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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 Authority 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: Advertisements 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

Polyhierarchical 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 develop-

ment 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 GASNII.

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 Rubricator 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 the 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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