

Restriction on maps: A denial of valid geographic information

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Maps have always served great social, geographic, scientific, economic and historical purpose. The restrictive policy regarding dissemination of map information as practised in India is disquieting. Maps on scales larger than 1:1 M of areas 80 km wide along the external land border and coastline are restricted and cannot be accessed in normal course. There is restriction on publication and export of maps, issue of gridded copies of maps, aerial photographs, and trigonometric and gravity data. The latest technological developments in the light of satellite imageries and Global Positioning System have made most of the existing restrictions anachronistic. The security of maps is a colonial legacy and should go. It is important to know that security of a country has a wider dimension and does not lie in restricting maps and toposheets. The Ministry of Defence, the authority which is insisting on map restriction, should be made to understand that the prevailing restriction has not served any purpose excepting denying the citizens of India their fundamental right to information about their land. Indian scientists should join in a chorus to get this restriction on maps removed.

Maps, like faces, are the signature of history.

– Will Durant

Introduction

From time immemorial maps have served great social, geographic, scientific, economic and historical purpose. From the geographic information of Rigveda (6000 BC?) and the oldest available Babylonian map on clay tablet to space imaging of one metre resolution of today, man has progressed by leaps and bounds in the field of cartography. The theodolites, alidades, compasses and levelling instruments appear primitive when compared with the present day computers, cameras, remote sensing multispectral scanners, satellites and the Global Positioning System (GPS). The hunger for information contained in maps is almost insatiable and thus was born the integrated Geographical Information System (GIS). There is a major thrust for refinement of map information and its dissemination in the developed countries.

The day is not far off when a home TV or a personal computer would flash any map information on any desired scale of any part of the globe by a flick of a button. The ground position in India however, is somewhat disquieting. The present author discusses all aspects of this restrictive policy regarding map information in India.

Maps for progress and development

Map is an important medium of communication of geographic information and environment represented on a plan and drawn to a scale. Maps and terrain data are essentially required by various users for geological mapping, earthscience studies, geotechnical investigations, geomorphological analysis, engineering project studies, environmental assessment planning, development, administration, education, land management, military purpose, etc. and these users generally belong to the Geological Survey of India, Central Water Commission, Forest Survey of India, town and country planning departments of state governments, irrigation departments, educational institutions, research institutions, geological departments of Universities, ISRO, National Remote Sensing Agency, Soil Survey organizations, Geological Society of India, NGOs, Defence, etc. as well as mountaineers, tourists and general public. The topographical maps are of fundamental importance to all scientists of earthscience, and other natural sciences and geographers, planners, engineers and without these maps their professional work suffers.

Map coverage of India

India with an area of 3,287,263 km² is covered by nearly 385 toposheets on 1:250,000 scale and these are called as Degree Sheets. Each degree sheet has 16 toposheets of 1:50,000 scale and at present the whole of the country is covered by 1:50,000 rigorous metric surveys in more than 5000 toposheets. Each 1:50,000 toposheet contains four 1:25,000 scale sheets. More than 35% of the country has been covered by 1:25,000 scale sheets. The Survey of India is the map maker of India. It is the principal national survey and mapping

organization of the country and is the oldest scientific department having been established in 1767.

Restriction on maps

The current policy of restriction on the dissemination of maps of certain areas, aerial photographs and trigonometric/levelling/geophysical data, etc. was laid down by the Ministry of Defence vide their letter No. F.7(7)/64/D (GS-III) dated 25.08.1967. This has been amended from time to time, and the salient features of this policy now in force, with reference to various aspects regarding maps are as follows:

Topographical maps

i) All topographical and geographical maps of the area between thick line (on Survey of India Index map) and the external border/coastline, on the scale 1:1 M and larger, North of 20° latitude are *restricted*. This includes maps of Bhutan. This restricted area is nearly 80 km wide from the land border and coastline and includes the whole of Jammu and Kashmir, northern and eastern districts of Himachal Pradesh, northern districts of Uttarakhand area of Uttar Pradesh, Sikkim, the whole of NE.

ii) All topographical and geographical maps of the area between the thick line and coast belt (on Survey of India Index map), on the scale larger than 1:1 M, South of 20° latitude are *restricted*.

iii) All topographical and geographical maps pertaining to outlying islands, viz. Andaman and Nicobar, Lakshadweep, Mini Coy and Amindivi on scale 1:1 M and larger are *restricted*.

At present nearly 227 out of 385 degree toposheets come under restricted category and cannot be accessed in normal course. The Survey of India map catalogue published in 1962 is also *restricted*.

However, the following 1:1 M maps have been declared as un-restricted under the Ministry of Defence orders during 1970:

- (a) 1:1M World Aeronautical Charts (CAO) Series.
- (b) 1:1M Carte Internationale du Monde (ICAO) Series.
- (c) 1:1M State maps of India.
- (d) Pre-1900 maps on the scale 1:1M and smaller, even of the border areas will be treated as un-restricted, provided international boundaries shown therein are correct, such maps showing external boundaries incorrectly should not be issued without prior approval of the Ministry of External Affairs.

Publication of maps

State Government/Central Government Departments will not undertake publication of maps of restricted or of higher security classification or survey of areas covered by those maps, nor should they permit any private individual or firm to do so, without the approval of the Ministry of defence.

The following exceptions have, however, been made:

State Governments are allowed to undertake surveys and publications of maps for cadastral purposes in areas marked as *restricted* and treat the maps as un-restricted, provided they show only outline of plots and lands together with their distribution and ownership and do not show any contours, physical features or other information.

Engineering and forest surveys are allowed to be undertaken by the State or Central Government Agencies to meet the needs of Railways, PWD, Forest Departments, Geological Survey of India, Municipal and Town Planning and for preparation of plans for power and irrigation projects provided that the results, if produced in the form of maps shall be treated as *restricted* or higher category as the Ministry of Defence may direct.

Maps of restricted areas prepared for special purpose should be treated as *restricted* (for official use only) even if these are given to contractors, and they should be used for official work, accounted for and taken back where not required by them.

Issue of restricted maps

The restricted maps are issued to Central/State Governments, their public undertakings, educational institutions, private companies, individuals, etc. after the completion of indent form 0.57 (a) of Survey of India and countersigned by the prescribed competent authority in accordance with rules laid down in the aforementioned indent form. In case of private companies and individuals the form should be countersigned by a Joint Secretary in State Government.

Issue of gridded copies of maps

Topographical maps, both for *restricted* as well as *un-restricted* areas, which depict Grid lines cannot be issued to civil user agencies without prior approval of the Ministry of Defence.

Export of maps

Restricted maps cannot be exported without the prior approval of the Ministry of Defence. Further, export of maps on scale 1/4" or larger and the microfilms ob-

tained from such maps depicting any part of India including its International boundaries and showing topographical features by contours is prohibited under Ministry of Finance Notification No. 227CUSTOMS F.No. 405/3/SO-Cus-III dated 29.11.1980. Whereas the National Remote Sensing Agency (NRSA) is free to sell satellite imageries tapes and related maps obtained from Indian satellites the world over. The bathymetric admiralty maps of the seas surrounding the Indian coast for navigation purposes which are restricted, are not allowed for report, are available from a firm in Calcutta, and they are possibly of foreign origin¹.

Aerial photographs (AP)

At present aerial photography is classified as secret/top-secret for the whole of India and the aerial photographs are not available for users in the country.

Trigonometrical data/gravity data

These are restricted and are not made available when required. The existing instructions are contained in Surveyor General's letter No. TS-964/42-A dated 26.02.1979.

The publication *Gravity Data in India*, is a restricted publication according to Ministry of Defence.

Geological maps

Even for obtaining geological maps on 1:1M and larger published by Geological Survey of India falling in *restricted* area, one has to obtain clearance from the Ministry of Defence (MOD) before these maps are supplied to users. An indent form has to be filled in and submitted to the concerned State Government and countersigned by an officer of the rank of Joint Secretary or above. Indentor of the restricted maps should clearly indicate on the indent the purpose for which the restricted geological maps are required. The countersigned indent is sent to GSI office for onward transmission to the MOD for obtaining the necessary clearance. After obtaining the clearance from the MOD the indented maps will be supplied to the indentor.

Many scientifically important geological maps pertaining to the Himalaya and coastal areas are not allowed to be published because they fall in restricted areas². Even when these are published, information regarding latitude, longitude, heights of peaks and names of rivers is removed.

From the aforecited list of restrictions it becomes clear that the users and user agencies in the country face an uphill task in accessing maps and map-related information.

All the restrictions were introduced at the time when the technique for obtaining terrain data was tedious and exclusive. However, the latest technological developments in the light of satellite imageries and Global Positioning System have made most of the existing restrictions anachronistic.

Security of maps: A colonial legacy

During the colonial rule greatest importance was attached to the security of maps by the British Government of India. There was a strict rule that surveyors should treat their work as secret and not pass on copies even to local officers, civil or military, without proper authority. It is presumed that this was because many public officers were carrying papers in their charge to England, especially maps which could be put to sinister users³.

The then British Government of India, fearful of upsetting other countries and of giving useful information to Russia about their work in Tibet and Central Asia, tried to insist on secrecy, or at least not giving away too much about the work of their surveying agencies. The early Indian Surveyors, collectively called *Pundits*, who had code names, were disguised, were required to measure distances, to record information in prayer wheels, and to conceal their surveying instruments. They covered a prodigious area of 40,000 km². There was secrecy shrouded about all their work. However, the officers of the erstwhile Great Trigonometrical Survey of India (GTS) felt that their work and that of the *Pundits* should be known about and win the admiration and credit it deserved. Naturally this prompted them to report much data on exploration to the Royal Geographic Society and recorded in its Journals and in other publications such as the *Journal of the Asiatic Society of Bengal*. Geographers of different countries however, admired this approach and were glad to exchange information, but Walker, the then Surveyor General, the spirit behind free flow of information, was nearly dismissed for publishing matter he had been instructed by the Government to keep secret⁴.

Britain has outgrown this colonial hangover of secrecy but the Independent democratic India still practises this policy of restriction with uncompromising rigidity.

Removal of restriction

Security of a country has a wider dimension. It is not merely confined to restricting toposheets along our land borders and coastline which is a negative policy, it should be based on modern approach of intelligence system within democratic framework with a strong technological bias, appreciation of ground reality, self-

confidence and national vigilance. Our economic and human resources are in the interior of the land and the land and sea borders represent a limit and not an end. It is time we look into all these aspects more carefully and analyse every implication of the existing restrictions in the light of technological revolution in cartography the world is witnessing.

Does the removal of restriction on maps, aerial photographs, trigonometric data, levelling, gravity, magnetic data, etc. so essential for scientific studies and research, affect the security of the country? This has to be examined rationally and be convinced scientifically before accepting the basis of this policy of Ministry of Defence. We cannot be swamped by the bogey of security everytime the question of removal of restriction on maps comes up for consideration. The categorization of map of border and coastal areas as restricted has become a major hurdle in the smooth functioning of the work of its users. These difficulties have been brought out by the concerned organizations from time to time in various fora and publications^{5,6}.

There are several reasons for considering the map restriction as unreasonable and redundant. The map information which is considered as of *restricted* nature is available by satellite photography which is today of 1 m resolution. Maps which are restricted in India are available in open sale in western countries. Internet provides a mountain heap of information while we restrict simple information for fear of security, which amounts to unnecessary denial of right to information pertaining to our own land. This is ludicrous. As scientists, are we not in a position to convince Ministry of Defence about the illogicality of this fallacious policy?

The futility of restriction is amply clear from the following:

1. Satellite imageries provide ground data of excellent resolution of 5.28, 2.5 and 1 m with which excellent maps can be prepared after elementary ground check. Those with evil design can still obtain such an information from open international market despite prevailing internal restriction on maps.
2. The Global Positioning System (GPS), a satellite network that guides jets, missiles and ships to within 10 metres of targets developed by US military in 1970 is available freely for any user. Surveyors in developed countries are making increasing use of GPS which are easily available as hand held instruments. From the measurement by GPS, we can obtain distance, direction, exact longitude, latitude and elevation of any site, and each reading takes a minute or two. This is precisely the type of information the Ministry of Defence intends to block for users.
3. Toposheets of scale 1:250,000 which are restricted in India are openly sold in western countries and

M/s Stanford International Map Centre, London advertise sale of toposheets on that scale. The US army map service has covered the whole of India including the mountainous regions on a scale as large as 1:25,000 scale.

4. Remote sensing has also brought about a revolution in mapping and has provided new capability to produce thematic maps on large scales. The new satellite remote-sensing systems provide data and images in digital form. This data which can be stored in computers and later processed, form the foundation of many Geographic Information Systems (GIS). All such informations can be obtained in international market.
5. Magnetic and gravity data are obtained from satellites which provide fairly good information and gravity maps are issued by the US Aeronautical Chart and Information Centre. Therefore, it serves no purpose by restricting the book *Gravity in India* by Survey of India.
6. The remote-sensing satellites have been successfully used by the intelligence and military agencies in developed countries for surveillance, for mapping military bases, emplacements, battlefields and covert intelligence programme⁷. Most of these satellites have dual purpose of military and commercial applications and the data available from Landsat, SPOT and Russian satellites are regularly used in this dual way. Therefore, our defence authorities should explore this avenue particularly when India has the capability of launching sophisticated satellites, instead of imposing restriction on topographical maps, which could not prevent Kargil type incursions. If they had only availed the excellent remote sensing data provided by ISRO the incursion could have been detected at the initial stage only. The remote sensing satellites have the advantages of delivering detailed information to a location far from an observed site.
- Border infiltration can be checked by closer posts, vigilant patrolling and installation of a network of warning system of superior technology and remote sensing. It cannot be checked by restricting toposheets as experience has shown.
7. Even in South Asia, there is no restriction on maps in Nepal, despite its being a landlocked Himalayan country.
8. The ban on export of maps has only encouraged circulation of faulty maps in foreign countries.

Action needed

Indian scientists should ponder on the logic of this policy of restriction on maps and other data and initiate a dialogue with the Ministry of Defence for the elimination of the restrictions that are prevalent. The govern-

ment agencies generate enormous data related to our land particularly topographic, geological, environmental and resources aspects. So little of this is made use of and at the same time so little of it is made accessible to users. If security becomes a mere obsession there will be little progress and development. For India to march forward and be abreast with developed countries, the plethora of restrictions should be removed. In the context of the present discussion it calls for the following action:

1. To derestrict the topographical maps on scales 1:250,000, 1:50,000 and 1:25,000 of the entire country and to allow their free availability. The defence-related objects need not be shown on such maps, if so required.
2. To make available aerial photographs of the entire country subject to elimination of VAs and VTs, if so required.
3. To make trigonometric, levelling, gravity, magnetic and other geophysical data available for scientific studies and planning.
4. To facilitate easy publications of maps and books containing maps and also geological and other thematic maps of all areas and on all available scales.
5. To provide outlets for sale of all categories of topographic maps outside Survey of India offices in private book shops, to allow reprinting of maps by private agencies and to make these maps available to all schools and colleges in India.
6. To remove ban on export of topographical and thematic maps as these maps bring not only credit to Survey of India, Geological Survey of India and other organizations, but also earn profit, in foreign exchange.
7. To make gridded maps available for civilian use, and if for any valid reason Lambert grid cannot be provided, the topographical maps should have some other grid.
8. To make available open series of maps for the whole country on 1:250,000 scale. At present these are available only on 1:1 million scale.

9. All toposheets can have an overprint in local language for the benefit of rural people.
10. Citizens' right to information should be upheld and attempt to hide information and to hold threats under Official Secrets Act 1923 should be deprecated.

Geographical and topographical data and land-related information have great social, scientific, educational, economic and tourism values and all Indian citizens who need this information and value its utility for progress and development should have free access to this information collected at great public cost. Restriction on maps impedes progress, imperils the scientific advance, distorts the democratic image of the country and achieves no purpose of security whatsoever. It should go, if we have to step into the new millennium with a sense of confidence and pride.

The problem does not restrict to maps alone and there are plethora of restrictions like nonavailability of data pertaining to geology of areas particularly generated at public cost. This also needs attention of scientists. Data collected at great public cost, if not disseminated, serve no purpose and are an enormous national waste.

It is time a National map policy is evolved after ascertaining the views of all users in the country including that of the Ministry of Defence for solving this vexatious problem of restriction.

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