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The Russian Rubricator: A Unified System of Classificatory Indexing Languages

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In the early '80s a common nation-wide automated scientific and technical information system with the Russian acronym GASNTI was developed in the then Soviet Union of which one component was a classification system called *Rubricator*. This system is still in use in Russia and is described in detail: its main classes are listed and also its Common Auxiliaries (Generalia Classes). Its structure is explained as well as its syndetic features (references, scope notes) and an example is included of Class 20: *Informatics*. For any necessities in local or regional institutions, local rubricators have been developed. Included in the article are also descriptions of the further development and maintenance of the Rubricator and its publications and present situation. (I.C.)

1. Idea and Purpose

In the early '80s a common nation-wide Automated Scientific and Technical Information System (Russian acronym: GASNTI) was developed in the then Soviet Union.

One of the main components of GASNTI was a common indexing language, resulting in the so-called GASNTI Subject Autority or in short: *Rubricator*. Actually, this "lingware" is a set of interlinked subject authorities: the GASNTI Rubricator and, derived from it, the local rubricators of national, republic and central sectoral information agencies and individual information institutions (1).

The primary function of the Rubricator System is to support the exchange of information files on conventional and machine-readable carriers among databases within and outside GASNTI.

The next major function is to allow remote user access, online or in batch mode, to any of the GASNTI files (2).

2. Components

The GASNTI Subject Rubricator is comprised of:

- the Introduction, which lays down the principles underlying the Rubricator structure and application;
- the Classification Schedule, which is a list of classification codes and feature headings; and
- the Alphabetic Subject Index.

2.1 Contents - Main Classes

The Rubricator is a polythematic three-level hierarchical classification system which is on a par with the UDC, the IPC, etc. It differs, however, from these and other traditional general classification systems in at least two ways: 1) it represents a synchronous cross-section of the tissue of today's knowledge in science, industry and other walks of life as modelled by the document flow, and 2) its structure and notations reflect the specific demands of the present-day computerized technologies (3).

The universe of knowledge in the Rubricator (4) is divided into main (level 1) classes which are consistent with the traditional knowledge classification, as follows:

00/26 Social sciences
00 Social sciences generally
02 Philosophy
03 History. Historical sciences
04 Sociology
05 Demography
06 Economics. Economic sciences
10 State and law. Juridical sciences
11 Politics. Political sciences
12 Science of science
13 Culture
14 Education. Pedagogy
15 Psychology
16 Linguistics
17 Literature. Literary criticism. Folk poetry
18 Art. Art criticism
19 Mass communication. Journalism. Media
20 Informatics
21 Religion. Atheism
23 Comprehensive study of countries and regions
26 Complex problems of social sciences

27/43 Natural and exact sciences
27 Mathematics
28 Cybernetics
29 Physics
30 Mechanics
31 Chemistry
34 Biology
36 Geodesy. Cartography
37 Geophysics
38 Geology
39 Geography
41 Astronomy
43 General and complex problems of natural and exact sciences

44/81 Engineering and applied sciences. National economy branches
44 Power engineering
45 Electrical engineering
47 Electronics. Radio-engineering
49 Communication
50 Automation and telemechanics
52 Mining industry
53 Metallurgy
55 Machine industry
58 Nuclear engineering
59 Instrument making
60 Printing trade. Reprography. Photography engineering. Film industry
61 Applied chemistry. Chemical industry
62 Biotechnology
64 Light industry
65 Food industry
66 Timber and woodworking industry
67 Building industry. Architecture
68 Agriculture and forestry
69 Fish industry
70 Water industry
71 Inland trade. Tourist service
72 Foreign trade
73 Transport
75 Housing facilities and public utilities. Consumer services. Household management
76 Medicine and health care
77 Physical culture and sports
78 Military science
80 Other branches of the national economy
81 General and complex problems of engineering and applied sciences and national economy branches

82/89 General and complex (cross-branch) problems
82 Organization and management
83 Statistics
84 Standardization
85 Patents. Inventions. Innovations
86 Labor safety
87 Environmental protection. Ecology of Man
89 Space exploration
90 Metrology

2.2 Structure

Each of the main classes forms the top level in a three-level hierarchy. The notation in the Rubricator, as in all hierarchic classification systems, is itself hierarchic, the number of two-digit numeric elements of a heading code (class number) corresponding to the hierarchic level of the class, as follows: Level 1, one element; level 2, two elements; and level 3, three elements. With this method of designing notations the class number is indicative of the level that it occupies in the hierarchic structure, e.g.,

47 Electronics. Radio engineering
47.51 Television engineering
47.51.22 Television systems

Many general classification systems, while basically hierarchic in structure, employ the faceted classification approach. This is also used in the UDC (which is sometimes referred to as a "semifaceted scheme") and in several polythematic and discipline-oriented hierarchic systems.

Patterned after the facet formula, there are unified standard lists of headings (similar to UDC auxiliaries) which form part of Generalia. The Generalia standard list includes headings for concepts that recur in different classes irrespective of a subject field. These concepts are designated in all classes by codes having identical final digits.

2.3 Generalia classes

What follows is the full list of headings that make up Generalia:

Generalia Subject Headings

XX.01.01 Guidance materials
Scope Note: This heading covers materials that characterize a science or an industry generally regardless of its association with other activities, information about new journals, and popular science literature.
XX.01.07 Philosophic issues and methodology
XX.01.09 History of science (by branch). Personalia
XX.01.11 Current status and development prospects
XX.01.13 Scientific and engineering societies, meetings, congresses, conferences, symposia, seminars, exhibitions, etc.
XX.01.14 Business matters, marketing, economic conditions, advertising
Scope Note: Advertisments are covered by relevant subject headings according to product advertized.
XX.01.17 International cooperation
Scope Note: This heading also covers international organizations
XX.01.21 Management of research, design and development projects
XX.01.25 Patents. Inventions and innovations
Scope Note: Patents are covered by relevant subject headings according to application.
XX.01.29 Information work
XX.01.33 Terminology. Reference works. Learning materials
Scope Note: This heading covers directories, dictionaries, terminological standards, class indexes, and bibliographies
XX.01.37 Standardization
Scope Note: Standards are represented according to standardization object and application area
XX.01.39 Propagation and popularization of science (knowledge)
XX.01.45 Teaching, learning and refresher training
XX.01.51 to XX.01.61 Reserved locations for non-standard headings
XX.01.63 Production of consumer goods
Scope Note: This subject heading covers products other than characteristic ones
XX.01.73 Statistics
Scope Note: This heading covers statistical data for relevant fields of activity
XX.01.75 Economics, organization, management, planning and forecasting
XX.01.76 Descriptions of enterprises
Scope Note: This heading covers general descriptions of enterprises and businesses
XX.01.77 Methods of research and modelling. Mathematical and cybernetic techniques

XX.01.79 Manpower
Scope Note: This heading covers documents on personnel policy, selection and placement
XX.01.80 Legal issues
Scope Note: This heading covers documents on legal document perfection and application
XX.01.81 Measurement, testings, quality control and assurance
XX.01.82 Enterprise design and overhaul
XX.01.83 Equipment installation, operation and repair
XX.01.84 Energy, water and heat supply
XX.01.85 Automation and mechanization
XX.01.86 Factory communication and signalling systems
XX.01.87 Factory conveyance and hoisting facilities
XX.01.88 Logistics
XX.01.89 Warehousing
XX.01.90 Crates, packaging, and marking. Storage and transportation conditions
XX.01.91 Industrial waste and waste recycling. Recoverable refuse
XX.01.92 Fire safety
XX.01.93 Working conditions, social welfare services, labor protection, industrial safety rules
XX.01.94 Environmental protection
XX.01.95 Industrial design. Ergonomics
XX.01.97 Corrosion and rust protection
XX.01.98 Subsidiary farms of enterprises and offices
XX.01.99 Other generalia

Codes with such final digits are used in the same meaning in all kinds of classes. Thus, information work in class 15 Psychology is coded by 15.01.29, and in class 31 Chemistry it is coded by 31.01.29.

The facet formula approach is used in the Rubricator also for ordering level 2 classes, called "Principal Divisions"; standard schemes for categorizing classes have been devised to this end.

This approach is followed most consistently in classes covering the engineering and applied sciences, and the national economy branches. Here, level 2 classes are grouped into the following categories:

XX. 01 General
XX. 03 Theoretical basis
XX. 09 Materials and supplies
XX. 13 Technology and equipment
XX. 15 and further Division by Process
XX. 29 and further Division by Product or Subfield.

2.4 References and Scope Notes

Polyhierarchic associations of concepts are represented in the GASNTI Subject Authority by a fairly sophisticated structure of references and notes:

- "see references" and their companion "ref.from" references,
- "see also references", and
- scope notes.

See references lead from an assumed location of a concept to the actual one adopted in the Rubricator. The reference includes the text of an aspect omitted in the subject heading name, and at the same time it points to the location of the concept within the Rubricator. The text of the aspect is not expected to repeat the name of the heading to which the "see reference" leads; e.g.,

19.21 Mass communication
Sociology of mass communication
See 04.51.54 Sociology of information and communication
04.51.54 Sociology of information and communication
Ref.from 19.21 Mass communication

This reference serves a checking function as well as improving the user-friendliness of the Rubricator.

See also references link related or overlapping headings, and associated concepts represented in different sections of the Rubricator. The linkage is, as a rule, reciprocal, e.g.,

76.35.29 Aerospace medicine
See also 89.27.21 Space flight safety and life support
89.27.21 Space flight safety and life support
See also 76.35.29 Aerospace medicine.

Scope notes may qualify or specify the scope of headings and/or replace a group of similar "see references", leading to a group of standard subdivisions, e.g.,

67.29 Building projects
Scope note: This heading covers the architecture, design and construction of complexes, buildings and structures of various purposes. Factory design and overhaul in the separate branches of the economy is covered by headings coded with XX.01.82 final digits.

2.5 Example of Class 20 "Informatics"

By way of illustration we provide a sample of the Rubricator Class 20 *Informatics.*

20 Informatics
Scope Note: Information work in individual fields of science, technology or the national economy is covered by the relevant section using codes with XX.01.29 final digits

20.01 Informatics: general
20.01.01 Guidance materials
20.01.04 Informatization of society. Information policy.
See also 12.41 Organization of science. science policy
Ref.from 26.11 Global issues
20.01.07 Theory and methodology of informatics
20.01.09 History of informatics and information work. Personalia
20.01.13 Professional societies, meetings and exhibitions
20.01.17 International cooperation and international organizations in informatics
20.01.33 Terminology of informatics. Reference works. Learning materials
20.01.37 Standardization in information work
20.01.45 Instruction in informatics
20.01.79 Manpower
20.01.80 Legal issues
20.15 Management of information work
See also 13.31 Librarianship. Library Science

20.17 Recorded information
20.17.01 General
20.17.17 Acquisition, inventory and storage

20.19 Document analysis and synthesis
For questions of Machine Translation see 16.31.21
Automatic text processing. Machine translation. Speech recognition
See also 13.41 Bibliography
20.19.01 General
20.19.15 Bibliographic description
20.19.17 Subject analysis and indexing
20.19.19 Annotating and abstracting
20.19.21 Reviewing
20.19.23 Technical translation
20.19.27 Symbolic text processing

20.23 Information Retrieval
20.23.01 General
20.23.15 Indexing languages
See also 16.21.47 Lexicology. Science of Terminology
16.31.31 Information and formalized languages
20.23.17 Search files. Databases
20.23.19 Information retrieval processes
20.23.21 Information retrieval systems. Databanks
20.23.25 Knowledge-based information systems

20.51 Information services
See also 12.41.55 Information support of research
20.51.01 General
20.51.15 Information users
20.51.17 Information needs and requests
20.51.19 Information services by kind
20.51.21 Science and technology promotion
20.51.23 Information service efficiency

20.53 Information technology
See also 13.20.31 Library equipment
20.53.01 General
20.53.01 Information input
20.53.17 Information storage
20.53.19 Information processing and retrieval
20.53.21 Information output
20.53.23 Communication techniques
20.53.25 Copying
20.53.27 Duplicating
20.53.29 Microfilming
20.53.31 Office equipment
20.53.33 Buildings and furniture

The foregoing extract is a three-level hierarchy which develops from the top level 20 Informatics.

At the beginning of the class, general subject headings with standard final digits are listed. Note that the classificationist selects the needed sample of general matters from the complete list.

In the extract above, references and scope notes link this class with the following classes:

12 Science of science
13 Culture
16 Linguistics
26 Complex problems of social sciences.

3. Development of Local Rubricators

The Rubricator provides the framework for development of local rubricators. A local rubricator is the subject authority of a sci-tech information institution or system which was developed on the basis of the Rubricator with a view to ensuring communication among the information systems within GASNTI.

The design of a local rubricator is predicated on the following idea: a local subject authority reflects the information need of an STI agency by means of a classification which is structured after, or derived from, the respective classes of the Rubricator.

A local subject authority can be designed as a sample of Rubricator headings, which may or may not be developed further. In either case the selected headings are transferred to the local rubricator with their codes and wording unchanged. The headings in a local rubricator are arranged in the ascending order of the Rubricator codes.

When developing a local rubricator its minuteness should be dictated by information need. If the need is adequately met by the three-level classification of the Rubricator then the local rubricator will be made a sample thereof. If further development is in order it is up to the classificationist to decide on the degree of elaboration of each heading in the local rubricator; different headings may be developed to varying degrees of minuteness.

Below is an example of the local rubricator elaborated for the VINITI Rubricator:

73 Transport	
73.37 Air transport	RUBRICATOR
73.37.21 Airports. Air fields	
73.37.21.21 Airport equipment	
73.37.21.21.43 Power generating equipment	VINITI Rubricator

The foregoing principles underlying the design of the Rubricastor structure and notation hold for local rubricators as well: the division of classes in the Rubricator and the construction of levels 4, 5, and so on, relies on the Generalia standard list of headings, standard categorization schemes, the reference apparatus and scope notes; local rubricators have an alphabetic subject index. When the hierarchic structure is developed the cross-references and the subject index must be updated correspondingly.

In the final count, the Rubricator System can be viewed as a common classification system with a common structure and notation, or as a common indexing language of the former Soviet Union's scientific and technical information agencies.

4. Development and Maintenance

Development and maintenance of the Rubricator System are supported by a set of guidance documents and instructions which regulate the basic principles underlying the development of publications for particular rubricators; the development of local rubricators; the indexing; the compilation of conversion tables for rubricators and other general classification schemes; and the searching by subject authorities.

To ensure unity within its rubricator system, VINITI has maintained, since 1987, a local subject authority examination group.

The Rubricator was developed by a research team composed of subject specialists under the scientific and methodological guidance of employees of major Soviet information centers: VINITI (All-Union Institute of Scientific and Technical Information), VNTITsentr (All-Union Scientific and Technical Information Center), GPNTB (State Public Library for Science and Technology), and INION (Institute for Social Science Information). The standard 3rd edition (1984) was approved by the USSR State Committee for Science and Technology.

The Rubricator used to be the Soviet Union's national version of the two-level Rubricator of ISTIS, the CMEA countries' International Scientific and Technical Information System; the top two levels of these classification systems are identical. The principles underlying the structure and notation of the ISTIS Rubricator are those described above. There are equivalent versions in the languages of the former CMEA member countries as well as a Spanish language version prepared in Cuba.

Some information agencies in what used to be the USSR prepared their own English versions of the Rubricator, but a full, standard version of the Rubricator is not available in English.

The updating or maintenance of the Rubricator in the USSR proceeded along the following lines:

The maintenance of the Rubricator involved the compilation of an updated version consonant with the current status of science, technology and branches of the national economy; primary standards were kept in paper form and in a computerized database.

As the Rubricator is maintained, subject headings of any level are introduced; existing headings deleted; heading codes changed; heading names changed; references and scope notes clarified; inaccuracies and errors detected and corrected; and the underlying design principles, functionality and rules of use specified.

Proposals from sectoral information centers, STI units in factories and other primary information services come up to central sectoral or republic-wide information agencies which summarize and consider them and, having decided on the need for changes, forward them to VINITI. STI agencies that are part of amalgamations submit their proposals through their amalgamations' head bodies.

The examination of submitted proposals, in which appropriate subject specialists are invited to take part, is the responsibility of the Subject Authority Methodological Council under the Interdepartmental Classification Commission, ICC. The ICC includes representatives of head information centers and larger libraries. Council meetings are also attended by the authors of proposals, experts and representatives of organizations concerned. On reaching a concerted decision, changes are forwarded to the ICC which passes the decision to make changes in the Rubricator.

STI bodies are notified about changes through a quarterly bulletin, Informatsionno-poiskovye yazyki ("Indexing languages"). Changes published in the Bulletin become effective in January of the next year following the publication.

5. Publication and Present Situation

The Rubricator is published as needed but at least every five years. The next version is to appear in 1992.

Currently there are plans to prepare a Statute of the Lingware of the Russian Federation State System of Scientific and Technical Information which is to follow up and develop the main underlying principles of the Statute of the GASNTI lingware, including those pertaining to the rubricator system.

It has been proposed that the name GASNTI Subject Authority be changed to GRNTI, which means in Russian the State Subject Authority of Scientific and Technical Information.

Based on an updated version of the GASNTI Rubricator, passed by the Interdepartmental Classification Commission in 1991, a national primary standard of the GRNTI and its maintenance service are being developed at VINITI.

During 1992 user proposals for extensions and corrections to the GASNTI Subject Authority will be collected, notably those concerning social sciences classes in view of the need for the de-ideologization of thre GRNTI. Proposals are to be considered and harmonized at meetings of the State Subject Authority Methodological Council and to be passed by the Interdepartmental Classification Commission. All extensions shall be entered into the GRNTI machine based primary standard maintained by VINITI.

The development and improvement of the system of classificatory indexing languages on the basis of the GRNTI will help maintain and establish information links, which is particularly important in the context of the current political and economic disintegration. These efforts will make it possible to avoid the fragmenting of the common information network of Russia and, possibly, of the Community of Independent States into disjointed territorial and disciplinary pieces.

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