times and places

2. New maps can be developed for students to suit the needs of geography education, defining and working out a new context.

But it can be seen that school and college education does neither of these.Instead they treat maps as documents of finality. The role of the map maker and the possibilities of differing maps is not examined giving a sense of neutrality. For instance, school text books bring in a strong sense of standardisation of symbols etc in maps.

'Maps have a universal language that can be understood by all.There is an international agreement regarding the use of these symbols. These are called conventional symbols. Some of the conventional symbols are shown in the Figure'.(NCERT, class 6 ; 26).

But these are the standardised symbols only of topographical maps; this does not apply to other maps. And topographical maps are something that students are not likely to use in schools. The atlas maps, wall maps and text book maps that they come across are not governed by this standarsisation. So there seems to be a fixation on topographical maps in school curriculum, even as these maps do not become part of the curriculum. Pedagogically this creates a gap between what is theoretically stated and what is practically used.

So map- training provided for students do not differ philosophically or methodologically from that of soldiers. Thus it is only a particular utilitarian aspect of maps picked up from the innumerable contexts that enter schooling. And ironically it is the military requirement! The academic, political, philosophical and social contexts of maps do not make entries into text books of schools and colleges.

Why is it that schooling reduces maps to a very narrow spectrum and treat them as fixed truth through *the* symbols, *the* colours etc? People who review and critique text books and attempt to make new texts must be wondering why maps and text books need to be so drab, uninteresting and uninspiring. Working on maps and in trying to elaborate their contexts and histories, map reading in schools stand like a pale, distorted ghost of all the social, political and philosophical history of maps. But why does this happen? Why are ghosts created instead of the vibrant real thing? Perhaps because vibrancy induces vibrancy which is not to be encouraged in schools? Ghosts only scare you and make you take shelter in safe places. Students would then hide in dark rooms and walk through alleys and by lanes. They wouldn't tread the sunshine and main ways. They would be compelled to accept the world as guided by 'ghosts'. Logically it does not invite students to become map- makers. It takes a stand that maps are 'given' which you only need to read in the instructed way. There is no imagination of students as philosophers, map- makers or socially- aware actors. Student map-readers are not imagined as persons who could see that maps have strong social relations, that the 'technical' aspect of maps is only a part of the story, that maps are made and remade- that they are socially created.

Let us look at some of the well- known efforts of bringing change to school education in the country. In the case of KSSP in Kerala and Eklavya in Madhya Pradesh, we can see that efforts have been made on map- learning. They have developed methods of getting children to make maps of classrooms and schools. Here children measure the length and breadth of the room which could be done through foot paces. A scale can then be worked out, for instance 5 foot paces can be

represented by 5 match sticks. This way the plan of the room can be constructed by students by using match sticks. I have tried this out with children and can say that it truly enhances an understanding of the concept of scale. The critiques on conventional education and alternatives created by many organisations in the country have consciously taken a route against rote- learning and worked for conceptual learning. And NCF (National Curriculum Framework), 2005 has heightened similar perspectives by placing the child at the centre of the learning process.

Even as one tends to agree with the above- mentioned perspectives on schooling, it is evident that the questions around knowledge that is raised in the present article cannot be captured by that perspective alone. That perspective only makes child- friendly attempts to teach the 'given' singular narrative of maps. It does question the ways in which children should be taught, it questions the futility of rote and creates activity- based ways of learning. But it fails to question the selection process of knowledge and the reductionist approaches of portraying maps. And it fails to cull out from the history of geography the contexts that would show students that maps are socially constructed and amenable to change.

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