

THE EMERGENCE OF THE NATIONAL ATLAS CONCEPT

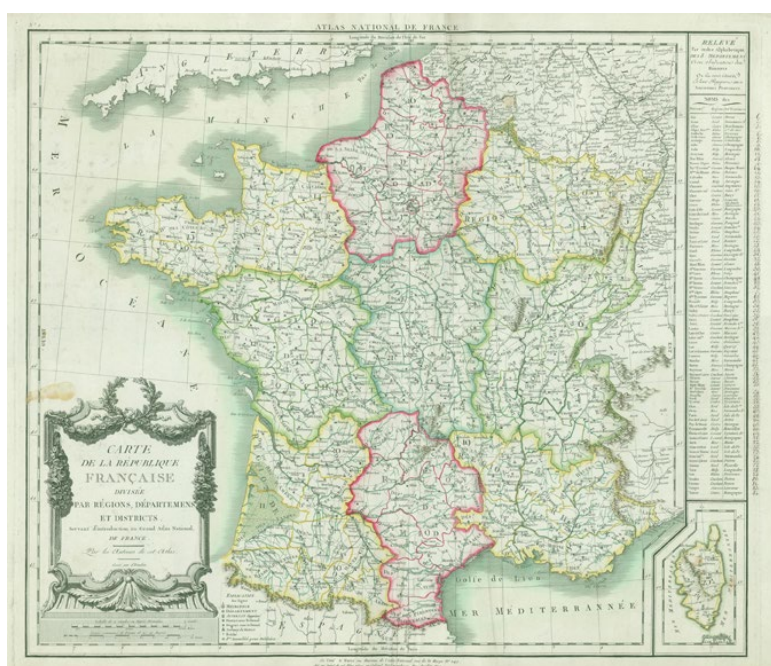
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Abstract

This paper will follow the development of the national atlas concept, describing the components that successively were being regarded as belonging in a national atlas. It highlights the role of the IGU Commission on National [and regional] atlases (1956-76), chaired by Professors Salishchev and Lehmann respectively, and of the Joint IGU-ICA working group on Environmental Atlases 1976-1987 chaired by Prof. Vazquez Maure, followed by Bickmore. To continue its work, in 1987 the International Cartographic Association created its own Commission on National Atlases. The early history of this ICA commission is described by Bengt Rystedt and Ferjan Ormeling in a paper on the ICA Atlas Commission's website (Ormeling and Rystedt 2018).

Introduction

The first mention of the term **national atlas** was found – in English – in an advertisement in the *Oxford Journal* of 21 December 1793, and it referred to a ‘national atlas of France’, to be produced by John Wallis in London. Although the maps were to be solely topographic, statistics were to be added, so in a sense the information planned for this publication approached that of a national atlas in the present sense. The atlas Mr Wallis intended to produce was copied from a French publication, the *Atlas national*. In France, this term ‘Atlas national’ was coined in the course of the 1789 Revolution, as a follow-up to the demarcation of the new administrative subdivisions in départements instead of the old provinces. One of the first products of the *Bureau de l'Atlas National*, set up for this purpose, was the *Atlas national et topographique de la France en départements*, published in 1795, with a map title emblem still very much

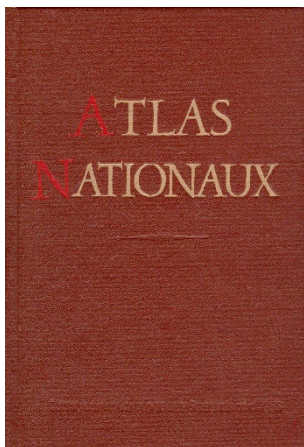


reminiscent of the old regime (see figure 1). The atlas contained an overview map of France and 83 maps, each of a different département. They were all on the same scale (1/3 of that of the map by the Cassini's) and – cut-out – could be assembled or pasted together to form a giant map of the country. It was essentially, a topographic atlas, be it a very detailed one. It was state-sponsored, as the *Bureau de l'Atlas National* had been set

up by the *Assemblée nationale*, it was very detailed and the result of a prestigious endeavour. The concept was kept alive, as similar ‘atlas nationaux’ were published in France in the 19th century, for example by Victor Levasseur in the 1840s (*Atlas national illustré des 86 départements et des possessions de la France*, 1845). It wasn’t what we nowadays consider to be a national atlas, but it showed that at least a national atlas should be based upon a detailed topographic knowledge of the country. In Britain, where comparable county atlases had been published since Christopher Saxton’s 1579 atlas of the counties of England and Wales, the term ‘national atlas’ in the 19th century would rather refer to general reference world atlases catering for the national market. Examples are the *National atlas of general geography* by Alexander Keith Johnston (1st edition Edinburgh 1843) and the *National atlas* by John Heywood (Manchester 1870). But in 19th century continental Europe the term *national atlas* would refer to atlases containing detailed topographic maps covering a nation-state.

As more and more geospatial information would become available during the 19th century, the advent of atlases that would bring together detailed topographical, physical and socio-economic information for countries would be a matter of time. There was the gathering of physical information, speeded up and channelled by Alexander von Humboldt, Heinrich Berghaus and A.K. Johnston starting from the beginning of the 19th century and there was the gathering of statistical information on the population and its endeavours (that is socio-economic information) from the middle of the 19th centuries onwards, first in centrally governed states like Austria, Russia and France. To cope with this information revolution, to bring it in a digestible form, to visualise it together in an atlas would be a logical next step.

The national atlas concept



In retrospect a number of atlases published in the 19th century or in the 20th century was later dubbed to belong to the national atlas category. That is especially after the formation by the International Geographical Union (IGU) of the *Commission on National Atlases* in 1956, chaired by Konstantin Salishchev (Moscow), who was able to convene a large number of geographers involved in national atlas production worldwide. In four years they worked out the contents of what in their opinion should compose a national atlas, and this was published in 1960 by Salishchev in the commission report *Atlas Nationaux, histoire, analyse, voies de perfectionnement et d'unification* (Published by the USSR Academy of Sciences 1960, see figure 2).

The Commission defined and codified the concept and produced lists of the subject matter to be visualized in national atlases. The standardization aimed for in this visualization was to be extended to the actual portrayal of the spatial information: maps were to be produced at specific scales, and sub commissions were organized in the 1960s (on a national basis) which had to come up with proposals for the best way

to map each of the various themes to be incorporated in the atlas – that is to develop standard legends. The grandiose idea behind this was the ideal that – if all maps in the national atlases would follow these standardized legends – all the atlases put together would form a national atlas of the world (stated for instance at the 7th plenary meeting of the Commission on National Atlases in Madrid on 26-30 April 1970¹). That ideal could only be realized however in our present digital era.

What made the atlas of a country a national atlas, what criteria had to be met? The Commission stated (Salishchev 1960) it had to contain maps of a) the country's physical environment, b) its population, c) its economy, d) cultural issues and e) its administrative structure. The physical environment had to be portrayed with geological, geophysical, morphological, climatological, hydrological, pedological, phytogeographical, forestry and zoogeographical maps. The population had to be portrayed according to its distribution and density, age, gender and evolution, to be extended with maps of social parameters, like employment of men and women. The economy of a country should be portrayed with maps on agriculture, manufacturing, tertiary production, commerce, domestic and international trade, finance, traffic and transportation. Cultural aspects should be portrayed by maps of education, the distribution of cultural and scientific establishments. This list of themes, that makes up most of the Commission's report, extends over 63 pages.

The maps had to be as detailed as possible, had to be of a scientific nature, suitable for problem-solving and therefore accessible for all educated readers. And, most important, the various themes had to be visualized in such a way that all of them could be compared to one another. As the production of a national atlas was a most labour-intensive endeavour, involving many state institutions necessary for gathering the geo-spatial data, it was logical that a national atlas would be state-sponsored and have a tremendous prestige because of its scientific elaboration.

Fore-runners

The IGU national atlas commission reviewed the atlases produced before 1960 and, in hindsight, identified previous cartographic works that answered its definition of national atlases, the first being the *Atlas de Finlande* (1899). This atlas was thus canonized as the first one answering the Commission's criteria of the national atlas, and this selection drew many comments. One has to understand that the Commission's report was published in the midst of the Cold War, and here was the Soviet Union, designating one of its satellite states as having the first national atlas,

1) Bulletin de nouvelles de l'UGI/IGU Newsletter volume XXI no 2 1970 pp 1-6, Reports of IGU Commissions – Commission on National and Regional Atlases. In its resolutions the Commission "Stated an opinion that, in the final analysis, the development of national and regional atlases must clear the way for the creation of a Thematic Atlas of the World, the pattern of which should be foreseen even now"

a most prestigious position. Scholars in many countries objected: the German cartographer Scharfe (1989) claimed that the 1828 *Administrativ-statistischer Atlas vom Preussischen Staate* by Ferdinand von Döring should be regarded as the first national atlas, even if it contained mainly administrative maps. It set the model, as it contained 22 thematic maps of the same state, Prussia, all at the same scale (including language, religion and manufacturing maps), thus providing perfect conditions for map comparison. According to Scharfe it also contained the first population density map, the concept being so new that it was still stated as the ‘ratio of the population and the surface area’ (‘Verhältniss der Bevölkerung zur Grundfläche’). The 1847-1870 *Atlas de España* by Francisco Coello was proposed also, although it was strictly topographical and never was completed.

Werner Stams (1965), assisting Edgar Lehmann (one of the members of the IGU Atlas Commission), claimed two more German atlases belonged to the national atlas group ²⁾, these were the 1860 Atlas of Saxony (*Atlas von Sachsen*) by Henry Lange and the 1878 Atlas of the German Empire (*Physikalisch-statistische Atlas des Deutschen Reiches*) by R.Andree and O.Peschel. The Atlas of Saxony – an independent kingdom at the time – contained 12 maps, amongst which a layer zone map (the first in a national atlas) but otherwise did not use thematic methods beyond the chorochromatic. The Atlas of the German Empire stands out as the first atlas that was produced as proof of the existence of a new state, as the German Empire had been founded in 1871 after Germany’s unification. The new Germany presented itself in this atlas to the world in 25 physical, demographic, animal husbandry and cultural (language, religion) maps. Statistics on agricultural production or on the manufacturing industry apparently had not been standardized sufficiently between the various components of the new state to allow for maps on secondary production. Industrialization must now be deduced from the maps on urbanization and on population change, showing the population move towards the industrial centres. It is indeed remarkable that Salishchev choose to ignore these German contributions, but this must be seen as a result of WWII: apparently German contributions were not yet perceived as ‘salonfähig’.

In the United States, Monmonier (1994) claimed that the 1876 *Statistical Atlas of the United States* by Francis A.Walker should have been regarded as one of the early national atlases, even though the US member of the IGU Commission, Carlton P. Barnes, did not see the need to include it. Neither did Arch Gerlach (editor of the 1970 *National Atlas of the United States*) hail its 1876 forerunner as the first national atlas of the US (Gerlach, 1965). Its 52 plates included physical maps, maps based on population, social and industrial statistics and maps and diagrams on vital statistics. It portrayed only half the country, as the western half had not been surveyed as yet, and maps on cattle, industrial production and cultural issues were

²⁾ „Zwei deutsche Atlanten, die weitgehend dieser und der bei *Lehmann* (1959) gegebenen Charakteristik moderner Regional- bzw. Nationalatlanten entsprechen, gehen dem Atlas von Finnland voraus.“ (Stams 1965)

missing; on the other hand for a long time it was the only 'national' atlas to include maps on wealth, indebtedness and taxation.

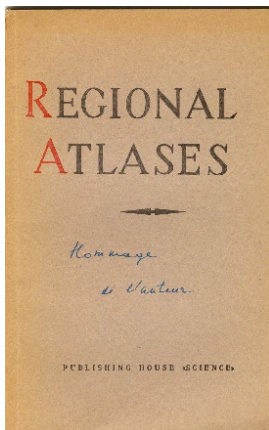
The 1895 *Survey atlas of Scotland*, by John Bartholomew, was comparable to the Atlas of Saxony in its limited scope, but was more advanced in the thematic methodology. Its 62 plates contained 11 maps of the whole country, to which plans of major urban centres were added. Dean (1970) regarded it as the first complex regional atlas, which is to say that, had the country been independent, it would have been the first national atlas. The *Atlas de Finlande*, now hailed as the first national atlas (Salishchev 1960), published in 1898 in French by the Finnish Geographical Society, contained 12 maps on the physical environment (amongst which two with the length of snow cover, and one on the timber line as well as the northern extension of crops), 6 demographic plates, one on rural schools, 5 on agriculture and forestry, 3 on energy, minerals and industry, 5 on infrastructure and 3 on history.

At the same time (1898) the *Atlas de Filipinas* by José Algué was published, so Losang (2018) claimed first national atlas status for this publication (by the US Coast and Geodetic Survey) as well, although only 4 of its 30 maps were thematic in nature.

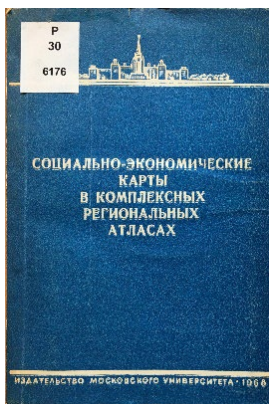
The *Atlas of Canada*, the first edition of which was published 1906, was strong on infrastructure (like the Atlas of Finland) and on population, but for most items relied on diagrams instead of maps. The 1914 *Atlas Asiatskoy Rossii*, produced to attract Russian farmers to colonize the virgin Siberian steppes, concentrated on their agricultural potential (maps on hypsometry, climate, soil, vegetation), on demography (ethnography, population density, religion), contained many (10) regional maps on the property structure and the availability of land free to settle (18) and contained one map on manufacturing industry.

In hindsight only 22 atlases produced prior to 1960 were accepted by the IGU Commission as true national atlases, answering the criteria it had defined. In later years many other 20th century atlases disregarded by the Commission would be proposed as forerunners of national atlases as well. In the Netherlands, for instance, the *Atlas Tropisch Nederland* (1938), of present-day Indonesia, was claimed as the first national atlas of a tropical country, although few of its native inhabitants were able to read it.

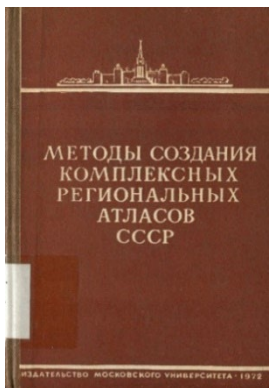
Regional and environmental atlases



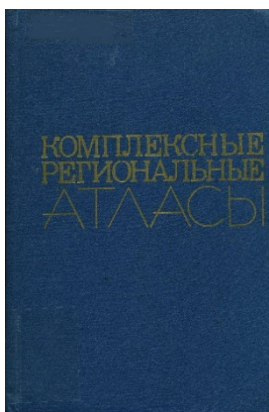
Apart from national atlases, the IGU Commission also focused on regional atlases, a more problem-oriented type of atlas. In 1964 Salishchev published the Commission report *Regional atlases* (see figure 3), in which maps of the physical environment and natural resources were described, and propositions on standardizing these maps were discussed.



In 1968 the follow-up booklet on socio-economic maps in complex atlases (Salishchev and Saushkin 1968, see figure 4) was published, unfortunately only in Russian. It described the editorial production process of regional atlases on the example of the 1963 Atlas of the Kustanay oblast (*Atlas Kustanayskoy Oblasti*) (now Qostanai in Kazakhstan), breaking new ground in the description how to attune the visualization of different phenomena to each other. The Commission regarded regional atlases as practical guides for solving the problems of rational use of natural resources, nature protection, and the most efficient territorial organisation of the productive forces in regional (physical) planning.



In 1972 the Commission published an additional guide for the production of environmental maps: *Methods for creating integrated regional atlases of the USSR: Maps of Nature* (Salishchev 1972, see figure 5). The publication work of the Commission culminated in the voluminous (638pp) 'Complex regional atlases' (*Kompleksnyye regionalnye atlasy*) edited by Salishchev (1976, see figure 6), a handbook that presented a summary of the Soviet experience in national and regional atlas production, with extensive descriptions of the requirements of different thematic map types. This last publication was not officially related to the work of the Commission, although, published at the time of the 8th Conference of the ICA in Moscow, it was regarded by its editor as a contribution to international cooperation aimed at the further development of integrated mapping (Salishchev 1976, p. 18). The term 'complex' or 'integrated' atlases was used to indicate the fact that parameters were combined or at least rendered on the maps to comparable specifications, and it was understood that national atlases were complex atlases representing a nation (Stams 1984).



In 1972 the mandate of the IGU commission was officially extended to regional atlases, thus adapting to current practice. As Salishchev stepped down, Edgar Lehmann (Leipzig) took over as commission chair. One of the new terms of reference of the commission was the production of supra-national atlases (for instance atlas of the countries around the Baltic – as a first step towards the global thematic atlas), another was the inclusion of more environmental and urban maps in national and regional atlases. Lehmann had published extensively on the national atlas concept (cf. Lehmann 1959) and was the editor-in-chief of the national atlas of the GDR (1976); contrary to Salishchev he was more geography- than cartography-oriented³). It was not easy to follow in the footsteps of a forceful figure like Salishchev, who with the weight of his institute's laboratory on integrated mapping (later to be chaired by Vladimir Tikunov) behind him, had made a big success of his chairmanship.

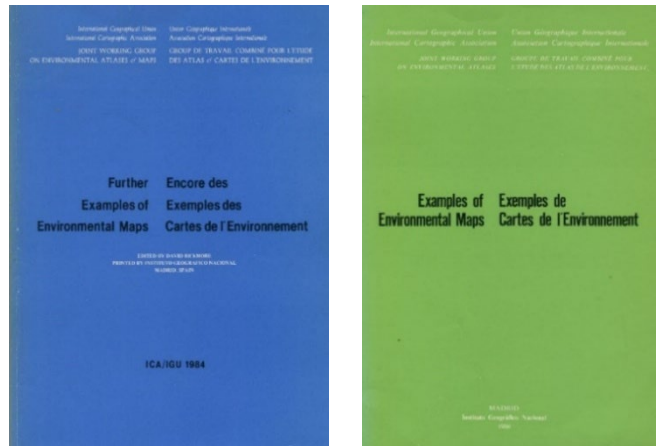
In the final report on his '72-'76 term as commission chair (1976), Lehmann proposed, as new terms of reference, more attention for town structure maps and for environmental themes, and he contemplated also the publication of a guidebook on atlas preparation⁴). Lehmann was opposed to the suggestion made by commission member Sander Radó (who at the same time chaired the ICA commission on thematic cartography), to merge the IGU atlas commission with his ICA commission. Lehmann was anxious to maintain close contact, but “by no means in the form of a common commission of I.G.U. and I.C.A. as proposed by Prof. S. Radó, Chairman of the I.C.A. commission” (Lehmann 1976). His opinion was not heeded however, as the boards of IGU and ICA decided to continue the Atlas Commission as a Joint ICA-IGU working group. The main suggestion in his report was adopted however, as the new cooperative body was to focus on environmental atlases. The new chairman was to be Francisco Vazquez Maure (Madrid), editor of the national atlas of Spain.

The tasks of the joint working group were: to collect data on atlases of the environment and on environmental maps in national, urban and regional atlases, and analyse them systematically, in order to compare their subject matter and the procedures used in mapping them. On the basis of this analysis, guidelines were to be worked out and recommended for the preparation of environmental atlases. The environment was defined as those geographical circumstances that influenced (preserved, ameliorated or degraded) the human ecological system.

³) „Daher besteht die Problematik komplexer Regionalatlanten viel weniger in ihrer kartographischen Methodik als in der Aufgabe, das Wesen eines bestimmten Gebietes — mit welchen Zeichenmitteln auch immer — eindeutig zum Ausdruck zu bringen“ and in his description of the aims of the new national atlas of the GDR:“ Die Hauptaufgabe dieses Atlas, eine universale Vorstellung des Landescharakters zu bieten, ist eng mit dem Zweck verbunden, der praktischen Wirtschaft zu dienen.“ In: Lehmann, E. (1959): Zur Problematik der Nationalatlanten. PGM. 1959/4, S. 300—10.

⁴) Despite earlier efforts, this was only to be realized 44 years later, with the Atlas Cookbook (Sieber & Vozenilek, 2020)

It was decided to publish a booklet gathering specific examples of environmental maps, and this was realized and distributed in 1980 (Vazquez-Maure 1980, see figure 7). It described for a number of environmental themes data collection, processing and visualization strategies with samples of the resulting maps.



For its 1980-84 term the commission retained the same terms of reference, focussing on recommendations regarding the inclusion of environmental maps in national and regional atlases, but added the study of database problems for environmental maps, (“To explore the development of data bases for environmental factors.”) as proposed by D.P. Bickmore.

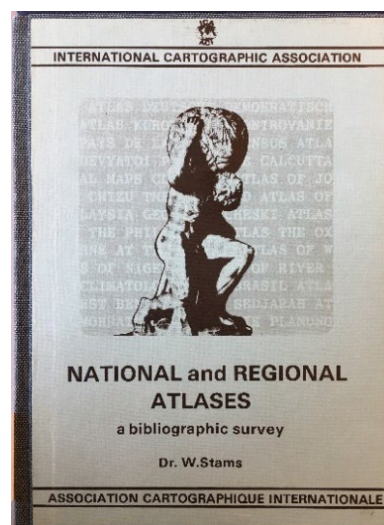
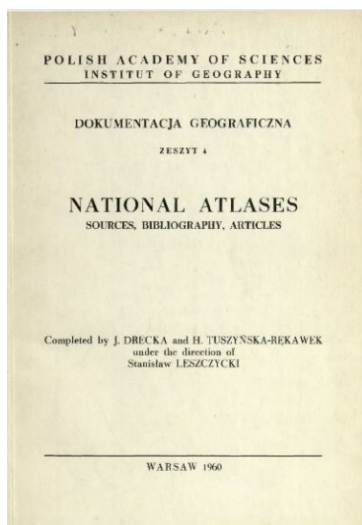
Francisco Vazquez Maure died in the autumn of 1982, and David Bickmore became acting chair, so that he became the editor of the second volume on examples of environmental maps (Bickmore, 1984, see figure 8) that could be distributed at the ICA conference in Perth and the IGU conference in Paris (ICA at that time had decided to no longer have their conferences linked to those of IGU). From 1968-1978 Bickmore had headed the Experimental Cartography Unit of the British Natural Environmental Research Council (NERC) and he had been the first to prove that complex maps could be equally well produced with computers and plotters as manually. When the working group was reinstated for a new term in 1984, with Bickmore as chair, the terms of reference completely changed, that is into the preparation of a detailed design study (with examples), on a pilot basis, for a Digital World Base Map for Environmental Science. During February 1985, ICSU awarded a small research grant via IGU to enable the Working Group to identify scientific evidence of the need for topographic data in digital form on a global scale. To that end many environmental institutions worldwide were contacted regarding their cartographic requirements, and this resulted in a project to produce a digital tape with a global base map in vector format which would probably be distributed through the World Data Center organization in Moscow and in Boulder, Colorado. This would place cartographic data on the same kind of basis as other sets of information relevant to the environmental sciences. The main problem for producing such a database was the funding, and apparently the WG was unable to solve this on an international basis, and in 1987 the WG was discontinued by IGU and ICA. It was the time of the quantitative revolution when geographers lost their interest in maps, and cartographers were dissatisfied with the new direction of the WG.

In 1986, at the AutoCarto meeting in London, co-organized by Bickmore, Bengt Rystedt (National Land Survey of Sweden) had chaired a workshop on national atlases, and this proved so successful, that ICA instituted an ad-hoc working group on national atlases, and next year, 1987, at the ICA General Assembly in Morelia (on a proposal from the Swedish

Cartographic Society supported by the Netherlands Cartographic Society) the ICA Commission on National Atlases was created, with Bengt Rystedt as the chairperson. The early history of this ICA commission is described by Bengt Rystedt and Ferjan Ormeling in a paper on the atlas commission's website (Ormeling and Rystedt 2018).

Documentation on national atlases:

Ena Yonge, in her description of current national atlases (1957) identified 22 items (with 3 additional ones under construction) that belonged to the national atlas species. Salishchev (1960) also identified 22, but their lists are dissimilar. On behalf of the National Atlas Commission, the Polish Academy of Sciences undertook the creation of a bibliography on national atlases, *National Atlases: Sources, Bibliography, Articles*, compiled in 1960 by J. Drecka and H. Tuszyńska-Rękawek (see figure 9), with a list of all atlases that answered the following criteria: to be focused on one country, to contain at least 3 different maps presenting: a) the geographical environment, b) the population and c) the economy, and they had to have been produced to scientific standards. To these criteria some 130 atlases worldwide qualified. As to answering the more strict criteria of the IGU Commission, only 40, indicated in the list with asterisks, would qualify in their opinion. The *Atlas Tropisch Nederland* (of Indonesia) qualified, the atlas of Belarus did not (although Salishchev included it in his 1960 list) and there was no trace of the 1934 'New atlas of the republic of China' (*Chung-hua min kuo hsin ti t'u*, Shanghai, 1934) by Wen-chiang Ting. A bibliography of papers on national atlases was added, and reviews of all atlases listed were incorporated as well. This publication was deemed so useful that it was repeated and updates were published in 1964, '68, '72 and '76. In the next edition (1964) a list of some 40 international collaborators was inserted, thus allowing to gauge the quality of the data. It now contained 361 atlases, as the criteria had been extended to also include regional atlases. The following editions were supplements, bringing updates on the atlases and relevant literature.



In 1984 the ICA published Werner Stams' bibliography *National and regional atlases: a bibliographic survey* (up to and including 1978, see figure 10). Its publication took some doing as his survey had first to be submitted to the members of the previous and new atlas commissions for comments, and because all titles in Cyrillic had to be transliterated to the Roman alphabet, but with over

2000 entries the results proved to be worthwhile – possibly the last time it was feasible to produce a comprehensive national and regional atlas bibliography. Meanwhile the number of national atlases (‘complex regional atlases of sovereign states’) discerned had risen to over 70, and the remaining regional atlases were subdivided into complex, semi-complex, mono-thematic and school atlases, planning atlases, topographic and specialized atlases. This bibliography not only showed the enormous recent growth in national and regional atlas production, but also the gaps still to be filled.

National atlas trends

Even when the term ‘national atlases’ is accepted as referring to atlases dedicated to a specific country, with a complete and detailed representation of all its socioeconomic, physical, and cultural aspects, in such a way that these can be compared, there are still different views as to how this framework should be filled in. The changing trends in the conception and functions of national atlases have been studied in detail by Christian Witschel (1999), who distinguished six national atlas production periods each with their own characteristics: 1899-1919, 1919-1949, 1946-1960, the 1960s, 1970s and the period after 1980. During the first period in which these atlases were produced, physical and demographic data were highlighted and the new communications infrastructure was focused on as well. Knowledge of physical phenomena was regarded as a condition for understanding socio-economic connections. In the second, interwar period, political emancipation led to new countries introducing themselves, and national atlases served too as inventories of resources of the new states. A gradual increase of socio-economic maps started, and the Soviet Union led in the production of complex and synthesis-maps; elsewhere national atlases demonstrated a fragmentation, leading to multitudes of analytical maps. After WWII, maps of socio-cultural phenomena increased in national atlases, and they became more practice-oriented. The Swedish national atlas (1953-71) here led the way, also in quantifying parameters. In the 1960s there was a trend to reduce the scales of the maps and thus the size of national atlases. This was a first attempt to not only attract a scientific audience, but also the public at large. The conceptual atlas frameworks in this period followed the suggestions made by the Salishchev report, but the atlases remained independent in their depiction of phenomena: commission proposals to standardise symbols or legends fell flat. In the 1970s the complex and synthesis maps advocated by the IGU Commission were also adopted in the West, for the first time in the 1969 regional *Economic Atlas of Ontario*.

After 1980, the standards proposed in 1960 no longer satisfied the requirements of atlas cartography, on the one hand because of the use of new technology, on the other hand because of a change in outlook. No longer were national atlases solely seen as statements of national achievements and aspirations. Instead they became increasingly seen as instruments for the elaboration of socioeconomic policies and consequently as problem-solving tools for issues like unemployment, pollution, extramarital births, abortion, decaying services in the countryside, or aging. This led to favouring aspects relevant to the nation’s inhabitants at the expense of

geoscientific topics. This new focus also served to target, next to the scientific community, a new audience: well-educated laymen interested in their environment. Therefore, explanatory texts had to be adapted. The educational function of national atlas got more attention as well.

An example of national atlases becoming more human-based than area-based is the 1984-90 second edition of the national atlas of the Netherlands (*Atlas van Nederland*), which focused on visualizing all phenomena related to life, work, distribution, welfare and recreation of and communication between the inhabitants of the Netherlands. It aimed, if not at solving, than at least at providing more insight in its spatial problems (de Smidt 1986). A similar view was reflected in the 1999-2006 *Nationalatlas Bundesrepublik Deutschland* with its



problem-oriented presentation, design and lay-out adapted to a large audience, subdivided in a number of topical volumes that could be acquired separately.

After the 1980s, the enormous increase in geospatial data brought further change in the national atlas concept and led to the production of national atlas information system, in which the national atlas (on paper or on screen) is only the visual portal to the underlying national atlas database. But the concept, the most detailed presentation of the spatial aspects of a nation in order to further the welfare of its inhabitants is still very much alive as can be seen also in the national atlas of the Ukraine (figure 11).

[The author was documentalist of the IGU-ICA Joint WG on Environmental Atlases (1976-83), a vice chair of the ICA Atlas Commission (1985-99) and contributed to the two editions of the national atlas of the Netherlands. The event that started his infatuation with national atlases was the inspiring lecture by Prof. Dr. Eduard Imhof in 1970 at Utrecht University on the production of the national atlas of Switzerland.]

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Figure 2 Cover of the 1960 report of the IGU Commission on National atlases: *Atlas Nationaux*, by K.A. Salishchev.

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Figure 7 Cover of the 1980 publication of the ICA/IGU Working Group on *Environmental Atlases: Examples of Environmental maps*, by F. Vazquez Maure.

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