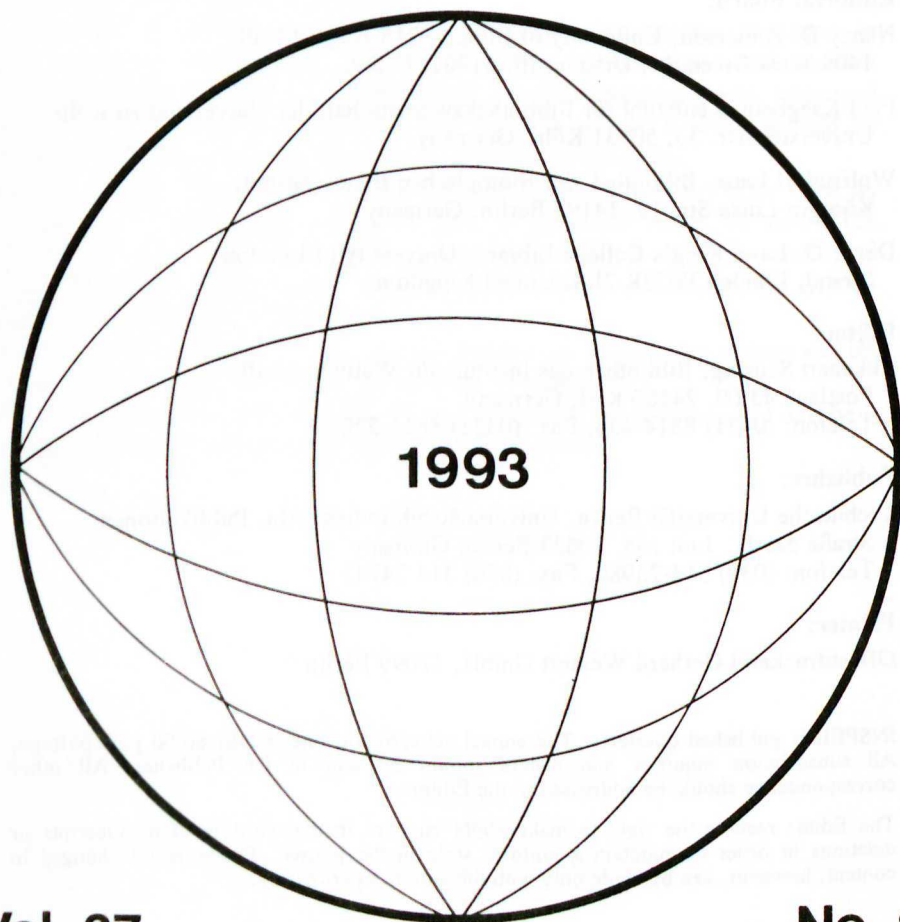


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The journal is directed to an international readership among librarians in government and international agencies, as well as in universities and research institutions. Librarianship is a key subject in a rapidly changing world. Improved practice will help produce economic benefits, and special attention should be given to problems concerning libraries in Developing Countries.

Articles will be drawn primarily from activities conducted within IFLA. But on occasion the Journal will publish articles on specified topics by non-IFLA contributors. Any reader interested in preparing such an article is invited to submit the paper to the Editor. Material on all aspects of librarianship will be considered eligible for publication.

The views and interpretations in articles published are those of the authors and do not necessarily represent the policies of IFLA or ASpB.

Comments or brief notes responding to Journal articles are welcome and will be considered for publication to the extent that space permits.

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MAP COLLECTION OF THE NATIONAL LIBRARY AND ITS USERS' PATTERN

By D. K. Mitra and A. K. Ghatak

Abstract: The authors give a historical survey of this map collection. They describe the type of collection in detail. A discussion regarding the needs, approaches, and characteristics of each user group helps to identify the best user service. Some broad user groups are as follows: Research scholars, students, mountaineers and treckers, casual and a miscellaneous group. It is stated that maps as a special non-book material represent one of the oldest forms of information and communication known and are immensely valuable reference tools.

Introduction

The National Library, Calcutta formerly known as the Imperial Library, Calcutta, is an institution recognised by the Government of India as a very special establishment devoted to the promotion of library services in the country.

The history of the National Library broadly falls into three distinct periods. The first period was the starting of library services by the Calcutta Public Library. The next period was merging of the Imperial Secretariat Library with Calcutta Public Library and forming the Imperial Library. Then in the third phase, just after independence the National Library was formed by an act of the parliament entitled imperial Library (change of name) Act of 1948.

From the early set up of the Calcutta Public Library and later upto the formation of the Imperial Library, maps and atlases were deposited gradually from various sources, which formed the core of the collection. The Imperial Library was declared open for the public in 1903. It was intended that the library should be a place of reference, a working place for students and a repository of materials for future generation. By 1909, the figure of map collection was 936. A catalogue was published in 1910.

Mr. Mitra's and Mr. Ghatak's paper was delivered at 58th IFLA General Conference New Delhi, India, 30 August - 5 September 1992.

The library has more than two million documents comprising books, bound volumes of periodicals, manuscripts, Indian and Foreign Official publications including maps and atlases. This is a depository library under the Delivery of Books and Newspapers (Public Libraries) Act, 1954 as amended in 1956 and a repository of all reading materials published in India. The map collection was 1800 in number by the time when the National Library started functioning in 1953 and with the introduction of D.B. Act 1954, the maps were received in great numbers. Today the number is about 80,000 by the help of Act, purchase and gift and exchange.

Formation of Map Division

A separate Map Section was formed in 1959, with an area of 1000 sq.ft. and later on shifted to Annexe Building in 1962. With a space of 2,000 sq.ft. Map Division was formed on the Western side of the ground floor of the building. The Division is surrounded by Rare Book Division towards the East, Science and Technology Division towards the North and Reprography Division towards the South. The ventilation is from the western side through 14 windows. The ground floor has a ceiling height of 8.5 ft. fixed with florescent tubes of 4 ft. throughout the ground floor. The illumination is 40 foot candles per sq. ft. which seems to be rather low. The space of different functional areas are divided into major heads. Under receiving, sorting, packing and mailing only 75 sq.ft. is used while under processing it is 74 sq.ft. Under conservation (mounting & repairing) it is 48 sq.ft. Catalogue area covers 30 sq.ft. The storage area covers highest among all, being 734 sq.ft. The reference table for 4 readers, covers 32 sq.ft. The working staff area covers 500 sq.ft. while Assistant Librarian's working area is only 100 sq.ft. From this it will be clear that there is hardly any space for expansion in coming few years. The staff pattern consists of 3 technical hands and 2 non-technical hands with Assistant Librarian as over all in-charge of the Division. The technical hands have basic library education but without a background of geography or any training in cartography. They are constantly advised by the In-charge in dealing day to day work.

Acquisition

The acquisition policy is to acquire and conserve all significant national production of printed maps and atlases (excluding ephemera). Collection of printed maps and atlases concerning India published outside, comes next in the priority list. Maps of the neighbouring and adjacent countries are also given utmost importance in the acquisition policy. The policy includes the planned and systematic acquisition of foreign maps and atlases.

The budget for the acquisition of the reading materials is Rs. 40 lakh and there is no separate budget earmarked specially for the purpose of the cartographic materials published abroad. The auxiliary materials consisting of gazetteers, geographical dictionaries, catalogues of leading map libraries, and topical updating journals are purchased from time to time.

Type of collection

The collection ranges from 16th century onwards. Some of the maps, published till the end of the 18th century were land surveys especially for revenue and military purposes which were carried out by the British military survey, are in the collection. Indian Topographical sheets of early days at scales of one inch, half inch and quarter inch to a mile have found a place in the collection. The metric equivalent scales are now published and majority of such sheets of Survey of India have been received by this Library. Under the Delivery of Books (Public Library) Act, 1954, almost all the maps published in India are received. The subject coverage is very wide. They include maps on natural resources, population, transport and communication systems, historical events, agricultural production, soil, vegetation, geology, planning and many more. Indian atlases on various subjects are also there.

The collection of mid-eighteenth century manuscripts maps and plans by some of the renowned early surveyers and map makers in India like James Rennell, Anthony Polier, Robert Orme, Bartholomew Plaisted, Dennis Morrison, Robert Barker, Capt. Luis de Gloss, etc., enriched the holdings of the Map Division.

The division has acquired some of the National Atlases either through purchase or from the Gift and Exchange Division of the Library. In the recent years some of the atlases like Historical Atlas of South Asia by Swartzberg, Historical Atlas of Canada, National Atlas of Sri Lanka have been received by the Gift and Exchange Division.

Besides the Map Division a fairly large number of maps and atlases are being kept in the different sections and divisions of the National Library.

Some of the rare maps and atlases along with explanatory notes are kept in the Rare Books Division of the National Library. There are about forty-two atlases in this collection. Nordenskiöld's "Facsimile atlas to the early history of cartography" and "Periplus" are worth mentioning in this collection.

The Asutosh Mukhopadhyay collection has also twenty-three valuable atlases. Jean Baptiste Bouguignon d'Anville's atlas in French of 1769 is of great value. Sir Jadunath Sarkar's precious collection of maps has also increased the value of the

Library's holding. These maps are indispensable for proper appreciation of the geographical basis of the late Mogul and early British periods of Indian History.

Fifty-three atlases on different aspects are kept in the Main Reading Room of the library for ready reference of the users from all walks of life. Government Publication Division holds some important statistical atlases and census atlases published by the Government of India and as well as by the State Governments. Science & Technology, Foreign Official Document Division, Children Library, Punjabi Division and almost all divisions possess few number of atlases.

This Library is a repository for the publications of the UNESCO. Maps and atlases which are sent to this Library under this programme are also added to the collection. This has helped area coverage to a great extent.

Readers Service, Users and their Variation

The general service includes servicing from searching a map in a journal to supplying a base map for a project work. Reprographic services are given by another Division, provided the document is not classified or a large scale map. Special services are also given to the Government of India by lending out a particular map.

Systematic record keeping regarding the user, e.g., name, educational qualification, profession, map consulted and purpose for consulting the map started from November 1980 to study the users pattern and to evaluate it from time to time. Studying the users pattern, taking 450 users into consideration from 1987 to 1991, some broad groups obtained are shown in the following table:

Sl. No.	Level of users	No. of users	percentage
1.	Research Scholars	160.0	35.6
2.	Miscellaneous group 126	28.0	
3.	Students	117.0	26.0
4.	Mountaineers & Trekkers	34.0	7.5
5.	Casual	13.0	2.9
Total		450.0	100.0

A discussion regarding the needs, approach and characteristics of each group is relevant in this connection.

Research Scholars

This group of users mainly belong to geography and geology discipline, of course scholars of other disciplines also use maps. Presently this group forms the major number 35.6% of the total readership. There is marked difference between the scholars of earth and others, mainly in their approach and use.

They have basic knowledge of different types of maps, their characteristics & specific uses. Quite a large section of them can explain, what sort of map containing what particular information they would like to have. The demand may vary from topographical sheets of varying scales to thematic maps dealing with different aspects concerning different areas of India or other regions of the world.

In case of searching of information for topographical sheets, it is the common experience that most of them have very vague idea about the scope and content of such sheets of various scales. They may be able to express how much information in detail they want e.g., about the location of a small place or small hill top or perhaps an ox-bow lake but they are not very sure as to the toposheet of what scale will contain the data of their choice. It is at this point where the map librarian has to play an important part. He may even have to guide the scholars in understanding the map catalogue giving details on coverage of areas of different scales, spot the particular toposheet that will contain the specific information and even help the scholar ultimately in locating the feature on the appropriate toposheet. Normally, scholars of geo-science can then make their way, once they have got the appropriate sheet in their hand and draw their own conclusion.

For seeking information the thematic nature in the form of map, the role of the map librarian becomes more difficult at the same time extremely critical. The demand for the specific information tend to be highly specialised in character and do not often fit squarely among the titles of thematic maps that are available in the catalogue cards. A case may be cited of a researcher who demand map showing existence of "Inter trappian deposit" in India. Obviously the catalogue cards will not reveal anything about the above deposit. The map librarian therefore has to initiate a dialogue with the seeker so as to know exactly what he means by his query, what are the possible topics that may contain some information of his choice and then gradually hunt through the possible references to locate the appropriate map. It is quite likely that in some cases no fruitful result will be achieved, but the map librarian can at least, give the researcher some information on the possible sources for the data that he is trying to obtain.

There are, of course, a large majority of research workers who can name the specific thematic information that they need, they are also conversant of the

limitation of scale and can find for themselves, once the available map on their subject is supplied to them. The map librarian if he can assess the specific need of such researchers, can help them in providing cross-references and also reference for maps, diagrams, etc., about which the researcher may not be aware.

Miscellaneous Group

This group includes retired personnel, tourists, travelogue writers, journalists, business executives and even school teachers. They form about 28% of the total users and have little knowledge of maps which they want to use. They requisition specific map for their purpose and practically they do not have a clear idea about preparing their map either directly or from any other source. They more or less, require small scale maps to serve their purpose. In small scale maps, unnecessary details are often simplified, generalised and at times modified to some extent. The reliability of a small scale map depends much upon the sources of information from where it has been compiled. At this juncture, the map custodian of the Library helps in the right direction for maximum use.

The group requires education of preliminary cartography dealing with scale, cartographic technique, method of representation, methods of reproduction availability of data and multiple uses of a single map. Such education can be imparted while in the Library and the map custodian can educate them having knowledge in geography and long experience in the profession. In dealing with this group simple and complex geographical maps are both to be dealt. A population map with a dot method is a simple map but a map showing density of population per unit area of arable land is certainly a complex map. Similarly coloured maps are to be dealt with some caution for this group.

Students

The students form 26% of the total map user. This group is divided into two clear sub-groups, viz., the undergraduate students and postgraduate students. The requirements of the undergraduate student of geography are very simple. They consult maps of the area related to their field report or of their course of study. As they start learning cartography from this education level, perhaps they do not require any more education on cartography. For their simple demand, they seek the help of the map custodian in their research. They, in terms of education can be encouraged to visit and use the maps as much as possible so that in due course of time they become regular user of maps.

The picture of postgraduate students of geography is slightly different. Not only they visit the Division more frequently for some reference or the other, they use

maps for long duration and at times with number of maps of various subjects. While they choose the map themselves for their particular use, they sometimes incorporate information for their better use. They have developed a taste of using thematic maps and atlases. Being in the present education level they want to fit in themselves for the future days and knowing that thematic maps are now playing an important role in development and planning, they study the technique of modern thematic mapping portraying the complex socio-economic systems.

Regarding the education of the users of this student group much depends upon the course of cartography at their education level. It is a fact, that there is a considerable divergence in approach to cartographic education in Indian Universities. In India, cartography is taught along with geography. Only in recent years, a syllabus has been made for postgraduate degree course in cartography with two years duration. The Survey of India, Hyderabad is imparting training and it is expected that standard of cartography will be at par with international level.

Mountaineers & Trekkers

Among the map users, this group forms 7.5% of the total readership. This number was remarkable high in the eighties. This was due to the fact of acquiring the Mountaineering Atlas of the World vol. II (Japan) in which Himalayan area has been included. From 1985 onwards this number started decreasing gradually. Bhuruka Foundation Trust is an organisation, now largely responsible along with other associations and clubs of the climbers in supporting the mountaineers and trekkers by supplying them the required maps, information and equipments.

The mountaineers may be classed as a special category of map readers because of the fact that they have an intimate knowledge by virtue of their field of the mountainous areas for which they seek further information in the map. What they lack is, an idea about the scale of the map, significance of different symbols, contour patterns, etc., and therefore the concept of the terrain is not very clear to them by having a glimpse at the map. It is on this point that they need the help of the map librarian who can interpret to them the total effect of the symbols and contours. But, once they get to know preliminaries and identify certain spots known to them on the map, they can very quickly thereafter follow the maps in general. However, most of them still need the help of the map librarian in assessing the possible slope pattern, glaciers conditions, morainic platforms so that they can decide upon the routes of trekking or scaling the peak while in the field. The map also gives them an idea of the panoramic view of the area around the peak in which they are interested. This perspective is very helpful in identifying the peak in the field.

Casual

The last group counts only 2.9% of the total user. They include lawyers, bankers, biographers, with a slant towards literature, rural electrification board and trainee air pilot etc. Neither these users know much about the maps nor they are satisfied. They make some notes as per their interest and return the map within shortest possible time. If by chance, they do not get it, they somehow manage their work even without a map. It is somewhat like "Try Your Luck".

It is observed and felt that if this group of users stay a little longer, some arrangements can be made in the Library itself in order to solve their problem. They even can be verbally educated regarding the maps for which they will be benefited.

Conclusion

Maps as a special non-book material represent one of the oldest forms of information and communication known and are immensely valuable reference tools. National Library with its collection of maps can cater to multidisciplinary and diversified research. Automated systems of non-book material can help in strengthening such facilities. The National Library now needs to establish cooperative ventures with other National Libraries and major map collections of India and abroad. Such efforts will broaden the horizon of the present services being rendered within the limited resources and infrastructure. Positive steps in that direction will be the future trend of activities of the National Library.

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RUSSIAN MAPS OF ASIA

By Natalia Y. Kotelnikova

Abstract: In this survey the author draws a clear historical picture of the development of cartographing the Asian part of Russia with Siberia, its adjacent territories and islands beginning at the end of the 16th century up to World War I.

Asian cartographers have made a contribution of honour to the study of Asia. The present report affords no exhaustive information about cartographing Siberia and contiguous territories, but it reflects main stages of the creation of maps for this region.

The initial period of the study of the territory beyond the Urals fell of the end of the 16th and of the 17th century when the strengthening of the Russian feudal state took place and when its boundaries began moving towards the East and the North of Asia which was well indicated in the "Atlas of geographical discoveries in Siberia and North-Western America" (1964). The Russian government would receive plenty of information about the newly gained land as well as data on the adjacent Eastern countries. Draughts of Siberia, composed by foreigners according to Russian eyewitnesses, were known to be in existence ever since the second half of the 16th century. They were highly schematic. In the 17th century Russian draughts of the Siberian land began to appear. The discovery of these territories went on especially actively in the end of the century by the military class, Cossacks, trappers. They were no cartographers, but they were charged with composing descriptions and draughts of the newly discovered and visited land. In many respects their surveys were primitive, they did not abide by the orientation by help of the cardinal points and assumed tales of the natives as bases for composing draughts.

The Draught book of Siberia (1701), compiled by the boyar's son Semyon Yemelyanovich Remezov of Tobolsk with his sons, can serve as a true monument of the ancient Russian cartography of that period. It was a Russian atlas of

Ms. Kotelnikova's paper was delivered at 58th IFLA General Conference, New Delhi, India, 30 August - 5 September 1992.

Siberia, which gave an authentic and detailed historic and geographical, cartographic characteristic of the territory. Its creation allowed the government to receive dispatches from Siberian regions and thus affect the improvement of the condition of the entire territory and to rule it.

A. Midendorf, a honorary member of the imperial academy of sciences, appraised it highly (1860). He pointed out that although the atlas had no mention of either longitude or of latitude, it afforded a relative notion of distances in both inhabited and uninhabited places of Siberia, the rivers were shown in the size of the little finger and lakes were depicted in the form of the half moon or of the full moon and the atlas contained plentiful information of great value. It concerned the accuracy of the depiction of settlements in the Tobolsk area on the Enisei. Tributaries of the Ob were shown carefully. The obtained materials permitted to master the new territories intensively.

The further blossoming in the study of Asia was bound up with expeditions towards the North-East. They entailed the more precise definition of the configuration of Chuchchee peninsula, the discovery of both a cluster of islands in the Arctic ocean and the ridge of the Aleutian and Kuril islands.

On the initiative of Peter the First systematic work was undertaken in order to study the inner parts of the country with the purpose of creating a general map of Russia. In the senate it was I.K. Kirilow who led the surveys. He composed the "General map of the Russian empire" (1734) which rendered the configuration of the North-East of Asia in detail. This portrayal of Asia remained in the atlas of the academic of sciences (1745) too.

The new stage of the study of the Asiatic part of Russia was tied up with the great Siberian-Pacific expedition of V.Bering and A.I. Chirikov (1724-1743). It resulted in the study and accurate cartographing of the North-Eastern Asia and in the discovery of the way to America and of the Aleutian islands.

The following stage in the cartographing of Asia was connected with the names of naval officers I.F. Kruzenshtern (Krusenstjerna) and Yu. F. Lisianskiy (Magidovich, 1967). Kruzenshtern was appointed chief of the first expedition round the world. Yu. F. Lisianskiy was attached to Kruzenshtern's expedition in the same year. Kruzenshtern was in command of 'Nadezhda' ship and Lisianskiy was in command of 'Neva' vessel. The ships sailed different courses: Kruzenshtern to Petropavlovsk-Kamchatskiy and Lisianskiy to the Russian America. By no means everyone knows that count N.P. Rumyantsev actively promoted and financed Kruzenshtern's expedition, whose book and cartographic collections underlay the Russian State Library, former Lenin State Library of the USSR. He

rendered energetic help during the organisation of Russian voyages round the world. The "Atlas to the tour of Mr. Kruzenshtern round the world" (1809-1812) including maps of the North-Western part of the Great or Pacific ocean, the Japanese and Kuril islands, the island of Sakhalin as well as magnificent engravings with views of towns, ethnographical sketches, portrayals of birds, the sea fauna and flora ensued from Kruzenshtern's voyage. The atlas featured prominently sketches of the natives - Aleutians and Kamchadals.

Having completed the first voyage round the world and returned to Russia in 1806 Lisianskiy out out at his own expense a description of his voyage and the atlas "Collection of maps and drawings belonging to the voyage of the fleet captain and cavalier Yuriy Lisianskiy on Neva-ship" (1812).

Besides sea voyages to America and round the world in the 19th century the regular survey of Siberia carried out by military topographers was set in. In 1825 the military topographic depot brought out the "General map of the Asiatic Russia", compiled by lieutenant Pozdnyakov. The map contained precise hydrographic network, outlines of the coastal line of the Arctic ocean and of the Pacific ocean, frontiers of provinces, regions, routes of Russian seafarers. Besides the map showed the territories inhabited by natives - Samoyeds, Ostyaks, Yakuts, Tungus and others. The map was executed on a scale 100 versts in one inch (1:4 200 000).

According to A.V. Postnikov (1985) from the beginning of the 18th century on the rivers gripped intent attention on the part of the Russian government as the interest of the state called for broadening and deepening data on the nature and economy of the separate parts of the spacious territory. In this connection the hydrographic network was carefully plotted on maps of the Asiatic Russia. Especially actively the hydrographic works started developing in the second half of the 19th century when sailing directions appeared. They were general maps of rivers with plans of separate sections of the waterways attached. The splendidly published "Atlas of the portage from the city of Bodaybo on the upper Vitim to the village of Narundukan on the Angara" could serve as an example. It was composed by the hydrographic expedition of the lake of Baikal commanded by colonel Drizhenko (1902). A detailed description of the portage Bodaybo - the upper Angara opened the atlas. Sheets of large scale maps followed characterizing both the river and its riverside strip.

Road maps began appearing in the same time with the hydrographic maps. One of such road maps was the 'Military road map of the Asiatic Russia' (1895), executed on a scale 1:2100000. The map had a special character indicating distances between railway stations and points with the accuracy of up to a fourth of a verst.

The Russian geographical society, founded in 1845, fulfilled significant work in Siberia. Valuable cartographic materials of little studied and unstudied areas were obtained by the expedition for the study of the Eastern Siberia and the Amur region in 1855. Such savants as N.A. Severtsev, N.M. Przhevalskiy, P.P. Semenov-TienShanskiy, G.N. Potapin and others took part in the expedition.

The development of capitalism in Russia necessitated a profounder study of the entrails of the earth and of the economy in Siberia. In the 19th century and in the beginning of the 20th century the subject cartography started to develop, economic maps appeared. Mining and industrial maps developed first and foremost, they showed deposits of minerals and works located in Siberia.

The "Atlas of the fatherland" (the second part Siberia and Turkestan), composed by N.N. Tornau, was published in 1907. This small economic atlas served as a teaching aid, but as far as the thoroughness and complexity of the maps as well as the originality and fullness of the statistical material exceeding its framework were concerned it could be regarded as a complex atlas. For the first time the atlas gave a complete economic characteristic of the Asiatic Russia. Its general economic maps paid special attention to the revelation of natural resources of the region. Besides the atlas included maps and statistical surveys of other states of Asia-Mongolia, the North-Eastern part of China, Korea, Japan. It corresponded to Russia's economic interests in the East.

The "Atlas of the Asiatic Russia" (1914) ranked among the best attainments of the Russian prerevolutionary cartography. The atlas was published in three volumes by the migrant administration with an extensive and richly illustrated text attached. Results of big work of different organisations and separate Russian scientists were reflected in the contents of the maps and the covering text.

The section about the history of the cartography of the Asiatic Russia introduced the atlas, followed by historical maps showing Russia at the time, when the Romanovs ascended the throne and when Peter the Great mounted the throne.

The economic maps made up the bulk of the atlas. The central section of the atlas contained maps of concrete provinces and areas with the general picture of the landowning and land-tenure shown. Here were results of the ten-year activities of the migrant administration concerning the settling of migrants. The map of trades or prevailing employments was of interest. It indicated the division of the territory in four areas by different colours of the background: the predominance of the agriculture; the agriculture and the cattle-breeding, the predominance of the cattle-breeding; the development of the Northern reindeer-breeding. Areas of the butter manufacturing, fishing; hunting were marked out by additional hatching in

the same place. The forest were represented on a separate map together with their distribution in compliance with their economic appurtenance. The agricultural cartogrammes indicated the specific gravity of diverse cultures in the tillage. The atlas lacked any industrial maps as the interest of the migrant administration called for it. For the first time in the atlas cartography these were maps of areas of the watering agriculture: from large scale maps (Murgab "Czar's estate", scale 1:168000) to small scale ones (the watering land of the entire Turkestan, scale 1:3360000). In spite of their versability the maps supplemented each other, they were mutually coordinated and compiled in a single aspect.

Thus on the eve of World War I the Asian part of Russia was mapped out rather well and not only its general geographic maps and atlases, but subject ones were compiled, too.

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DEVELOPMENT OF ATLAS CARTOGRAPHY IN THE USSR

By Oleg A. Yevteyev and Natalia Y. Kotelnikova

Abstract: The authors start their survey giving a detailed description of the "Atlas of the Asiatic Russia" then they describe the development of a great variety of atlases elaborated by numerous scientists who could work out due to modern technologies atlases like "The Great Soviet Atlas of the World" as well as other specific atlases concerning the Antarctic continent, economic atlases, atlases of the oceans, natural resources etc., partly in collaboration with foreign scientists. In the end of their study the authors conclude that due to the geographic information system the atlas cartography will further develop and be completed.

The formation of the atlas cartography of the Soviet State can neither be comprehended nor explained without a historical tie with the creation of complex atlases in Russia. The Soviet school of the atlas cartography continues and perfects the tradition laid by the Russian cartography.

Large complex regional atlases originate in the fundamental work "Atlas of the Asiatic Russia" (1914) consummating the complex cartography in the prerevolutionary time.

The migrant administration put out "The atlas of the Asiatic Russia" in three volumes with a richly illustrated text attached. For the first time a big set of maps with 62 titles was introduced in the atlas. Two thirds of them were economic maps. A geographic characteristic of Siberia, the Far East and Central Asia was adducted there in a summary form. The maps of specific governments and regions showing the general picture of the landownership and land-tenure take the main place in the atlas. They reflect the results of the activities of ten years standing of the migrant administration touching the organisation of the land exploitation for migrants. The atlas of the Asiatic Russia has a great significance from the historic and geographical point of view. On its basis the degree of the agricultural assimilation of the Asiatic Russia by the outbreak of World War I can be judged.

Mr. Yevteyev's and Ms. Kotelnikova's paper was delivered at 57th IFLA Council and General Conference, Moscow, USSR, 18-24 August 1991. This paper shows the situation as of August 1991.

At the same time the album atlas "Agricultural craft" (1914) appears in the main directorate of tillage and organisation of land exploitation. It contains numerous cartodiagrams, cartograms, graphs, diagrams accompanied by an explanatory text. The first half is devoted to the husbandry and the second one to the agricultural education, to the dissemination of the agrotechnical knowledge. The maps are notable for the colourfulness and a high quality of the polygraphic execution, but their contents are rather simple: special branch cartograms. The atlas was destined for the demonstration of potential possibilities for the development of the agriculture in the future and it was meant rather for foreign countries in order to enlist new investments than for the internal use (Preobrazhenskiy, 1987).

Private business men were engaged in the publishing side by side with state establishments. In 1859 the cartographic establishment of Ilyin started its activities, before the revolution it published mostly school atlases. In the beginning of the 20th century the publishing house of Marx takes over the leading role in the issue of world atlases. The well-known geographer Shokalskiy, one of the editors of the great world atlases of Marx collaborated with this publishing house (1905, 1909).

The Russian geographers and cartographers occupied with the creation of maps and atlases in the end of the 19th and in the beginning of the 20th century carried on their vigorous activities after the October revolution embodying the most interesting ideas and intentions.

The new time determined new approaches towards the creation of complex atlases. On the whole the stress was laid on the enlightenment of people. With this purpose new educational atlases were prepared, authors' teams pooling efforts of prominent scientists Kaisarov, Shokalskiy, Anuchin, Borzov, Sokolov, Chefranov came into being. In 1924 they compiled "The elementary atlas for the first stage schools". Since 1926 "The geographic atlas" edited by Shokalskiy, has been appearing in mass circulations. It was published in 16 and 32 tables. For the first time the atlas, containing 32 tables featured physical, soil, ethnographic, ecologic charts of the Soviet Union on one scale. The atlas in 16 tables came out 17 times up to 1933. "The geographic atlas" by Silichshenskiy prepared on the basis of maps for the Soviet encyclopaedia is of indubitable interest (1929). The atlas was a complex world. Following the methodological introduction the maps of the oceans are inserted, where the volumes of goods, traffic, and fishery are indicated. For the first time the energetic resources of the world are characterized. The compilers of the atlas noted the overload of the subject charts and their insufficient clearness.

The development of complex atlases was activated in the end of the twenties and in the beginning of the thirties when the industrialization of the country began. In that time the methodology of the economic cartography was improved, fundamental atlases of the industry of the USSR were elaborated. In 1929 the all-union council of national economy started publishing "The atlas of the industry of the USSR". It consisted of five issues: 1) the qualification (large-scale) industry; 2) the small-scale and home industry; 3) the minerals; 4) the renewed energetic resources and peat; 5) the natural conditions of the USSR and a characteristic of the labour resources (in two parts). The last issues came out in 1931. The contents of the atlas were rich in the statistical material but the economic charts were performed in a schematic way, which did not ensure the accurate territorial localisation of the cartographed phenomena.

The atlas "The industry of the USSR by the beginning of the second five year plan" (1934) was a new step in the cartography of the industry. In comparison with the first atlas of the industry it was built up according to a new principle which amounted to the refusal from the cartogram way in the representation of the cartographed object and to the transition to the portrayal of the placing of the industry by means of marks according to the enterprises with the indication of their output. In the methodological respect it exceeded "The atlas of the industry" of the year 1929 but it suffered from the absence of a general summary map of the industry, too.

In the same period complex regional atlases of separate territories were created. Among them "the atlas of the Moscow region" (1933) and "The atlas of the Leningrad region and the Karjala autonomous Soviet socialist republic" (1934) were the most significant ones. "The atlas of the Moscow region" edited by Baransky and Kamenetskiy was compiled in the Moscow university. The atlas gave an extensive description of the region, of the peculiarities of its nature and economy, elucidated the economical and cultural development of the given territory. In the atlas such geographic methods of the cartography were developed which had been scarcely or even not at all used previously. From the methodological point of view it became a turning point in the Soviet complex cartography.

"The atlas of the Leningrad region and the Karjala autonomous Soviet socialist complex republic" distinguished itself by a great diversity of subjects, but the choice of the modes of the cartography was rather scanty. The central place in the atlas was taken by the section "The industry" made of thirty bigger and lesser maps indicating the location of the marks in absolute unbroken dimension.

"The great Soviet atlas of the world" had an enormous significance for the development of the atlas cartography in the USSR. Lenin's instructions con-

cerning the creation of a complex atlas of the world - the completeness of the contents, the demonstration of the phenomena in the historical development - were assumed as basis of its elaboration.

The first volume of the atlas appeared in 1937. It consisted of two parts: 1) a world map; 2) a map of the USSR on the whole. The first contained numerous physical maps, economic and political maps and the second part contained a characteristic of the Soviet Union of the same versatility. The atlas was notable for its novelty and variety of methods of the cartographic representation.

The second volume of the atlas came out in 1940, it contained maps of the regions of the USSR of two types: general geographic and general economic maps. The economic maps of the atlas excelled in extreme complexity and minuteness concerning the picture of the main branches of the economy.

As for its collection of maps of the USSR "The great Soviet atlas of the world" can be deemed the first national atlas of the Soviet Union.

The compilation of complex atlases recommenced after World War II. The second congress of the geographical society of the USSR (1947) and the posterior elaboration of theoretical fundamentals of this problem as a multilateral reflexion of natural and social economic phenomena had a significance of principle for the renascence of the complex cartography. Since then the development of the atlas cartography has been bound up with the name of Salishchev who has made a sizable contribution to the creation of several profound world atlas. "The sea atlas" in three volumes (1950, 1953, 1959), "The physical geographic atlas of the world" (1964), "The world atlas" (1954) were high water marks of that time.

"The sea atlas" was conceived as far back as in the prewar years. Shokalskiy spoke about the expediency of the creation of such work in 1939. The book representing a code and a generalisation of a vast amount of material for the study of the World ocean and different seas summed up research of more than 15 years standing.

The first volume of the atlas consisted of navigation geographic charts and it was noted for the shapeliness of the system, the coordination of the scales, the unity of bathymetric and hypsometric scales.

The second volume reflected the aggregate and the interaction of the main physical geographic phenomena in the World ocean.

The third volume dealt with the naval history.

The large desk "World atlas" (1954) was a profound publication based on general geographic detailed maps of all continents and countries of the world. Its strong

point is the even coverage by maps of the entire surface of the planet. Besides it is the first atlas showing the relief of the sea bed. The production roused vivid interest abroad and therefore its second edition (1967) was put out in two versions in Russia and Latin.

"The physical geographic atlas of the world" was a unique cartographic production. It was composed on the basis of the processing of an enormous amount of new materials and both Soviet and foreign researchers took a keen interest in it.

In the USA a translation of its legend and of the explanatory text came as an independent book in 1965.

"The Atlas of the Antarctic region" published in 1966 was the first complex atlas of the Antarctic continent and of the ocean playing around it. It was a stride in the study of the Earst. Its second volume (1969) included general conclusions of the results of Soviet and foreign research of many years standing.

In the postwar years a number of atlases of popular nature have come out in the Soviet Union side by side with fundamental scientific reference atlases of the world. Among them are "The geographic atlas for teachers of the secondary school (1954-1986) the complex "Atlas of the USSR" (1962, 1969,1986), in the last years "The geographic reference atlas" was published (1987).

In the same time union republics have commenced preparing their national atlases. They are "The atlas of the USSR" (1958), "The atlas of the Armenian SSR" (1961), "The Atlas of the Ukranian SSR and of the Moldavian SSR" (1962), "The atlas of the Azerbaijanian SSR" (1964), "The atlas of the Georgian SSR" (1964), "The atlas of the Tadjik SSR" (1968). The successful compilation of the atlases of republics has been going on.

Thus the national cartography of the USSR develops on the level of republican atlases.

Since the beginning of the sixties the creation of the regional atlases of territories has been under wide development. Under leadership of Salishchev a problem laboratory of the complex cartography functions at the Moscow university. Large centres of atlas cartography are forming in Leningrad, Irkutsk, Kiev, Tbilisi, Yerevan, Tashkent, Vilnius and others.

The atlases of the Itkutsk region (1962), the Kustanai region (1963), the Transbaikal territory (1962) can serve as examples of regional atlases. The first two atlases composed by the Moscow university and the last one by the Institute of Geography of the Siberian branch of the Academy of Sciences of the USSR.

Fundamental regional atlases are notable for the completeness and diversity of subjects (up to 500 maps), the depth of the elaboration of the geographic cartographic representation of natural and social economic complexes, a high degree of detail and concretization of the picture, the exposure of spatial conformities of a phenomenon, the inclusion of subjects of applied and estimating nature, synthetic maps and others.

Side by side with fundamental atlases numerous regional and territorial atlases dedicated to the local lore and meant for the general public come out in the USSR.

The preparation and publication of "The atlas of the ocean" (the Pacific ocean, 1974; the Atlantic and Indian oceans, 1977; the Arctic ocean, 1980) were a significant event in the Soviet and world atlas cartography. On the whole the atlases convey an exceedingly broad and deep characteristic of the World ocean: from the relief of the sea bed and the structure of the Earth to the transport lines of communication, medical geographic conditions and the placing of the population. In 1986 the fundamental "Atlas of the Arctic region" with an all round characteristic of the given territory came out.

In the eighties the complex atlas cartography enriched itself by new methods using the distant sounding of the Earth from space. Results of the application of new methods are recounted in several publications "Natural resources of the central Pamirs on the basis of space survey" (1983), "Natural resources of the Kalmuck ASSR" (1966). They represent series of mutually coordinated subject maps, reflecting the placing, qualitative and quantitative characteristics of natural resources and ecological conditions.

Several complex national and subject atlases "The national atlas of Cuba" (1970), "The national atlas of the Mongolian People's Republic" (1990), "The atlas of the climate and surface water of the MPR" (1985), "The atlas of the lake of Khubsugul" (1989) exemplify fruitful international cooperation.

"The decipherment of many zone aerospace photographs" (1982) "The decipherment of many zone aerospace photographs. The scanning system "Fragment" (1988) created together with the academy of sciences in Berlin can be rated as important methodological text books touching the use of space photographs.

In the last years some profound subject atlases were put out in the USSR. "The atlas of the lithological paleogeographic maps of the world" (1989) is one of them. The atlas is compiled on the basis of a broad range of maps of lithological formations of the continents (the scale to be 1:25000000) and the oceans (the scale to be 1:35000000). Such a global approach was possible as a result of the fulfilment of a programme of deep water boring. Besides a large published material both on the

territory of the USSR and on other countries were generalised. Legends to the maps are both in Russian and English.

"The atlas of Gondwanaland. Paleotectonic maps" (1987) can serve as an important contribution to the geologic cartography. It adduces the latest data about the history of the Earth and shows a picture of its development. New original publications on no par with earlier ones appear. "The atlas of agriculture of the Yakut ASSR" (1989) takes a special place among them. It generalised an enormous factual material not only concerning the agriculture, but also concerning the nature and the economy on the whole.

For the first time the atlas "The health resorts and health resort resources of the Georgian SSR" (1989) was created. The atlas is versatile concerning its contents, it consists of six sections. They convey a general characteristic of the national environment and acquaint with health resort resources of the republic. A text in three languages (Georgian, Russian, English) accompanies the atlas and due to this fact the atlas is accessible to both Soviet and foreign specialists.

The Institute of Geography of the Academy of Sciences of the USSR completes the creation of such profound complex prognostic atlases as "The atlas of the natural environment and natural resources of the world" and "The atlas of snow and ice resources of the world".

In prospect the creation of national atlases of the USSR and RSFSR should be seen. In particular the new series of the maps of the USSR "For the institutions of higher learnings" and a new series of soil maps open up information and methodological approaches to these publications.

Problems, experience, outlooks of the atlas cartography were generalised in several transactions: on the atlas cartography on the whole (Churkin, 1979), on national atlases (Salishchev, 1960), regional atlases (Salishchev, 1976) and others. Soviet research in national and regional atlases has won recognition in the world atlas cartography.

The nearest outlooks of the atlas cartography in the USSR are tied up with the system development of the contents of atlases and with the improvement of their creation.

In the contents of atlases a trend is beginning to show towards the development side by side with factological characteristics of the cartography of the system structure, the interrelationship, dynamics and synthesis of the phenomena, resource and ecological evaluations and others.

Within the methodology of the elaboration of atlases the use of the materials of space survey and of the computerisation with the application of mathematical cartographic modelling, by means of the automation and the digital cartography promises alluring prospects.

Books

1. Комплексные региональные атласы./ Под ред. К.А.Салищева. -М.: Изд-во Моск. ун-та, 1976. - 637 с.
2. Национальные атласы. История, анализ, пути совершенствования и унификации. / Под ред. К.А.Салищева. - М.: Изд-во Моск. ун-та, 1960. - 152 с.
3. Прображенский А.И. Выдающиеся произведения социально-экономической картографии в дореволюционной России./ История развития тематического картографирования в России и СССР. - М., 1987. - С. 76-86
4. Чуркин В.Г. Атласная картография. - Л.: Наука, 1974. - 139 с.

Atlases

1. Атлас Азербайджанской ССР. - Баку; М.: ГУГК, 1963. - 213 с.
2. Атлас Азиатской России. - СПб., 1914. - 86 с.
3. Атлас Антарктики. - т.1-2. - М.-Л.: ГУГК, 1966 - 1969. т.1, 1966. - XXIII; 225 с. т.2, 1969. - 597 с.
4. Атлас Арктики. - М.: ГУГК, 1985. - 204 с.
5. Атлас Армянской ССР. - Ереван; М.: ГУГК, 1961. - III с.
6. Атлас БССР. - Мянск; М.: ГУГК, 1958. - 140 с.
7. Атлас географический справочный. - М.: ГУГК, 1987. - 295 с.
8. Атлас Гондвана. Палеотектонические карты. - М.: ГУГК, 1987. - 30 л. карт.
9. Атлас Грузинской ССР. - Тбилиси; М.: ГУГК, 1964. - 269 с.
10. Атлас Забайкалья. - М; Иркутск: ГУГК, 1967. - 176 с.
11. Атлас Иркутской области. - М., Иркутск: ГУГК, 1962. - 182 с.
12. Атлас климата и поверхностных вод МНР. - М.: ГУГК, 1985. - 15 л.
13. Атлас кустанайской области. - М.: ГУГК, 1965. ХУІ, 79 с. карт.
14. Атлас литолого-палеогеографических карт мира. Л., 1989. - 74 с.
15. Атлас Мира./ Отв. ред. А.Н.Баранов. - М.: ГУГК, 1954. - 555 с.
16. Атлас Мира./ Отв.ред. А.Н.Баранов. - 2-е изд. - М.: ГУГК, 1967. 553 с.
17. Атлас озера Хубсугул. - М.: ГУГК, 1989. - 118 с.
18. Атлас океанов. - т. 1-3. - М.: Гл. упр. навигации и океанографии, 1974 - 1980. т.1. Тихий океан, 1974. - ХУІ; 302 с. карт. т.2. Атлантический и Индийский океаны, 1977. - ХІУ; 306 с. карт.
- т.3. Северный Ледовитый океан, 1980. - ХІ; 184 с. карт.
19. Атлас промышленности СССР./ Сост. Ф.Г.Дубовиков и др. - вып. I-У. - М.: Пресидиум ВСНХ, 1928 - 1931. Вып.1, 1928. — 38 л. Вып.ІІ, 1929. — 38 л. Вып.ІІІ, 1930-1931. — 22 л. Вып. ІУ, 1931. — 22 л. Вып.У, 1931. — 12 л.
20. Атлас сельского хозяйства Якутской АССР. - М.: ГУГК, 1986. — 115 с.
21. Атлас СССР. — 2-е изд. - М.: ГУГК, 1989. — 199 с.
22. Атлас СССР. - М.: ГУГК, 1986. — 259 с.
23. Атлас Таджикской ССР. — Душанбе; М.: ГУГК, 1968. — 199 с.
24. Атлас Украинской ССР и Молдавской ССР. - М.: ГУГК, 1962. — 90 с

25. Большой всемирный настольный атлас Маркса. — СПб., 1905; - 60 л.к. + 34 с. указ; То же. — 2-е изд. — 1909.
26. Большой Советский Атлас Мира. — т.1, 2. - М.: НИИ ВСАМ при ЦИК СССР, 1937, 1939. т.1, 1937. — 168 с.карт. т.2, 1939. — 143 с. карт.
27. Географический атлас. ч.1./ Сост. проф. М.И.Силищенский и В.А. Каменский. - М.; Сов.энцикл., 1929. — XX, 34 с. карт.
28. Географический атлас в 16 таблиц / Под ред. Заслуж. проф. Ю.М.Шокальского. — Л., 1927. — 16 с. карт.
29. Географический атлас в 32 таблицы / Под ред. Заслуж. проф. Ю.М. Шокальского. — 1-е изд. - Л., 1930... - 32 с.карт.
30. Географический атлас: Для учителей средней школы. — 4-е изд. - М.: ГУГК, 1985. — 238 с.
31. Дешифрирование многозональных аэрокосмических снимков. — М.: Наука; Берлин: Академи-ферлаг; 1982. — 83 с.
32. Дешифрирование многозональных аэрокосмических снимков. Сканирующая система «Фрагмент». - М.: Наука; Берлин: Академи-ферлаг, 1988. — 124 с.
33. Курорты и курортные ресурсы Грузинской ССР. - М.: ГУГК, 1989 — 76 с.
34. Морской Атлас / Глав. ред. ниж.контр-адм. А.А.Демин. т.1-3. - М.: Мор.ген.штаб, 1950-1958. т.1. Навигационно-географический, 1950. — XIX с; 83 свд. л.карт. т.2. Физико-географический, 1953. — XXIII с; 76 свд.л.карт. т.3. Военно-исторический, 1958. — XIX с; 45 свд.л.карт.
35. Монгольская Народная республика. Национальный атлас. - М.: ГУГК, 1990. — 144 с.
36. Национальный атлас Кубы. — Гавана, 1970. — 132 с.
37. Природные ресурсы Калмыцкой АССР. - М., Эльста: ГУГК, 1985. — 35 л.карт.
38. Природные ресурсы Центрального Памира по материалам космической съемки. - М.: ГУГК, 1983. — 107 с.
39. Сельскохозяйственный промысел в России = Industrie agricole en Russie. — Пр., 1914. — 252 с.
40. Физико-географический атлас мира. - М.: ГУГК, 1964. — 298 с.
41. Элементарный учебный атлас: Для шк. первой степени / Сост. проф. Ю.М.Шокальский и др.; под ред. В.Д.Кайсарова. — М.: Пр.: Гос. изд-во, 1924. — 20 с.карт.

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AN ANALYSIS OF COMPUTER MAP-MAKING AND GRAPHIC DESIGN

By Alexander Koshkaryov and Ludmila Zinchuk

Abstract: During its twenty-five year development automated cartography has accumulated a mass of experience concerning methods and practical realizing of computer topographic and thematic map-making. The most concentrated reflection of this experience is a number of computer maps, atlases, and map sets, which have been published during this time, and which can indicate degree of automated cartography development in any period, in any country, in some branch of thematic map-making. This report has for an object to analyse features of this production in the field of data sources, hardware, and software means of data-processing, machine-graphic means, the manner of cartographical representation, and map design. The analysis is based on the catalogue prepared for publication in 1990 by the USSR Academy of Sciences Institute of Geography in cooperation with the Map Division of the Lenin State Library. (The automated cartography production: A catalogue of computer maps and atlases / L.N. Zinchook, A.V. Koshkariov. - Moscow, 1991. - 108 p.). The catalogue describes 48 issues stored in Lenin State Library and, partially in the Institute of Geography, published during 30 years. The catalogue organized by continents and countries contains four easy-to-use auxiliary indices: Geographic Index, Atlas Title Index, Personal Names Index, Corporate Bodies Index.]

Computer maps and atlases features

Source materials types.

One of the most remarkable general features of automated cartography production uses a large volume of well structured data bases. Analysing its information supply being of special interest as follows:: primary thematic and locality source material characteristics, forms of their "existence" (representation, physical being), features of interaction of data-keepers and map-makers, system of data

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collection and ordering in accordance with the author's conceptual aims. There are three source-material data types:

1) *Population census data* basing on a wide variety of social-economic, economic and demographic atlases (14-16, 21-23, 29, 35, 39, 41, 43) as well as federal and ministry administration statistics, similar in collection modes and representation forms e.g. mortality (12, 13), crop capacity (4), selected tests (16).

2) *Geological, geomorphological, geophysical and geochemical system collection data*. These are: geochemical testing network (7, 11, 29), national and international systems of gravity anomaly data collection (9, 30, 32, 37, 46) and magnetic anomaly data (31, 33), altimetric (33, 42), aeromagnetic (8), radiolocation (42), naval hydro-acoustic systems (28).

3) *Hydroclimatic data* of regular meteorological and weather observations and their different combinations (1, 2), oceanographic and oceanological information data (3, 46) similar in obtained mode, processing methods and representation form. Secondary *cartographic* material sources consist of a small part of thematic data.

A special group is formed by inventory-information atlases of summary data (34, 36), although the same characteristics - availability, reliability, belonging, data density - constitute custom auxiliary teams preferring a level of factual data, as a rule various in types, kinds, confidence, completeness, it means - traditional set of drawbacks of a lot mass data collection in heterogeneous and instability technical processing environment.

Source material data can be divided in two groups: *analogical* and *digital*. The first group consists of derivative and generalized sources concerning the form of primary statistics review, tabs, catalogues, lists, cadastres. Digital source materials present the same data in machine-readable (punch-, tape, video) form not to be digitated.

A real practice has a large volume of special modes of data transformation into unified digital environment. They are:

- 1) manual tabulation of published data from ministry statistic reports (6, 17, 25, 35);
- 2) retrieval and extracting of necessary data from existing digital data sets (12-14, 24, 26, 29, 30, 32, 38, 39, 41-43, 46);
- 3) creation of special digital data sets (databases and databanks) of general purpose (non specifically cartographical) but not only for map generation (7-11, 20, 40);

4) making of special databases and databanks aimed only to be used for the content of concrete product (22);

The analysis of citations in the catalogue maps and atlases shows a general tendency of evolution from creation of special cartography means of data organization using existing digital data of general purpose for atlas cartography. Among them: data base GEOMULTDAT (20), regional data base HUNTADATA (42), Data bank of Atlas obyvatelstva CSSR (22), reference data bank СИНОПТИКА of climatic issue of вниигми мцд (1, 2), biological data base of the Atlas of Australian birds (40). Locality part of data described network of spatial objects (first of all geographical base data elements and regional unit boundaries) is sometimes gotten directly in digital form from national topographic surveys or many-sided cartographical data banks e.g. WDB1 and WDB2, whose records were used for reproduction of geographic bases of NODC catalog of OCSEAP data (36).

Areal units types

The genesis and property of source material - the most important features defining a lot of kinds of area units. used for mapmaking - are area units of data representation. There are two different area unit types:

- 1) *regional division units* used for maps of social-economic and demographic at lases and
- 2) *regular area units* (grid cells) created for geochemical, geophysical, hydro-climatic map themes.

A number of regional division units varied from few dozens and hundreds to some thousands (17, 29, 45). The record-holder is the Atlas of population and housing (41).

Consisting of seven volumes the maps reflect statistic data on more than 13.000 census units. Two or three grids of regional division units of different hierarchic levels are used in any cases: communes and cantons (21); counties and local administration units (12, 13); census units and town block (17); wards and boroughs (15); provinces, districts, municipality and communes (43); different combination of census units (43); districts, subdistricts, town blocks (42); so called MS-regions, their combinations, cantons (MS-region, special mapping unit based on boundaries of different types (23).

There are other problems of information and cartographical means if it is necessary to base on a single whole hierarchic level in case of different structural

administrative divisions of various countries, as it is necessary for the "Atlas economique de l'Europe."

Reorganization and changes of administrative boundaries force discrepancy between locality organization grid of source material and cartographical units result in special preliminary actions of data processing (14, 15, 29).

There are examples of carrying out possible users' wishes to have (or to get without difficulties) regional (position) representation of cartographical data, both in form of different hierarchic levels and of some other mode e.g. by using transparent overlays, contained boundaries of some areal grids, differed from items of maps of atlas (23, 41).

About the half of analysed maps and atlases of geochemical (8, 11, 20), geophysical (9, 30-33, 37, 45, 47), geological (10), climatic (1, 2, 18), oceanological and oceanographical (3, 46), biographical (40), and agroecological (5), and other thematic (16, 27, 38) are based on principles of grid cells data organisation. Principles of grid cells data organizations are the basis of about the half of analyzed maps in which grid cells are used for describing of zonation units.

The choice of the grid cells as a basis for data local organization and map-making units is connected with:

- a) feature of source data (point data localization of measuring-observing nets of collection of hydroclimatic, oceanological, geophysical information, point sets of sample selection places, of fauna registration with longitude/latitude reference of point features)
- b) features of reflection object (*the fields* of geophysical, geochemical, climatic or other parameters are represented by applicated sets in regular or irregular placed points)
- c) cartographic representation type (graduated symbols with reference to node points of regular grids)
- d) type of used means of the graphic devices (as a rule being raster graphics devices). Regular grids are differed on the mode of its localization and cell value. The grids existed in the geographic co-ordinates system of different angle dimension cells - 1×1 , 2×2 , 2×5 , 5×5 , 5×10 , degrees; $5,5 \times 5$, $7,5 \times 7$, 10×10 minutes - are the most util. Cells referred to kilometer grid (20×20 , 6×6 , 5×5 , 3×3 , $2,5 \times 2,5$, 2×2 , 1×1 km) are used on maps of large and middle scale. Value of appropriated cartographic units is changed according to map scale from some dozens of square millimeters in doubtless mozaic maps till hundredth parts of millimeter in microraster images of geophysical fields and relief.

Methods of primary data processing

Existence of prepared digital data sets does not get out from necessary completing of any operations preceded modelling, analysis and visualization. Operations of preliminary data processing may consist of:

- data retrieval
- converting of structures and representation format
- accuracy testing
- selection of unreliable statistic data
- time-locality homogenization
- filtering and interpolation of surfaces and time series
- filling of gaps in data tabs
- aggregation
- transformation of absolute factors to ratio
- other simple arithmetic and logic actions.

Model types

Stage of generation of map representation is often preceded by data transformation being more solid than preliminary data processing. Tendency to add map image with features more widely opening maps themes - statistical mode estimation, mediane, arithmetic means, dispersion or standard deviation, hystogrammes or cumulates (1, 3, 4) - is already shown in the earliest computer atlases.

The following among them are generally known:

- regression analysis (6),
- correlation matrix evaluation (43),
- evaluation of other factors referred to mapping variables (41),
- application of methods of multivariate statistical analysis - factor analysis (10, 17, 25, 42) and principal components method (7, 15, 16),
- cluster analysis used for regional division and information synthesis (10, 16, 17, 25),
- time series analysis (39),
- discriminant analysis (10),
- digital terrain modelling processing (11, 27, 44, 47),
- compilation of nonspatial liked map representations - anamorphoses, topoides (25).

Special software or well-known software packages - SAS (11), SPSS (16, 17), SASPAC (16) - are used during mathematical statistical evaluations. Other models are to be mentioned such as: climatic moduls of air pollution (k18), evaluation of "complex function of service", evaluation of "migrant activity of divi-

sion" (22), the model "centre-peripherie". Results of modelling generate new themes, are organized in tabs form or additional graphic equipment of thematic sets.

Modelling possibilities of cited atlases do not confirm an idea that automatic cartography production is too analytical.

Hardware and software types of computer map design

Different means are used for cartographic visualization of data (printing, fair drawing, photographic, registration, engraving). Early computer maps are compiled by help of non specific cartographical means - *line printer*, which let nevertheless imitate some graphic features of maps (bars, hatching, shaded solid) with computer symbols (4, 5, 34, 35, 38). In the Atlas of Atlanta a live-printer was used, well known through over the world Package SYMAP of Laboratory for Computer Graphics and Spatial Analysis of the Harvard University.

Numerous computer atlases printed at the beginning of the 70's have been based on this package.

An active application of different *plotters* (registrating map representation on paper listing, photosensitive emulsion, film, coated plastic) refer to this time. Such as: belt-bed, slat-bed and drum plotters, different vector-oriented devices used for plotting, drafting, photographic registration, engraving on line-symbols and for imitation of shaded solid by line patterns of different degree of darkness.

A half of cited maps and atlases have been compiled using plotters. Software of graphic system SURFACE II and package of map design MINIGRAPH (11), system of automated map-making GIMMS (12, 13, 16), packages TELL-A-GRAF (16), INKAS-P (17), SICAD and SIKART (18), automated cartographic system (22), packages COPAM and VCPLLOT (23), CompMcBross (25), MSDAMP (38) have been used for map representation.

From the beginning of the 80's *raster graphic devices* are applied widely; such as: dot-matrix printers, electrostatic printers/plotters, laser raster plotters, ink-jet printers. The manner of raster computer map representation detailed on micro-mosaic pixels is their aggregate feature. Eighteen maps and atlases described in the catalogue are compiled by use of raster graphic devices, among them: laser plotters APPLICON (20, 37), and SEISCOM (14), electrostatic plotter Versatec (17).

Three above mentioned types of machine graphic devices form genetic series, determinate (together with other important features) graphic design of automated

cartography production according to the first, second and third generation, which can be approximately referred to the periods of the 60's, the 70's, the 80's.

Cartographic representation types

The evolution of graphic means can be regarded as a tendency of approachment of machine graphic design to traditional map production, as transition from simple imitation of some classic representation types to using all available means together with appearance and fixation of new graphic forms, in ways never previously imagined in non automated environment.

Method of *choropleth* mapping since J. Bertin's works have been prevailed in computer maps of the first and the second generation by virtue of relative simplicity of its realization. Simple "filtration" of statistical data through "sieve" of area units were vary handy and causes the whole production line of computer atlases, using only choropleth for map representation. New features applied in computer-generated choropleth maps are:

- use of different formal rules of choice of class intervals together with analysis of hystogramma or cumulates type
- use of the last items for legend of chorograms representation (11, 26) or in addition to legend as graphic or tabs (11)
- use of micro- and macro-raster dot-pattern (graduated) shading (29)
- application of continuous-tone map symbolization whose shading density (percentage of ink coverage) put in exact accordance to value range of map object (23).

The last is one of the most numerous new methods appeared because of automated cartography.

The second (by frequency of appearance) method used for social-economic maps is *graduated (proportional) symbols* (sectored and unsectored pie-charts) in skeleton and filling form using different figures such as: circles, multi-bars, rectangles, quasi-rectangles symbols, regular polygons.

Graduated symbols (point referenced) have been used only in Atlas obyvatelstva CSSR (22).

A large series of maps compiled by methods of *random points* is offered in U.S. Navy marine climatic atlas (3) of the world.

Few examples of *linear symbols* (multi-linear image of fluvial characteristics) can be found only in Umweltatlas Berlin (18). Rare examples of realization of *contour maps* show that using formal and not perfect interpolation procedures from

irregularly-distributed points to contours can provoke con-correct contouring (1, 2, 45). The use of a laboured method is necessary to correct contours consisting of: smooth and adjusting automated generated contours, their manual drawing, digitizing and the second plotter drawing.

Computer cartography forced development of *method of relief depiction*:

- perspective hill-shading relief representation on The map of relief of Takada and Nagano (27) which could not be done by traditional engraving;
- three-dimensional perspective "fishnet" representations overlaid solid-colour planimetric thematic layers in Lord Howe Island Regional environmental study (44);
- three-dimensional transformation of remote sensed images in Geochemischer Atlas der Republik Österreich (11).

Numerous raster mode generated geophysical maps on which microraster unit (pixel 0,2 x 0,5 mm in map scale) is put in accordance to colour pattern of unclassified or multiclassed colour wedge (till 90 classes) characterizing an unvisual degree of colour units in sequence, that liked colour half-tone photographic registration, not mosaic map.

Extreme plastic representation of according magnetic, gravimetric and other geophysical fields is possible due to this mode.

Features of structure and design

There is no doubt that a lot of described cartography production has more or less "machine" shape, although the atlases reproduce traditional features of maps' content, structure and design. For example the extreme short of computer atlases of the first generation did not often allow possibility of reproduction of detailed *base data* on a very single map. The transparent overlay (with boundaries of regional division units and other reference type elements) has been used for this purpose.

Supplying maps' *legend* with histogrammes of distribution of mapping factor, including graphical materials, tabs repeating or enriching cartographical means of map theme expression have been able due to automatical technology.

The configuration of external base data is changed, including various auxiliary cartographical, textual, tab-form elements in various combinations.

There is a trend of the essential increasing of textual or some *noncartographical* elements part and expansion of their functions: detail of data processing methods,

regional characteristics of mapping object, detailed spatial mapping analysis, comparative analysis of map content with interpretation elements and conclusions. "The economic atlas of China" (25) and "Lord Howe Island: regional environmental study" (44) presenting typically album-monographic editions with immersion of cartographic materials into noncartographic environment are examples of such editions.

Reference material

1. Данные о структуре и изменчивости климата: Общая облачность по спутниковым наблюдениям: Северное и Южное полушария. — Обнинск, 1987. — 247 с.
2. Ежедневные многолетние средние значения высоты 500 гПа : Северное полушарие. — Обнинск, 1988. — 371 с.
3. U.S. Navy marine climatic atlas of the world. — Washington: GPO, 1979-1981. — 2 т.
Vol. 5: South Pacific Ocean. — 1979. — 350 с.
Vol. 9: World-wide means and standard deviations. — 1981. — 169 с.
4. Пространственно-временная изменчивость урожайности сельскохозяйственных культур на юге Дальнего Востока: ЭВМ-атлас. — Владивосток: ДВНЦ АН СССР, 1984. — 4 т.
[Вып. 1] / В.П. Каракин, А.В. Кошкарёв, В.Г. Стариков. — 93 с.
[Вып. 2] : Амурская область / В.П. Каракин, А.В. Кошкарёв, М.Н. Нарзибина, В.Г. Стариков. — 86 с.
[Вып. 3] : Приморский край / В.П. Каракин, А.В. Кошкарёв, Л.А. Смирнова, В.Г. Стариков. — 86 с.
[Вып. 4] : Хабаровский край / В.П. Каракин, А.В. Кошкарёв, В.Г. Стариков. — 86 с.
5. Ароклиматический атлас многолетних трав Эстонской ССР, составленный с помощью ЭВМ /П. Каринг. — 1:1 000 000. — Tallinn: Vaglus, 1980. — 46 с.
6. Atlas économique de l'Europe. — Bruxelles, 1986. — 176 с.
7. Geochemical atlas of Northern Fennoscandia. — S.l.: Nordkalott project, 1985. — 155 с.
8. Aeromagnetic anomaly map. Northern Fennoscandia. Aeromagnetic anomalikarta Norra Fennoskandien: Total intensity referred to DGRF-65. 1:1 000 000. — Helsinki: Nordkalott project, 1986.
9. Gravity anomaly map. Northern Fennoscandia. Gravimetrisk anomalikarta Norra Fennoskandien: Terrain corrected Bouguer anomalies. — 1:1 000 000. — Helsinki: Nordkalott project, 1986.
10. Mineral resource assessment map Northern Fennoscandia: Regions a. locations highly favourable for mineral deposits 1:1 000 000. — Helsinki: Nordkalott project, 1986.
11. Geochemischer atlas der Republik Österreich: Böhmisches Masse und Zentralzone der Ostalpen-Bachsedimente. — 1:1 000 000. — Wien; Salzburg, 1988. — 35 с. + 141 с. прил.
12. Atlas of cancer mortality in England and Wales: 1968-1978 Chichester etc.: John Wiley & sons, 1983. — 116 с.
13. Atlas of mortality from selected diseases in England and Wales: 1968-1978. — Chichester etc.: Wiley & sons Ltd., 1984. — 96 с.
14. Census atlas of South Yorkshire: Computer and laser graphic mapping of 35 selected population characteristics in over 2700 enumeration districts. — Sheffield (England), 1974. — 118 с.
15. A social atlas of London. — Oxford: Clarendon Press, 1974. — 128 с.
16. Plymouth in maps: A social and economic atlas - 1 st ed. — Plymouth: Polytechnics, 1987. — 92 с.
17. Computeratlas Berlin: Sozial- und Wirtschaftsstruktur von Berlin (West). — 1:125 000. — Berlin: Dietrich Keimer Verl., 1984. — 48 с. + 38 с. карт.

18. Umweltatlas Berlin: in 2 Bd. 1. Aufl. — 1:50 000. — Berlin: Kulturbuchverl., 1986-1987. — 2 т.: Bd. 1: Boden (01), Wasser (02), Luft (03), Klima (04)/ Franz-J. Ellermann et al; Margit Behnen-Hamann et al; Kartographie: Ralf Armbrusters; Textbearb.: Thomas Schneider et al. 1986. — [48] л., [25] стр. л. карт. Bd. 2: Biotope (05), Flächennutzung (06), Verkehr/ Lärm (07)/ Franz-J. Ellermann et al; Bearb.: Jürgen Behrens et al; Kartographie: Ralf Armbruster; Textbearb.: Jürgen Stellpflug et al. — 1987. — [17] л., [23] стр. л. карт.
19. Atlas electoral de Espana/ Pilar Bravo Castells, Carmen Ortiz Corulla. — Madrid: Fundacion IESA, 1985. — 2 т.
Vol. 1: Comunidad Autonoma de Madrid. — 1985. — 155 с. Vol. 2: Comunidad Autonoma de Galicia. — 1985. — 348 с.
20. Geochemischer Atlas Bundesrepublik Deutschland: Verteilung von Schwermetallen in Wassern und Bachsedimenten. — Hannover: Bundesanstalt für Geowissenschaften und Rohstoffe, 1985. — 79 с.
21. Population française. Population of France. — [Paris]: IGN-INSEE, 1980. — 22 листа текст, 22 листа карт.
22. Atlas obyvatelstva CSSR. — 1:750 000. — Praha: 1987.
23. Strukturatlas Schweiz. Atlas structurel de la Suisse/ Martin Schuler, Matthias Bopp. — 3. überarb. Aufl. Herbst 1986. — Zürich: Ex Libris Verli. AG, 1985. — 296 с.
24. Atlas of Qatar from "LANDSAT" images/ By Dr. Mohamed Adel Ahmed Yehia; Centre of Sci. a. Applied Research Qatar Univ. — 1:250 000. — AD Dawhah, [1983]. — 166 с.
25. Chine un atlas economique. China an economical atlas/ Pierre Gentelle avec la collab. d'Hubert Mazurek. — Montpellier: Fayard-Reclus, 1987. — 112 с.
26. The population atlas of China I st ed. — Oxford etc.: Univ. Press, 1987. — 217 с.
27. [Карта рельефа районов Такада и Нагано]. — [Токио: Нихон кокусай тидзу гаккай], 1984. — Изд. на яп. яз.
28. [Эхолотограмма бухты Тояма, характер дна бухты Тояма, карта глубин бухты Тояма]. — [Токио: Нихон кокусай тидзу гаккай], 1984. — 3 листа. Изд. на яп. яз.
29. Atlas de Brazzaville: Cartes realisees par traitement informatique des donnees urbaines. — [Paris]: ORSTOM, 1984. — 108 с.
30. Canadian geophysical atlas. Atlas geophysique du Canada. — 1:10 000 000. — Ottawa, 1986. Map 1: Observed gravity values of Canada. Map 2: Free air gravity anomaly map of Canada. Map 3: Bouger gravity anomaly map of Canada. Map 4: Isostatic gravity anomaly map of Canada. Map 5: Horizontal gradient of the Bouger gravity anomaly map of Canada.
31. Magnetic anomaly map of Canada. Carte des anomalies magnetiques du Canada: Map 1255A. — 1:5 000 000. — Ottawa: Survey a. mapping branch, 1987.
32. Gravity anomaly map of the continental margin of Eastern Canada (Bouguer on land; Free-air at sea): Map 1708A. — 1:5 000 000. — Ottawa, 1988.
33. Magnetic anomaly map of the continental margin of Eastern Canada: Map 1709A. — 1:5 000 000. — Ottawa, 1988.
34. APSRS. Aerial photography summary record system. — Washington: GPO, 1979-1980. 3: Arkansas, Louisiana, Mississippi: Aug. 1979. — IV, 23 л. карт. 8: District of Columbia, Delaware, Maryland, Virginia, West Virginia: July 1979. — IV, 23 л. карт.
13: Iowa, Missouri: Aug. 1979. — IV л. карт. 5: Kentucky, Tennessee: Dec. 1979. — IV, 23 л. карт. 18: Montana: Sept. 1979. — IV, л. карт. 23: North Carolina, South Carolina: Oct. 1979. — IV, 23 л. карт. 27: Oklahoma, Texas, Northern: Nov. 1980. — IV, 23 с. карт. 28: South Texas: Aug. 1979. — IV, 23 л. карт. 28: Southern Texas: July 1981. — IV, 23 с. карт.
35. Atlas of Atlanta: the 1970's. — Sl.: Univ. of Alabama press. — 46 с.
36. NODC catalog of OCSEAP data: (Alaska outer continental shelf environmental assessment program). — Washington, D.C., 1979-1980. Pt. 1 (Rev.): Distribution of digital data received for the Alaska outer continental shelf environmental assessment program: Apr. 1980. — III, 96 с. Pt. 2 (Rev.): Inventory of digital data by lease area for the Alaska outer continental shelf environmental assessment program: June 1979. — III, 84 с. Pt. 4: Selected examples of graphic products and data summaries developed from OCSEAP data files: Sept., 1980. — VIII, 126 с.

37. Digital colored residual and regional Bouguer gravity maps of the conterminous United States with cut-off wavelengths of 250 km and 1 000 km: Map GP-953-A. — 1 : 7 500 000. — Reston, 1982. 2 л. (4 карты).
38. Map showing physical characteristics related to sanitary landfill siting in Fairfax county, Virginia: Map I-1309. — 1 : 48 000. — Reston, 1982. 2 л.
39. The APASCO atlas Dynamic Australia: demographic statistics: current marketing information: by postcode area: colour coded. — Sydney: McGraw-Hill Book Co., 1986. — 231 c.
40. The atlas of Australian birds. — Melbourne: Royal Australasian Ornithologists Union, 1984. — 738 c.
41. Atlas of population and housing: 1981 census: in 7 vol. — Canberra, 1983.
42. A computer-assisted atlas of the Hunter region of New South Wales, Australia with the Lower Hunter and Newcastle urban area: Characteristics of population and housing - 1981 Census. — Newcastle: University, 1984. — 57 c.
43. The urban Illawarra: A social atlas: Census 1981. — 1 st ed. — Wollongong: IRIS, 1984. — 80 c.
44. Lord Howe Island: Regional environmental study. — Sydney: Crown cop., 1985. — 2 т. Vol. 1. — 56 c. Vol. 2: Map atlas. — [30] л.
45. Free air gravity anomaly of Antarctic region. Brief topography in Antarctic region for reference for gravity anomaly chart. — 1 : 13 000 000. — Tokyo, 1984. — (Special map series of Nat. inst. of Polar research; No 3). — 2 л.
46. Atlas of Tropical Pacific: Wind-stress climatology 1971-1980. — Tallahassee: Florida State Univ., [1984]. — 182 c.
47. Gravity field of the World's Oceans. — Approx. 1 : 40 000 000. — Reston: Geol. survey, 1987.
48. Атлас поверхности Венеры. — 1 : 10 000 000, 1 : 4 000 000. — М.: ГИТК, 1989.

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MAPS FOR PLANNING

By Vladimir I. Zhukov and Leonid G. Rudenko

Abstract: The authors present the requirements for maps for planning from the users' view. The organisation of collecting the datas and presenting the maps is given by the example of the USSR, a country where the economic and social transformation is in urgent want of new and timely information including the adequate maps.

Great changes occurring in the world economy now necessitate the elaboration of a system of provision of information being capable of the satisfaction of all main demands from the management and planning by taking into consideration the daily dynamics of social and economic relationship, of its medium term and long term trends. The organisation of such an information provision is especially important in the USSR, where the restructuring of all links of the economy is happening. New relations between union and autonomous republics will form the full economic self-dependency, as well as the transition to the territorial cost accounting of regions, districts and cities of the country. This is accompanied by the breakdown of old economic connections, the decentralisation of the economic management of branches and territories, the revision of conditions, forms and directions of the economy. It happens against the background of the aggravation of economic, social, political, ecological, and national relations between republics as well as regions. The novelty and dynamism of the occurring processes, the complexity and amenability of the taken decision raise the interest of all organs of government and planning from the level of the union and union republics to the level of urban and rural Soviets for various, actual, and territorially specific information about natural surroundings and resources, the economic potential, the ecological situation, the social infrastructure and other features of the territory.

Taking this into account first of all one ought to heed the problem of the cartographic meeting of the planning needs of the economy whose role and functions increase under new conditions immensely. This is explained by unique

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properties of maps and by enormous possibilities of new cartographic methods for research, by the transition of cartography to automation and geoinformations, by the broad use of the data of the distance sounding, by the complex application of the system approach, by the rapid rise of elaboration of maps and the provision of users with them. But in practice, the compilation of maps for planning is used extremely insufficiently. The elaboration and systematic consistent realisation of a perspective programme of cartographic satisfaction for branch and territorial planning with regard to inquiries from all its links and level are necessary for a radical improvement of the state of arts. A special attention must be paid to a broad introduction of the scientific and technical progress in cartographic science and practice which will allow to go over to the systematic of genuine economic territorial complexes, to the allround and purposeful mathematic cartographic modelling of processes occurring in them, to the creation of a more objective and scientifically grounded evaluation, as well as prognostic and other cartographic models on the basis of the use of computer data bases and automated cartographic systems.

All this can only be organised on a new level of the information securing of the cartographic activities within the framework of geographic information systems, including cartographic, aerospace, statistic and other sources of information from data bases combined with automated cartographic systems. For the fulfilment of this there are considerable theoretical, methodological, and practical foundations in several scientific cartographic centres of the country, e.g. at the Moscow University where the automated cartographic system AOS-MGU tested in the case of the formation of data bases and of the automated cartography of the Moscow and other regions is operative.

Such an approach will save the necessity of a profound study of many questions concerning the information securing, the process of creating maps for the sake of planning.

The exhaustive information about the territory will accumulate within the framework of universal geographic information systems. Additionally separate information massifs with the data being necessary only when composing maps for planning can be created. The elaboration of such geographic information systems must precede within the framework of a united general state programme without fail. So the concordance of the structure and contents concerning the geographic information system on all territorial levels will be ensured.

The use of materials from aerospace surveys should be started, because its significance is rather large for investigating the territorial localisation and for the interaction of objects and phenomena of nature and economy. Their contemporary

state and change in space and time engenders a special problem while creating geographic information systems capable of ensuring the automated projecting and of compiling maps for the planning. The elaboration of such geographic information systems must proceed within the framework of the united general state programme without fail. This will ensure the concordance of the structure and contents concerning geographic information systems on all territorial levels.

Much work is to be done to touch the selection and classification of geographic information systems of specific indices capable of providing the process of mathematic-cartographic modelling with all initial parameters, and of saturating the maps for the planning with indispensable natural resources, ecological, social and other information.

Within the framework of geographic information systems all data are used by composing maps for planning from definite subject files in computer data bases. They are furnished with a special control system and packages of applied programmes for mathematic-cartographic modelling and automated cartography. Let us mention that the specificity of maps for planning and the methodology of their creation necessitates the elaboration of special solutions of many questions concerning the programming and automated cartography.

From this point of view it must be conjugated with the solution of arising methodological and practical questions of cartographic ensuring the planning of the economy, including the revision of subjects and contents of maps, the improvements of their types and kinds taking into consideration new inquiries from institutions of management and planning. Many organisational, legal, technical, commercial, and other aspects of cartography are liable to re-interpretation. Much work waits for the extension of the theoretical and methodological fundamentals of cartography including the specification of the used terms and notions, the selection of objects, units, indices and the foundation of map scales with regard to the perfection of methods for the creation and use of maps for planning.

Ensuring the greatest efficiency of planning and foundation of the proposed plan, decisions necessitates the perfection of its scientific fundamentals, the modernisation of methods, and its fulfilment in conjugation with the solution of the problems in cartographic ensuring planning tasks. It is possible if the planning objects are regarded as complicated territorial systems and resorts to the principles of cartography. On all territorial levels of planning it is important to elaborate and to keep a certain work succession by clearing out and analysing the problems to be solved and after determining specific goals of research. By means of system analysis a target investigation of the territorial or branch system is to be studied. The exposure, modelling, and diagnosis of its elements as well as of their interrelation-

ship, the analysis and prognosis of the development of the systems in time and space are conducted. In particular: needs of resources are determined, conditions ensuring the development of the system are elaborated, planned conditions and scenarios of the development of the system are analysed, and most acceptable versions are chosen. The decisions reflected in series of maps are utilised for the selection and specification of the solutions concerning the development of the geosystem, realizing the fulfilment, and controlling the use of cartographic research methods.

Thus diverse maps including basic maps, research map-tools, map-decisions, and others are used in planning. They are made available on all levels of the territorial hierarchy of planning and they ensure the solution of the tasks of the current, short term, medium term, and long term planning and for prognoses. Depending on the direction of planning (the development of material production or of the non-productive sphere, the environmental protection or the use of natural resources aso.) the cartography covers certain elements and subsystems of the general territorial complex being integrated in structural or resource maps, maps of the ecological state, or the protection of the environment, maps of the conditions curtailing the development and functioning of the territorial complex, maps of the functional zoning of the territory, of the efficacy concerning the functioning of the complex within the territorial system of higher hierarchical ranks and others.

Sets of maps of the groups just mentioned, their subjects, contents, and ways of compilation will vary in proceeding from the specific natural economic complex and planning tasks.

The aggregate of basic maps renders a fundamental characteristic of the territory and therefore it serves as basic cartographic information while solving diverse tasks of planning and prognoses. Operative maps exist independently or as supplements to basic maps. They represent objects of planning and management according to data for a year and even shorter periodical time. First and foremost these maps are composed on the basis of current statistics, of materials from aerospace surveys, and of other information sources being steadily updated. Therefore the solution of the problem of the automated rapid creation, reproduction in quantity, and dissemination is especially important for them.

Although the subject of the basic and operative cartography is the same - the form or shape of a natural complex on a territory, based on the available social economic potential, the used kinds of resources, and formed or shaping connections - the approaches to its cartography are fairly different. For basic maps the cartography of stable and steady structures and connections of dynamic trends and

forecasts, of general and similar characteristics combined with the use of synthetic typologies and classifications attains the greatest importance. That is why information by such maps does not lose its actuality within several years. First of all the operative maps make use of monetary and current changes, therefore they are actual within a very short time, afterwards they already have historical significance.

Besides the necessity of ensuring the system mode of the scrutiny of the objects concerning cartography and automation of the process of creating maps it is important to take into consideration lots of other trends being particularly important for the modern situation of the social, economic, and political development of our country. With regard to the maps for the planning general emphasis is to be laid on people including the description of their health, social, and economic well-being, national traditions, their religious faith, and political conviction. Therefore the characteristics concerning the duration of life, of birth- and death-rates, of sick rates, of evaluating social tensions, and the criminal situation, of national strikes etc. are to be used in maps for planning. It is important to disclose the social economic, national, political causes of the observed destabilising phenomena and processes, especially in the regions of social economic calamities and ecological disasters.

Under the conditions of the rise of economic self-dependency in the republics and regions the elaboration of new principles of the economic and political organisations of the Soviet Union raises the problem of compilation of all-union and republican maps representing fundamental subjects of the economy and the social development in a generalising territorial (regions and districts) view. On this level it is important to show not only the placing, qualitative and quantitative indices of the natural and economic resources, favourable conditions of the economic mastering of the territory but the degree of the formation, the specialisation and the spatial structure of the territorial production complexes, the system of shaped social economic relations touching labour resources, raw materials, completing materials, and the final products as well.

With the transition of the cartography to great economic regions there increases the role of the characteristic of the reached level and of outlooks concerning the development of the intra-republican and interregional division and cooperation of labour, of the social and economic interrelationship within the all-union, interregional and international exchange, of trends in the transformation of economy and property, of the departmental and territorial organization of economic and social objects, of priorities in the location and development of the productive forces including the social reorientation of industry, agriculture, transport, and

services, of the limitation of the production requiring the expenditure of labour, land, or energy, of the reconstruction and modernisation of plants with ensuring a high environmental security and economic efficiency of the production.

Owing to the necessity of a study, account and full utilisation of any additional possibilities of the development and of resources of the economy, there is built up the need of information on resources and conditions of the social economic development of other republics and regions with which interrelations and interactions exist or may exist, including issues of environmental security, of relations between nations aso.

For the social economic cartography on the regional and local level, systems of maps will be required and they will have to represent urgent problems and tasks of the social and economic development of different settlements and plants, of administrative districts and other objects of management and economy. Among them let us mention the characteristics of the level of development, the peculiarities of the placing and efficacy of industry and agriculture, the demand for labour and natural resources, the technical maintenance and supply of raw materials, consumer goods, the level and specific positions being provided with local sources of raw materials, energy and other goods, and the necessity of purchase (exchange) from other regions, the participation of the region in the all-union division of labour, the pollution, and the ways of improving the environmental situation.

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RESEARCH DATABASES. THE FINNISH UNIVERSITIES' RESEARCH DATABASE PROJECT

By Päivi Kytömäki

Abstract: The research database project started in 1989 with the aim of creating a research register with a uniform data content to serve all the university-level institutions in Finland. The Ministry of Education is supporting and directing the project in order to ensure that the register will serve all the universities and prevent the overlapping of planning at the various universities.

The research database system should be a data system which enables reliable, accurate and up-to-date information on individual research projects to be found continually and quickly. Thus it will improve access to information concerning research planned and in progress in Finland, and facilitate its reporting. It will also complement the national and international scientific information services, prevent unnecessary overlapping research and be of use in the planning of scientific policy.

The research databases are formed in accordance with the special needs of each individual university, and each university will assume responsibility for the maintenance of its own database. The databases are required to possess a certain uniformity with respect to structural content; they must be checked and revised to conform with the EC directive concerning the content of research databases. Thus, information would be at the disposal of all those who need it in as flexible a manner as possible and later it would be possible to assemble all the databases into one national, centralized system if needed.

Introduction

Bibliographical database have been in general use in the field of library and information services for approx. 20 years, in addition to which other types of database have been introduced, covering facts, research in progress, institutions, and expert advisors. Research project and expert databases account for approx. 80

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out of the 5000 listed in the first Directory of Online Databases of 1992. Data on research going back even to the late 1960's are available in some databases, but most cover the period from the late 1980's to the present day. The majority of the databases originate in Canada, the United States and Europe, although numerous corresponding databases also exist in Japan, for instance. Usually the databases cover only certain topics, and often only a narrow sub-field within them. Examples of large databases include 1) Current Research in Britain, which includes data on over 75,000 projects in progress at over 500 universities, polytechnics and private and public institutes, and 2) Japanese Government and Public Research in Progress, containing data on over 20,000 scientific and technical research projects at approx. 600 Japanese universities and public and private laboratories.

The aim of this paper is to present the plan for a research database for the Finnish universities. I will discuss in particular the general aims of the project and the information to be contained in the database, and finally provide a general review of the possible uses of databases and their advantages, especially in developing countries.

The need for records of research work carried out in Finland has been acknowledged since the mid-1970's, and two extensive proposals have been made (Committee Report 1976; Nyrhinen & Ylinen 1987), the latter of which formed the basis of a recommendation from the Ministry of Education as to the content of such a database (Letter from the Ministry of Education, 10.3.1989). It was nevertheless not until 1989 that the first practical steps in this direction were taken, when the Ministry of Education and the Universities of Helsinki and Oulu began to draw up a joint record of research taking place in university-level institutions throughout Finland. The aim was to create a system which would serve all the universities and comparable institutions and help to avoid duplicated planning work.

The report of the first working group and the first version of the database were completed in summer 1991, after which the report was circulated among the universities for their comments. Then, in spring 1992, the Ministry of Education appointed a new working group, of which the present author is a member, to monitor the project. The tasks of this group are 1) to monitor and coordinate the work of setting up research databases in the various universities and colleges, 2) to ensure that the databases concerned are comprehensive, up-to-date and properly maintained, 3) to attend to the problem of links with other databases, especially those in use in libraries, and 4) to extend the opportunities for using these research databases via Finnish and international data transmission networks.

Objectives

The research database system should be such that it enables reliable, accurate and up-to-date information on individual research projects to be found quickly at any time and allows statistics to be compiled on them. Thus it should improve access to information concerning research planned and in progress in Finland and facilitate its reporting. It should also complement the national and international scientific information services, prevent unnecessary overlapping research and be of use in the planning of scientific policy.

The Ministry of Education sets out from the idea that each institution of higher education should set up its own database according to its particular needs, although a certain level of compatibility should be expected between them both, in data structure and in the technical solutions employed, so that the information on research can be made most readily available to those who need it. A sufficient level of conformity in content would also facilitate the construction of a joint database later, should such a decision be reached.

Content and functions of the research database

When the informational content of the database was planned, the most significant user groups and their needs were taken into account. The Ministry of Education made recommendations as to the content of the database in 1989, but they must now be checked and revised to conform with the EC directive concerning the content of research databases published in 1991, since Finland is an European country and has applied for membership of the European Community.

The recommendations of the EC directive refer to the following content:

I Obligatory data

1. Administrative data

- owner of the database (code and/or name)
- latest updating data
- completeness of the research data

2. Identification of the research project

- control number (identifies access to data)
- identifier of the research project (country code + registration code)
- original language of the research (language in which the information was originally provided: two-digit code ISO/DIS 639)
- Other languages (languages in which information can be obtained: two-digit code ISO/DIS 639)

3. Data connected with the content of the project
 - title in the original language
 - title in the other language(s)
 - abstract in the original language
 - abstract in the other language(s)
 - person responsible
 - other researchers
 - date of commencement
 - assumed date of termination
4. Data concerning the institution carrying out the research
 - name of research institution (official complete name in the original language; if several levels of organization, at least the lowest level at which the work is actually being carried out should be mentioned)
 - address of the institution (also country code)
 - telephone, telefax, telex, electronic mail
5. Data related to the classification of the investigation
 - free keywords
 - controlled keywords (the Research Thesaurus)
 - Common European Research Classification Scheme
6. Financial data
 - source of finance (name of organization and any code available for it)
 - amount of finance obtained (in the currency of the country and possibly in ECU's)
 - number of full-time researchers - man years

II Optional data

- connections with other research projects (parent project)
- collaborators
- principal results (at the present stage, e.g. number of publications, patents and prototypes)
- special equipment used
- other relevant data

The University of Oulu has proposed the following additions, which are already taken into account in the university's own version:

- Academic degree of the researchers: should be a separate search criterion.
- Confidentiality: a classification should be given indicating what information about the research can be released.
- Expensive pieces of equipment used: details should be given of any items of equipment costing over FIM 100,000 which are required for the research.

- Register of experts: mention should be made of the names of experts consulted, the organizations which they represent, their field of expertise, their experience in years and their academic degrees.
- Classification (OECD, UNESCO, NLM, UDC etc.)
- Published works of the projects

Universities may include other information according to their own needs.

The principal functions of the software are guidance, database maintenance and data search. The aim of the data search function is to make the database as easy to use as possible, employing Help menus to enable entry data to be accessed. A search may be based on any of the above data or on the content of the abstract.

System environment

The Oulu database is designed to operate in a microcomputer network, the proper functioning of which requires the database computer to have a class 80386 or 80486 processor, at least 8 Mb of main memory and at least 200 Mb of hard disc space.

A research database can be of either a relation or a text type. The flexibility of the transfer facilities should be taken into account when selecting the data management system to be used. Since there is no national register, it is essential that outsiders should be allowed access to local systems. This is achieved in Oulu by means of gateway computers which the person requiring information can contact in order to reach the actual database machine via the network.

Updating and maintenance

Each university or college will make its own arrangements regarding the updating of the database and responsibility for its maintenance. In the case of the University of Oulu this task has been thought to the University Library at the present stage which at present is responsible for storing the data on the published works of staff members for the university's annual report. Primary updating can either be centralized in the library or dispersed among the departments in the form of temporary files to be incorporated in the library's database after checking and classification. No decision has yet been reached in Oulu on detailed updating procedures.

Plans exist in the University of Oulu whereby the library's information specialists would be responsible for classifying the research projects and perhaps to some extent for assigning the keywords.

Further steps

The Universities of Helsinki and Oulu will continue to develop their databases and test them in practice during 1992, financed by the Ministry of Education. The aim in Oulu is also to combine the university's research and publication databases as soon as possible.

The universities, the Ministry of Education, the Central Statistical Office of Finland and the agencies financing research each collect very similar data from the researchers and departments at the various universities every year, which is very frustrating and annoying from the point of view of the researchers themselves. The working group engaged in planning the Finnish research register has the ambitious aim of coordinating this data acquisition with that carried out for the research register, and finally of attaining the ideal of a comprehensive university database, the sub-databases of which would include research-in-progress databases, a register of experts, a list of university publications and statistical data.

It was also proposed in the final report of 1991 that the individual databases should be combined into a national one. The Ministry of Education has for the moment backed down from its efforts to achieve a central database, but the question will certainly have to be reconsidered at some stage.

Use and advantages of research databases

The comprehensive use of a research data base requires that it can be reached by means of a communication network and that the data are included at least in national database directories and preferably in international ones. The users of databases can be divided at least into the following groups: 1) political decision makers at the national and international levels and universities, 2) persons responsible for the research, e.g. research/project directors, 3) the researcher themselves, and 4) institutions applying and utilizing the research, e.g. trade and industry.

The database provides political decision makers with data on the quantity and comprehensiveness of the research being carried out in various fields for coordination and financing purposes. Information on research promotes the transfer of technical and scientific data at the national and international levels and enables people responsible for research to familiarize themselves with projects which may be useful for their work and to find researchers specialized in some particular subject. It can also prevent overlapping in research and planning. For a researcher, the register is a versatile source of potential innovations.

I cite the German article of Rolf Volmerig of 1991: "New information is produced daily at universities and research institutes, and innovative technical development is carried out at these. The results of this work provide significant opportunities to solve technical, ecological and economic problems. What is crucial is not the constantly accelerating pace of data production, but the rapid and efficient transfer of new scientific results into practice. "The rapid and efficient utilization of intellectual and economic resources to the maximum extent is vital for developing countries and especially valuable for their economy, so that rationally compiled and utilized research registers can play a significant role in building up the welfare of developing countries.

These research databases can also be expected to provide assistance to libraries and information services in their retrieval problems associated with this "grey area" in scientific knowledge.

References

1. Komiteanmietintö 1976:45. Tutkimusrekisterikomiteanmietintö. Helsinki: Valtion painatuskeskus.
2. Nyrhinen, K. & Ylinen, A. Tutkimustoiminnan rekisteröinti: ehdotus tutkimusrekisterin tietosiällöksi. Otaniemi: Teknillisen korkeakoulun kirjasto, 1987. 75 p. (OTA-kirjast A 10).
3. Korkeakoulujen tutkimustietokanta Tutka: loppuraportti. Helsinki 1991. 22+26 p. (Opetusministeriön työryhmien muistioita 1991, 28).
4. L 189. Commission Recommendation of 6 May 1991 concerning the harmonization within the Community of research and technological development databases. Official Journal of the European Communities, L, Legislation, vol. 34, p. 1-32.
5. Volmerig, R.: Von der Uni in die Praxis. Cogito, (4) 1991: pp. 40-47.
6. Directory of Online Databases, 13 (1) 1992.

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TRANSBORDER INFORMATION FLOWS - THE CASE OF FRENCH PUBLICATIONS IN ECONOMICS

By Ekkehart Seusing

Abstract: The French publications in economics are examined on the 1989 intake of the National Library of Economics in Germany. The crucial points of the production of this literature are presented by a detailed study. The main fields of the publication activities relate to foreign trade (international or EC questions), theoretical economics (including econometrics and statistics) as well as research in economic policy

Economists from France often complain that the results of their research are internationally rather unknown. A set of reasons for this short-coming is identified and the author suggests some improvements for the world-wide distribution of the results of French research in economics.

1. Introduction

In this study the author analyses the way in which the production of economic literature in France is reflected in the Library of the Kiel Institute in World Economics.

Due to the function of this Library as National Library of Economics (NLE) in the Federal Republic of Germany with the national task to collect economic literature from all countries and in all languages as well as to index and to lend it to all clients, it can be delineated that the French publication of this subject area are almost completely available in Kiel. The study only refers to publications from France (i.e. publications from the overseas departments and territories are not taken into consideration). In order to avoid misunderstandings French publications and publications in French have to be clearly differentiated. The first mentioned are exclusively from France whereas the latter mentioned can have been published in other countries such as Belgium, Canada or in Africa.

The study results from the author's experience as librarian in charge for acquiring

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and cataloguing literature from France.

The author concentrates on two main issues in this study. The introduction gives some characteristic elements of the area of collection and in particular concerning the French publications.

The first part deals with the "raw material". By help of a detailed analysis the focuses referring to France as well as the theoretical and international keyprints of the literature are examined.

The second part deals with different aspects of the transfer of scientific information. French researchers complain again and again the fact that the results of their research are internationally only considered on a low scale.

As conclusion the author makes some suggestions for improving the world-wide circulation of French results in research.

2. Acquisition policy of the NLE

The National Library of Economics collects and classifies the total of literature demanded by the national and international community of economic researchers and scientists.

The publications concentrate on special literature in economics including indexed articles in journals and contributions in collected works (conference volumes and Festschriften). they concentrate on all economic branches and products as well as the acquisition and classification of material not being distributed by bookshops (grey literature). Approximately 60% of the stock belong to this non-conventional literature.

The international field of the collection is reflected in the variety of languages: approximately 43% of the stock are in English, just 25% in German, and 7% in French.

The area of collection emphasis includes all aspects of economics, world economics, political economy, and business economics.

Beside these selection criteria there are numerous overlaps and border areas with other libraries, e.g. the Library of the University of Cologne has responsibilities within the German special subject fields programme for the literature concerning business administrations.

Literature on sociology, law, politics, geography, and history belong to the boarder areas and is only acquired when the economic and/or scientific relation is obvious.

The same criteria is valid for publications of inter-disciplinary publications and broad subjects such as family, women, household, children, culture, or environmental questions.

Economic statistics of central and federal states as well as theses are a main issue but theses from France can only be acquired rather uncompletely as there is no requirement of their being printed.

3. Status of publications from France in the NLE

As since 1925/26 the Library's statistics have been recorded according to the same principles an impression of the importance concerning the French publications can be given.

At the end of 1989 there was a stock of 84054 volumes (monographs and periodicals) from France: representing 4.9% of the total stock. The annual acquisition from France during the last three years was on average 1600 volumes. The statistics of the continuously acquired periodicals according to the country of publication show 936 journals, annuals and newspapers from France (situation as of September 30th, 1989): this figure corresponds to 5% of all periodicals.

That part of the acquisition budget of the Library which had to be spent on French publications was on average 5.8% of the past three years. An important role played, beside the acquisition, getting books on a complimentary basis and on exchange.

In total, according to the imprint data 1989, 17671 monographies were collected and classified, and 20054 articles in journals, resp. in collected works were indexed in the NLE from all over the world. In the same year 804 monographs were acquired from France as well as 1210 articles in French journals or collected works were indexed for our databank ECONIS (Economics Information System).

These figures of French publications regarding the total acquisition of the Library amount to 4.5% for books resp. 6.8% for articles.

In comparison with long-term time series it can be found out that the number of volumes acquired from France has been relatively stable.

The stockbuilding of French literature is clearly recognized in a study published in 1936¹. Two staff members of the University of Chicago surveyed by means of a list containing the most important books and journals in social sciences (economics, law, politics and sociology), the holdings of the leading libraries in the USA, Great Britain, France, and Germany.

The Library of the Kiel Institute of World Economics was checked, too, and in the evaluation particularly regarding the French publications it was noticed that the considerable stock of literature from France had been highly significant even in that time.

Nearly all economic publications from France of the Chicago list were available in Kiel. Analysing the books not available, it can be concluded that these belonged to the fields of sociology, geography, and history, subjects which even at that time did not belong to the central area of collection at the Library. It can be underlined that even 90% of the leading French journals were available in Kiel. In comparison with other libraries the NLE achieved a considerable good result.

Taking into consideration that the NLE cannot complain about losses during World War II, it is not surprising that even clients from France verify a great deal more of French literature in economics in the NLE than in any other university library in their home country.

4. Main issues concerning publications from France

4.1 Analysis of the mix of French publications

The basic year will be 1989. Due to the fact that the acquisition is partly rather difficult and that some bibliographies show a very great delay, it can be taken for granted that 1992 (the date this paper was written) all relevant publications of 1989 are available in the Library.

2014 titles from France published in 1989 can be found in the databank ECONIS, i.e. 804 monographs, 1010 indexed articles in journals and 200 articles from collected works.

Considering the main sections of economic research in France it can be said that roughly 60% of the publications concentrate on ten specific sections (see table 1).

Just 10% of the contributions deal with economic development and growth. Furthermore, there are publications on economic policy, international economics, labor economics, and the internal market of the EC which represent central areas of work of French research in economics. There are 100 publications concerning theoretical economics as well. Business economics are represented by 86 publications. Questions on agricultural and regional economics as well as studies in the field of demography do play an important role for French authors. All three fields mentioned at last are regarded as traditional areas of economic research in France. Further important fields of research representing less than 70 publications in 1989, concern studies on innovation, the banking sector, energy policy, questions

on environmental policy, studies regarding selected economic sectors as well as publications on statistics and econometrics.

208 publications (i.e. more than 10%) were edited by the Organisation for Economic Development and Cooperation (OECD) in France in 1989. As the main focuses of the OECD publications differ from the remaining French ones because of the special functions of this international organisation its publications were commented separately, as follows.

As expected research projects concerning international trade, developing countries and the labor market are at the top of OECD publications (see table 2). Further issues are studies on demography, competition policy, and agriculture. With these fields mentioned it can be said that they cover the main research areas of the OECD.

To them there have to be added publications of the International Energy Agency and the European Conference of Ministers of Transport concerning each of their special fields.

In order to achieve meaningful details concerning the structure as regards contents of the French literature in economics, the available data will be disaggregated.

Having deducted the OECD publications the remaining ones are differentiated in two groups as follows:

- French publications in economics relating to France (see table 3)
- French publications in economics and non-relating to France (see table 4).

Thus it can be clearly worked out where the main areas of the French production of literature can be found.

4.2 The main focuses of French publications in economics relating to France

Problems concerning the labor market are the main issue of these 643 publications. They reflect the situation on the labor market itself, the unemployment, and discussions on the reduction of working time (see table 3).

The second wide-spread field deals with economic policy. Contributions on industrial policy as well as the debate on nationalization versus denationalization play an important role besides discussions on topics like the general economic policy in France. Furthermore, there are extensive studies on the economic plan for the years 1989-92.

France's role in the world economy and studies on the international competitiveness of the French industry give the reason for the great part of publications con-

cerning international trade. In this connection the nearly just as high figure of titles on the internal market of the EC and its influence on France has to be emphasized. This fact underlines the French authors' great interest in the problems of the future of France in the European internal market.

The part of literature dealing with regional questions or structural problems of selected regions has significantly increased since the beginning of the politically intended decentralization of France.

The difficult situation of agriculture - a permanent topic of the French economic policy - finds expression in a high figure of studies.

In 1989 the main issues as cited above had the side effect that topics like educational questions, budget, or business cycles were pushed at the margin. Proportionally little literature can be found as far as the topics environmental protection resp. energy supply are concerned. However, publications on those two subjects significantly increased in 1990 and 1991.

There are still some special fields worth mentioning because specified studies were published. These are the food industry, the telecommunication sector, the housing policy, and not to forget studies on cultural economics, a field having been promoted by the French Ministry of Culture for some years. Finally monographs and articles in journals are to be pointed out as that were published on the occasion of the award of the Nobel Prize for economics to Maurice Allais.

Concluding it can be said that the part of the French production of literature dealing with national French topics relates above all to questions on the labor market, economic policy, and foreign trade whereas questions on vocational training, studies on tax discussions as well as budget problems are significantly less dealt with.

4.3 Research in economic theory and internationally comparing studies

Most often foreign trade orientated issues are to be recognized in the 1163 publications from France dealing with topics not relating to France (see table 4). Essay on the internal market of the EC are at the top. This area does also play an important role in other main issues. The influence of the EC can clearly be seen in publications on locational choice by enterprises, or regional policy, or in studies on selected branches such as the electronics industry, or the international competitiveness of the French industry. It can be recognized that the internal market of the EC is like a leitmotiv in a great part of the French publications and it is irrelevant whether in these studies the national, the international, or the theoretical aspect is underlined.

Publications on economic policy are the third topic. This focus of the French economic research is divided into two different fields. i.e. the economic reforms in Eastern Europe and studies on questions of deregulation mainly concerning airline deregulation.

Studies on economic theory mainly concentrate on questions like financial theory and foreign exchange markets as well as on the market theory and competition theory.

Monographs and articles in journals on development questions take a large place. Traditionally French authors tackle these questions for a long time and above all the French researchers deal with foreign debts, possibilities for the conversion of debts, and the Uruguay-Round. Also reflections on the Zone Franc are published: the effects of the European Monetary Union play an important role in this field.

Essays on demography, and family planning represent a further traditionally French topic within the frame of economic and social sciences being also significant for the developing countries.

Worth being mentioned as main focuses are studies on energy supply and demand for which articles in journals on OPEC-policy, oil prices, and nuclear industry are to be underlined.

4.4 Regional and historical focuses

It is necessary to determine regional orientated focuses beside the economic ones.

Just a third (643) out of 2014 titles relates to France itself. A further field of study represents, as mentioned above, EC-questions. Almost 16% relate to studies on selected developing countries. More than half of these 313 titles studies economic problems in African countries.

There are traditional relations which can be explained by the colonial past. In the centre there are the francophone states in Sub-Saharan Africa and in the Maghreb whereas only 25 titles deal with the other African countries. These studies underline the attachment of France to its former colonies which is manifested by the regional distribution of its development aid as well. The significance of "la francophonie" is also demonstrated by several articles in journals tackling the economic questions in Quebec whereas only one article discusses the Canadian economy in total.

The two southern neighbour states of France, Spain and Italy, are of most interest for French researchers among the EC states whereas the USA, Japan and

Germany are more intensively examined under the aspect of international comparisons and not in selected studies.

Beside this focus it is obvious that French authors often work on historical questions. 109 monographs resp. articles have a historical connection of which almost half of them discuss questions of French history. It has to be taken into consideration that in 1989 the 200th anniversary of the French Revolution was celebrated. On this occasion and by means of financial help by some French Ministries (a fact which can be seen in footnotes), the most different aspects of the Revolution were critically acknowledged.

There are, however, also 60 essays on historical subjects not relating to France. In this respect it is not necessary to emphasize that historical research plays an important role in France, a fact which also reflects on economic studies.

4.5 Intermediate remark

A definite main focus within the period under observation is represented by the foreign trade orientated studies. So there are publications dealing directly with this subject like studies on foreign trade of France concerning investment goods. Furthermore, there is a wide-spread spectrum of literature on the EC and particularly on the internal market 1992. Research studies on problems of developing countries must also be regarded under this heading

A further large field includes studies in economic theory, contributions on business economics as well as studies in econometrics and theory of statistics which also represent a traditional field of study as these focuses show innovative results.

The third main focus represents the publications on economic policy such as industrial policy, planification, and labor market. The literature related to France as well as the internationally comparing studies are of great importance. The agriculture is to be mentioned as the sector which is most important for researchers. This sector is not only of interest for France, but also it is intensively examined regarding to developing countries. Here it is again proved which important role the developing countries play concerning the French economic research.

The tradition of French studies on history is reflected in the numerous publications on economic history.

5. Language problems and international transfer of information in economic research

For years the French have been complaining about the lack of knowledge of the French language in other countries. The French language is not only losing its importance as economic and scientific language, but in the world-wide aspect as well.

Already in 1976 an expertise has noticed "que l'anglaise est devenue la langue technique par excellence"². The latest study on this subject with the intentionally provoking title "Does the French book have any future?" determines that the English language is nearly in all fields superior to the French language, particularly in economics and technics³, i.e. the dominant role of the English language has been noticed. However, there follows the question whether the necessary conclusions for the production of literature are drawn. Are e.g. English language articles published in French journals?

5.1 English written publications from France

398 of the 2014 monographs and articles examined, are written in English. At first glance the part of nearly 20% seems to be high, however, it must be seen in relative terms by deducting the English language OECD publications. Hence this part reduces the English publications to 11% (= 225) of which 142 are monographs which are mostly working papers. The fact that approximately three quarters of the working papers in the period under consideration are in English, can be evaluated as a first positive sign.

This shows the French scientists' interest in publishing their latest results of research world-wide and their willingness to take part in the international discussion.

The 72 articles published in English language in 1989 came from a great variety of journals. "Annales d'économie et de statistique" is the only economic journal publishing articles in English regularly and in great extent.

After this shattering fact it is satisfactory to determine that 482 articles include a summary in English and/or in another foreign language, i.e. almost 50% of all indexed articles include a summary in a foreign language. Furthermore, it is worth mentioning that these summaries are completed by the translation of the titles.

Concluding it can be said that the leading economic journals in France try hard to promote the international circulation of the results of French economic research by publishing at least an increasing number of summaries in English.

It should not be missed to point out that since 1989 the publications in foreign languages have steadily increased - either the complete publication or the summary. This fact could be proved by means of a random check in 1991 concerning working papers. Furthermore, some journals have included English summaries in their program. This trend is stressed by new foundations like the "Département et laboratoire d'économie théorique et appliquée". publishing its studies and working papers nearly exclusively in English and having close ties to the scientific community both in France and abroad, by this promoting the "lingua franca" in publishing.

5.2 The significance of language for France's culture

In spite of the relative positive development promoting the dissemination of French research results on an international basis, it has to be stressed that it is the aim of the French cultural policy to protect its own cultural identity by promoting the French language and to emphasize the feeling of solidarity in one's own original cultural identity⁴.

In France the language is a conscious part of the cultural identity, whereas for the British and German speaking countries - the world of fiction excluded - the language is seen as an instrument for the international scientific communication. The French fear giving up their identity when speaking another language whereas the Germans using a foreign language, only see the chance of continuing the communication⁵.

In this connection e.g. three publishing houses are to be mentioned because they create their product lines so that a great part of their books can be exported to Africa. Beside the publishing house "Présence africaine" being more orientated in fiction, the two publishers HARMATTAN and KARTHALA are specialized in studies on developing countries and publish numerous economic studies concerning the development of selected African states.

This traditional orientation towards the francophone countries which might be promoted by financial support of the French government has obscured the scientists' view to the English-speaking world for years and at the same time it has aggravated to achieve the international acknowledgement which they would have earned due to the quality of their studies. For the status of scientific publications does not only depend on its contents but is also determined by the readers' knowledge of foreign languages. The isolation caused by the French language might be the reason that the relevance of French research in economics with its complete spectrum has only been recognized by a small group of linguistically

proficient colleagues. As the acceptance of new ideas primarily depend on the fact whether they are linguistically understood.

Seen from the French point of view this means that the exclusively English speaking scientists do themselves isolate from the latest results in research, for it often happens that important French studies are translated into English with a delay of 15-20 years⁶.

It is, however, regrettable if French studies do not find the international and desirable acknowledgement due to linguistic barriers, so it can be seen that in the last few years a change in the French researchers' view took place because the share of English publications as well as the number of abstracts in foreign languages has increased.

Due to this development the dominance of the English language (in research studies) has been involuntarily promoted. If all scientific results are only be published in English this would certainly be the most efficient way. All barriers of communication would be removed and also the time lag in the circulation of new ideas would be minimized. There are, however, doubts whether a predominance of the English language would be desirable if a dominant anglo-saxon culture is the consequence and hence the cultural variety would disappear.

5.3 The international dissemination of French publications

As far as the policy of acquisition in the NLE is concerned it does not matter in which language a publication is written. Important studies are acquired without taking the language into consideration. The quality of French research studies, however, is sometimes considered by colleagues from other countries: "France lives on dreams of grandeur and on rhetoric instead of scientific analysis from its economists"⁷. In 1973 this statement might have been valid. Even today it might be true that the melodious formulations do have a certain importance in French research publications. In the meantime, however, a new generation of researchers has followed willing to compete with their publications on the international research market.

This orientation towards the English-speaking world is sometimes considered as "anglomanie des économistes Français"⁸.

In French publications it is significant that a great part of the authors write like essayists and emphasize the interdisciplinary attempt. Maybe it is just this style which prevents French results from being circulated on an international basis. As far as economic theory, applied mathematical studies, econometrics or even special fields like regional economics or foreign trade theory are concerned, there

are numerous publications by French authors, which are well-known in the anglo-saxon world.

In this connection it has to be mentioned that researchers like Jean-François Hennart or Jean-Michel Grandmont worked abroad for a certain time or are still working like Gérard Debreu (Nobel Prize Winner 1983; although American citizen the French regard G. Debreu still as a Frenchman).

Other authors like Maurice Allais or Edmont Malinvaud are well-known in the anglo-saxon world because of their numerous publications in English.

They both published important research results first in English through American publishing houses before a French translation was brought out in France.

A further reason for the unsatisfactory dissemination of French research results may be their research on different lines compared with their colleagues abroad. The French studies on economic planning, concerning the economic policy in the Third World, and the industrial policy in the developed countries as well occupy large space. Due to the planification of the French economy there is a long tradition to tackle these topics, whereas for American researchers they are not of such importance and, therefore, they are not of great interest for them.

Different methodological attempts for different philosophies prevent the acknowledgement of a part of the French studies as well. Hence Mark Pearlman complains about the fact that he does not find an American publishing house willing to translate and publish the book "La semantique économique en question" by Christian Schmidt. He puts this unwillingness down to the fact that the monograph "offers view of Cartesian methodology in economics which is completely unknown to the English reader/Popper influenced economics profession"⁹, i.e. different attempts in research are the reason for barriers in transfer of scientific information.

Conclusions

The French researchers in economics provide important contributions from all fields of economics. This study shows that there are several issues of research which can be partly explained through the historical aspect like the studies on francophone developing countries. Other areas are influenced by the present economic situation in France, i.e. studies on economic planning, regional policy, or on the internal market of the EC. Last but not least the studies on economic theory caused high credits for French economic researchers.

In spite of these facts the French economists complain that their research results do not achieve the international dissemination and acknowledgement they really deserve. In this connection the importance of English publications and/or summaries for the scientific dissemination of information is demonstrated.

The significance of the rhetorically correct use of the language (for a French scientist) should not be underestimated. He is not only expected to be a writer, but he also has to publish fiction. It is worth mentioning Jacques Attali, a famous economist who has also become President of the European Bank for Reconstruction and Development in London recently and who published some works in non-economic fields.

The question is by which means barriers for the international transfer of information can be reduced for French publications. All problems of each other's understanding would be solved if all researchers published in one language. However, this is - as mentioned above - not desirable. Therefore, some measures will be suggested which might improve the situation as follows.

1) In France there is no leading journal publishing English articles by French authors in English. Additionally, it would be necessary to include contributions by foreign authors in order to increase the incentive for non-French colleagues to read this journal regularly.

As an example the "Weltwirtschaftliches Archiv" has been mentioned several times¹⁰.

2. A further step would be the edition of a journal publishing important French articles translated into English or in another language. These translated articles should be completed by English summaries of two to three pages of several important books so far published only in French.

3) Over and above that it would be advisable to include the working papers of French authors (in English and French) in international special bibliographies like "Abstracts of working papers in economics" or "Economics working papers bibliography" and so to introduce these papers to an international readership.

4) Anyhow French researchers should be interested in their publications being announced in international review-journals and international bibliographies in order to be acquired by libraries and consequently get known to foreign colleagues.

5) Generally speaking the French politicians should accept the English language to be the leading language for economics and be aware of the fact that within the

international frame only studies published in English, are acknowledged world-wide.

6) As already cited above, it promotes the scientific transfer of information if researchers work in Anglo-American countries for some years. By effecting this the intellectual barriers can be reduced besides the language barriers. So national research topics might be introduced to each other and different methodological attempts in research could be overcome.

7) The cooperation in international working groups like the "Association des Instituts Européens de conjoncture économique" promotes the fact to regard the economic questions under different aspects and to reflect on them together. Meetings are essential for the constitution of an international and trans-border network of researchers. This is particularly important in case of a country in danger of being linguistically isolated and of losing the contact with the leading researchers, resp. of a country not being in a position to introduce the results of its researchers on an international basis.

For certain this study seems to have raised more questions than it has answered. So far only the supply of French literature has been examined. It would be advisable to investigate empirically which publications from France are mainly asked for in the NLE by its clients. Such an investigation could give specific hints how to change the rules of acquisition in order to fulfill the tasks of the Library better than ever before.

Note

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References

- 1 Waples, Douglas; Lasswell, Harold, D., *National Libraries and Foreign Scholarship. Notes on Recent Selections in Social Science.* Chicago, Ill., 1936.
- 2 *Exportation des productions littéraires et artistiques françaises. Rapport présenté par Claude Payement au nom du Conseil économique et social.* In: *Journal Officiel de la République Française. Avis et rapports du Conseil économique et social.* Paris 1976, no. 9, p. 518.
- 3 Cahert, Patrice. *Le livre français a-t-il un avenir? Rapport au Ministre de la Culture et de la Communication. (Collection des rapports officiels).* Paris 1987. P. 11.

- 4 See Guillard, Gilbert, Französische Kulturarbeit in der Bundesrepublik Deutschland. In: 79. Deutscher Bibliothekartag in Bonn 1989. (Zeitschrift für Bibliothekswesen und Bibliographie. Sonderheft 50). Frankfurt am Main 1990. Pp. 290-295.
- 5 Wickert, Ulrich, Frankreich. Die wunderbare Illusion. Hamburg 1990. Pp. 344-345.
- 6 See the report: Study of the problems caused by English language domination. "Social Science Information and Documentation Liaison Bulletin", Helsinki, vol. 10 (1990), no. 3, p. 7.
- 7 Johnson, Harry G., National styles in economic research: The United States, The United Kingdom, Canada, and various European Countries. "Daedalus", Cambridge, MA, vol. 102 (Spring 1973), no. 2, pp. 65-74.
- 8 Koen, Vincent, L'anglomanie des économistes français. "Economies et Sociétés", Paris, vol. 23 (1989), no. 8, pp. 103-115.
- 9 Private information to the author from May 7th, 1991.
- 10 For example: Ratier-Coutrot, Laurence. Les économistes français vus d'Amérique. "Futuribles", Paris, no. 91, pp. 71-75.

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Table 1

The main section of economic research in France (1989)

Rank order	Specific sections	Frequency	%
1	Economic development and growth	189	9,4
2	Economic policy	166	8,2
3	International economics	143	7,1
4	Labor economics	136	6,8
5	Internal market of the EC	127	6,3
6	Theoretical economics	100	5,0
7	Business economics	86	4,3
8	Agricultural economics	86	4,3
9	Regional economics	74	3,7
10	Demographic economics	71	3,4
	Subtotal	1178	58,5
	Other sections	836	41,5
	Total	2014	100,0

Table 2

Focuses of publications from the OECD (1989)

Rank order	Focuses of publications	Frequency
1	International trade	18
2	Development and aid	18
3	Labor market	16
4	Demography	16
5	Competition policy	16
6	Agriculture	15
7	Environment	14
8	Energy	13
9	Research and Development	13
10	Transport	9
	Subtotal	148
	Other focuses	60
	Total	208

Table 3

The main focuses of French publications in economics relating to France (1989)

Rank order	Focuses of publications	Frequency	%
1	Labor market	72	11,2
2	Economic policy	44	6,8
3	International trade	36	5,6
4	Banking and monetary problems	36	5,6
5	Regional development	35	5,4
6	Internal market of the EC	33	5,1
7	Agriculture	23	3,6
8	Economic growth	22	3,4
9	Education	21	3,3
10	Taxation and budgetary problems	21	3,3
	Subtotal	343	53,3
	Other focuses	300	46,7
	Total	643	100,0

Table 4

The main focuses of French publications in economics and non-relating to France (1989)

Rank order	Focuses of publications	Frequency	%
1	Internal market of the EC	94	8,1
2	International trade	86	7,4
3	Economic policy	75	6,5
4	Theoretical economics	72	6,2
5	Labor market	64	5,5
6	Agriculture	63	5,4
7	Development and aid	62	5,3
8	Business economics	61	5,2
9	Demographic economics	48	4,1
10	Energy	40	3,4
	Subtotal	665	57,1
	Other focuses	498	42,9
	Total	1163	100,0

THE ROLE OF INFORMATION SERVICES IN AGRICULTURAL DEVELOPMENT OF IRAN. A PROGRESS REPORT

By Nassrin-Dokht Emad-Khrasani

Abstract: Taking into consideration the importance of "information" in the economic and social development of developing countries, the requirement for information services and its application in agriculture in these countries has been well recognized. But, since these services need required roles and appliances, because of the lack of necessary possibilities most of the developing countries have not achieved progress in this respect and lack of progress in agricultural information services will cause the stagnancy of agricultural development and extension. On this basis required actions have been taken for the renovation and systematizing the Library of Agricultural Scientific - Information and Documentation Centre in Iran whose stages of establishing and forming has been presented as an experience of an agricultural documentalist in Iran.

Introduction

Agriculture is one of the most important issues which has always been under consideration throughout the world especially in developed and non-developed countries, as it plays the vital role in economic and social developments of these countries. Therefore, it is necessary to give priority to agricultural development and extension, with the objective of increase in production and redistribution of income as the interest and profits for peasants and farmers in these countries. Although, agricultural development relates to the special attention of the government "Agricultural resources" and "man power" are considered as two effective factors for the growth of agriculture. In other words, existence of utilizable and useable sources in any country as well as the existence of specialists, semi-specialists and experimental manpower, results to an agricultural extension due to a fundamental planning. But, the most important factor which provides such development and extension is "information" which is considered as important requirement for production in agriculture regarding to the modern technology. That is if extension workers and farmers as well as researchers, policy makers and

planners gain suitable information about modern agricultural systems and its related matters, no doubt a better production of foodstuff will be achieved. Skilled and effective man power responsible for the growth of agriculture requires an continuous increase in knowledge. In other words it is necessary to have immediate access to innovations, changes, and the latest results of agricultural research. Nowadays, policy makers and relevant authorities in agriculture in developing countries are well informed of the importance of information and information services in the field of agriculture. But due to the lack of systematic centralization of agricultural information, unfortunately they cannot achieve full information on progress and innovation in agricultural fields. So their production does not have any relation to references and documentary information. Nowadays, scientific and technical information are considered as the basis of material and intellectual sources in different societies, and any society which is able to access more information automatically has more potentiality. In other words, in the present era known as the time of "explosion of information", information is considered as a fundament of power. Among the several scientific and technical achievements of these countries, development and extension of agricultural science have vital importance, due to the thousands of research activities and agricultural development projects performed throughout the world every year and thousands of active researchers trying to promote production of foodstuff as well as the increasing living standard of peasants and farmers. Therefore the outcomes of agricultural research projects have created mass information which are published in different forms such as books, articles, reports, and reviews. Information sciences allows the collected and organized information in different fields of science and technology like agriculture. Distribution of information can be done either collectively or through selective dissemination although in both cases, unless there is a systematic data base, the process of documentation and information services is not possible.

Agricultural information services in Iran

In Iran, agricultural information services are performed irregularly and dispersely. In spite of a large number of agricultural libraries throughout the country such as academic, governmental, professional associations, trade, corporations, etc., unfortunately, there is no agricultural information network. Also considering the lack of sufficient equipment in most of the agricultural libraries in Iran, and sometimes their managements through traditional and non-standard methods, agricultural information services in Iran do not match with technical advancement in agriculture throughout the world. Therefore, as an agricultural documentalist and as a special librarian, interested in the systematic expansion of agricultural

libraries in the country, and also considering the existing requirements, I have performed several activities in this field since 1980 such as renovation and systematization in the Library of Iran Agracultural Scientific and Documentation Centre. Now I would like to present my experience in the related matter to encourage beginners, especially librarians in the developing countries. Herewith I want assure them that due to this continous endeavour and effort they will certainly achieve their objectives.

The progress report

The Library of Agricultural Scientific Information and Documentation Centre is the result of continous efforts, struggles, unifications, knowledge, and experiences which started its activity on the basis of principles of modern library science on February 8th, 1981. It was not easy to begin. Bundles of different books, documents, periodicals, and even papers were without any arrangement in the storeroom. This room which later became entomology museum had no light and air. After a hard, long and tiresome work with assistance of lizard, beetles and rat excrements, it was only the will for the best that pushed me forward to arrange the publications. After three months, according to the project presented to the head of the Centre, I hold many consulting meetings with my professors to make the necessary planning. Afterwards, to begin routine activities, I started the training of five female non-specialist staff heaving secondary school diploma and bachelor degree other than library science. After a while we moved to a new building consisting of a hall and a few rooms about 900 sq. meters, and finally after seven months of hard work even in holidays, the Library was ready for the clients. In this respect, the most important aspect is the effort and endeavour which took place to establish the Centre with the least possibilities. Some believe that it is impossible to be effective without primitive possibilities such as semi-specialist or at least trained staff as well as the required equipment such as card-cabinet. But according to my experience the case is just the opposite. For example concerning the expansion of activities, the Center needed a higher number of personnel and also considering that there was no possibility to employ specialists and semi-specialists, immediately I started to instruct young girls interested in library science. This training lasted one year during which the collection of the Library was arranged. Now those obliged to read some books and texts of library science are able to work as semi-specialist librarians and after the removal of employment restrictions, some were employed in the center as daily-paid librarians and some are able to perform the entrusted duties actively in different sections, i.e. cataloging and classification, indexing of documents, articles and audio-visual materials, circulation, and organizing periodicals. On the other hand in spite of

the importance of tools and equipments, and general appliances of libraries, lack of possibilities and required equipment the work didn't result in stagnation. For example sometimes instead of card-cabinet we used airmail envelopes and cardboard boxes and afterwards the cardcabinet was delivered to the Centre. The Library had started its activities, but the users were occasional and countable. The Library should become more active and its public services should be extended. Therefore, expansion of circulation section took place in form of interlibrary loan among the local libraries of the city and then throughout the country and finally abroad. Expansion of circulation was not the only way and ways should be found to attract and absorb the interested persons. Therefore, providing information sources such as publications of a quarterly bulletin containing the latest scientific and research information about agriculture was considered as an effective contribution. In this connection on the basis of regulations required action was undertaken to collect all publications of the Ministry of Agriculture throughout the country. It means that each of such publications was registered in the Centre in the form of copyright and as a result yearly bulletin was prepared and published: "The union catalog of the publications of the Ministry of Agriculture". Publication of informal sources resulted in increase of work and users, but even now the Library needs more expansion and has to become known among the clients. The other activities were attending agricultural specialized laboratories, attending the farms and visiting research places, and negotiating with researchers at the site. Most of the researchers did not have time or other problems to attend the Library, and as a result they were not aware of agricultural information or did not receive the publications frequently. Consequently a plan was presented to provide direct services to these persons. Existence of a monthly current bibliography such as "Agrindex" was considered to be an effective way and its advantages and methods were discussed. Some of the researchers benefited from it properly and for those groups who did not have time or mood to attend the Library, the Library presented its services directly. In this connection, the Centre could perform correspondence with several national and international agricultural libraries and received required publications. The most important aid was done to the Library by SDI section of FAO. Because of the lack of the necessary information in the existing sources in Iran, the centre requested through telex or correspondence.

The other activities of this Centre were as follows: establishing a profile of agricultural researchers on the basis of the subject of their research; providing a data bank of the particular agricultural writers and translators; establishing workshops for experts and researchers in different fields of agriculture to become familiar with the method of utilizing library and special sources in agriculture;

training of students in the field of library science at the Centre and education of non-specialized librarians of other libraries affiliated to the Ministry of Agriculture; mutual cooperation with other state libraries like the National Library of Iran, consultation and supervision for systematizing of other agricultural libraries of the country.

Anyway, this Centre was established, but it has not still achieved its real development and I hope the Centre to be useful and effective in the agricultural development considering the information technology and positive efforts.

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INTERNATIONAL DEVELOPMENT INFORMATION NETWORK (IDIN)

Abstract: This paper presents the main tasks of IDIN. Phase I (1989-91) saw the decentralisation of the data bases on information on development institutions, research projects and individuals from the Development Centre of the OECD in Paris to five regional associations. The second phase of IDIN will focus on coordination and evaluation of the collaborative mechanism, extending the range of sources tapped, designing and developing value-added products and marketing and promotion of the IDIN products.

Background of the IDIN data base project

The International Development Information Network (IDIN) was first set up in 1976 at the OECD Development Centre, Paris. It comprised a data bank on development research in the member institutions of the five associations of the Interregional Coordinating Committee of Development Associations (ICCD): ADIPA in Asia, AIRCARDES in the Arab region, CLACSO in Latin America, CODESRIA in Africa and EADI in Europe.

In 1984, the OECD-Development Centre requested the International Development Research Centre (IDRC) in Ottawa, Canada to evaluate the Centre's database on Development Research. In the evaluation-report (the so-called 'Oswitch report') three alternatives were given. It was decided to choose for the decentralization of data-gathering and -processing to the level of the five regional associations within the ICCDA-framework.

The partners in the network gather and process information on research and training relating to economic and social development. The collection and computerization of data is handled at the regional level.

The purpose of the project is to exchange this information in order to improve the flow of information on social science research and training and to foster regional and interregional cooperation (South-South and North-South) in support of the development process.

The working languages are English, French and Spanish.

The OECD Development Centre will act as a technical focal point of the project. Each Regional Association will send copies of their data bases for input into the Global Data Base maintained at the OECD Development Centre. Eventually each Regional Association will have the disposal of a global data base development research of the five regions.

In the framework of IDIN the following information applications will be implemented:

- profiles of institutions,
- ongoing research projects,
- specialists,
- research publications

Technical tools and formats

The five associations, involved in IDIN, agreed to use identical software (CDS/ISIS), formats and keyword-systems (Macrothesaurus).

Software

CDS/ISIS is a menu-driven generalized Information Storage and Retrieval system designed specifically for the computerized management of structured non-numerical data bases. One of the major advantages offered by the system is that CDS/ISIS is able to manipulate an unlimited number of data bases of which may consist of completely different data elements.

Formats

IDIN formats are designed for the creation and management of databases for:

- bibliographic information,
- institutes,
- ongoing research projects and
- specialists.

The format for bibliographic information is described in: 'IDIN manual for the creation and management of a bibliographic data base using Micro-ISIS'.

The other formats are described in the 'IDIN manual for the creation and management of databases using Micro-ISIS for Research and Training Institutes, Research Projects and Specialists'. The design for all databases is available on diskettes for participating institutes, using micro-computers.

Keyword system and subject coverage

As keyword system is chosen: **Macrothesaurus for Information Processing in the Field of Economic and Social Development.**

IDIN will cover the following subjects:

- International cooperation, international relations
- Economic policy
- Social policy
- Culture and society
- Education and training
- Agricultural economics
- Industrial economics
- Trade
- Transport
- Public finance
- Labour
- Demography
- Food and health
- Environment
- Development planning
- Information and documentation.

IDIN EUROPE

The European part of IDIN has been implemented by the Development Research Institute (IVO) in Tilburg on behalf of EADI.

In the European part of IDIN the decentralized data-gathering and -processing at the national level is exercised and tested for the first time. The principle is to collect the information at the closest point to its generation. National focal points in the participating countries are able to coordinate with other national research register activities to ensure no unwanted duplication and to reduce the demands made on the research institutes and individual researchers. The national focal points are requested to provide us with the processed information in machine-readable form. The information will be imported in our database 'Ongoing research projects'. Where necessary technical and organizational support will be rendered by us to the national focal points.

The European part will cover data on ongoing research projects and in a later stage data on institutes.

In the first (pilot) phase of the project the organizational problems concerning the National focal points identified and now cooperating in the IDIN project in Europe are:

- The Netherlands: SWIDOC and IMWOO,
- Hungary: Institute for World Economics of the Hungarian Academy of Sciences,
- Federal Republic of Germany: Deutsche Stiftung für Internationale Entwicklung,
- Spain: Instituto de Información y Documentación,
- Norway: Norwegian Social Science Data Service and Chr. Michelsen Institute,
- Switzerland: Institut Universitaire des Etudes du Développement (IUED),
- Finland: Institute of Development Studies (IDS) University of Helsinki
- Italy: ISPA Nord/Sud.

The pilot phase of the project resulted in 1991 in a database with 1.069 ongoing research descriptions from 7 European countries. In the second phase (1992-1994) the extension of the geographical coverage is planned. New national focal points have started their activities in: France, Slovenia and Denmark. Update procedures in the countries already participating in IDIN has started recently: results are expected soon.

For several smaller countries in Europe (e.g. Iceland, Ireland, Bulgaria, Albania etc.) data-collecting are carried out directly from Tilburg. This activity has recently started and has resulted in more than 100 project descriptions.

On behalf of EADI's secretariat a database with profiles of individual expertise of researchers in EADI member institutes has been implemented, containing 630 records. A publication will follow.

IDIN worldwide

Since the start of the decentralization process all Associations have been collecting and processing data on ongoing research projects and development research and training institutes in their own regions. The overall results of the first phase of the projects are:

	Research projects	Institutions
Asia	847	761
Arab Region	789	214
Africa	881	851
Latin America	1.304	120
Europe	1.069	541
<u>Total</u>	<u>4.890</u>	<u>2.497</u>

New tasks and services in IDIN phase II

In the second phase new tasks and services will be developed in order to strengthen the IDIN Network.

- definition and implementation of links with external information sources
- experiments with value-added products
- development of procedures for merging regional databases into global IDIN database
- study on promotion and marketing alternatives
- improvement of communication between IDIN partners through electronic mail user-study
- strengthening of technical capacity.

The Development Research Institute (IVO), carrying out the European component of the Network, will implement the following new tasks:

- inventarisation and acquisition of external information-sources and databases;
- merging and integration of the regional databases into global databases;
- coordination of technical developments and technical experiments, e.g. electronic mail, hypertext, desk-top-publishing.

More Information

For more information, please contact the IDIN Project Coordinator, c/o CLACSO or the information officers of the respective Regional Associations.

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