The Old Church Slavonic Institute (Staroslavenski institut: STIN) is a public institute founded in 1952 by the state. Now it has 22 employees. Besides the specialized library it has a collection of prints, microfilms and CD’s, of almost all important Croatian Glagolitic and some other European medieval sources. The scholars of STIN study the medieval period of the Croatian language and literature. The Croatian language and the Croatian Church Slavonic (CCS) language have been written in three scripts: Glagolitic, Latin and the Croatian Cyrillic. STIN investigates the Croatian Glagolitic heritage. “These studies started in the 18th century, developed more profoundly at the end of the 19th, in the first half of the 20th c., and fully flourished in the second half of the 20th century mainly due to the work of the Institute.”

The results of the research of the Croatian Glagolitic heritage have been published in many scientific books and journals. We also publish facsimiles and Latin transliterations of the Glagolitic codices, fragments and printed Glagolitic books.

The current Scientific Program of STIN under the title: Language, Literature and Paleography Research of the Croatian Glagolitic Heritage, has been approved by the Ministry of Science, Education and Sports of the Republic of Croatia. It consists of four projects. Through these projects important segments of the Croatian Glagolitic heritage are investigated: linguistics, paleography and literature. They are: 1) Grammar of the Croatian Church Slavonic Language (principal senior researcher: Milan Mihaljević); 2) Dictionary of the Croatian Redaction of Church Slavonic (Principal senior researcher: Anica Nazor); 3) Croatian and European Medieval Literature (Principal senior researcher: Ivanka Petrović); 4) Glagolitic Paleography (Principal researcher: Marica Čunčić).

The process of digitization in STIN takes place in the frame of the project of Glagolitic paleography. We have two collaborators on the Project who are experts in informatics: Mario Essert, Professor of mathematics at University of Zagreb who applies his computer program expertise in STIN through his former student Antonio Magdić, engeneer, who has been our employee since 2007 and has constructed all programs we needed including the web page. In order to start digitization first we have installed a good computer basis for various possibilities later: three new servers for web page, e-mails and enough memory for saving pictures of Glagolitic sources, bibliography and the future grammar and dictionary data ready for use by STIN scholars and eventually for public in general. First a new web page of STIN was constructed www.stin.hr Through it the bibliography of the STIN scholars is available via links with CROSBI (Croatian Scientific Bibliography Portal) http://bib.irb.hr

STIN is the publisher of the scientific journal Slovo, Časopis Staroslavenskog instituta 1(1952) - 56-57(2008) http://hrcak.srce.hr/slovo and Radovi Staroslavenskog instituta 1(1952) - 9(1988) http://hrcak.srce.hr/radovi-staroslavenskog-instituta. All issues were made available with complete texts of all articles at the Portal of the Croatian Scientific and Professional Journals HRČAK as it is obvious from the web addresses above. HRČAK is connected with other Search Engines: Base, Alster, Open Archives and Scientific Commons. All titles, authors, key words and words in summaries in Slovo and Radovi are searchable. The articles are not searchable because they were printed from pictures, so they are presented in a PDF as pictures. However, Slovo 56-57 (2008) is printed in a searchable PDF and will be soon available at EBSCO as well as the future issues of Radovi, since we have signed an

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Agreement with EBSCO. Making our publications available online is part of our efforts in general to digitize as many of our resources as possible. Digitization of the material collected and compiled in STIN is important for the scholars in STIN, for the Croatian public and Paleoslavists in the world. The aim of our computer programs is to harmonize the team work on the same CCS corpus, with possibility of inputting linguistic, literary, biblical, paleography and codicology data and the construction of the Glagolitic paleography portal at the web address of the Old Church Slavonic Institute. For our needs we use Scriptrunner, a computer program produced at the University of Zagreb. To solve the problem of dispersed information about the copies of the Glagolitic manuscripts we started in 2007 digitization of catalogues of different media copies: photography, print, microfilm, CD, DVD, plaster casts, of the Glagolitic and other manuscripts, inscriptions and printed books. There are 194 sources by now in computer program called IZVORI at [http://izvori.stin.hr/](http://izvori.stin.hr/). They can be searched by title, place, language, script, material and so on. More than 500 pictures of the sources have been added to it so far. It is not open for the public yet. We still have to put in more sources and pictures. As soon as it is finished, it will be available for our employees who will correct the data over certain period of time and then we will open it for the public. We have also developed a web version of sources available through browser and searched online. All materials are in high resolution and can be zoomed in and out and print on demand.

We also have a computer program for internal communication among our employees at [http://members.stin.hr](http://members.stin.hr) which collects and shares documents, fonts, news, messages etc. (members only).

**Glagolitic Palaeography**

Digitization in the Glagolitic Palaeography Project took place in the research of the oldest Slavic manuscript extant: the Kiev Missal (KM) from the 10th century. A paleographic analysis of the Kiev Missal shows a high degree of similarity with the geometrical normative character form. Distribution of different Glagolitic character heights in KM has been found as predictable. It may be described by so called KM normative produced from a geometric model of Vasil Yonchev. It would be almost impossible for the analytical Glagolitic paleography to present the results of research of the character height of the complete KM without a computer program designed for that purpose. The program enabled the measurement and comparison of the character heights with the normative character heights. All characters were put in the program separately with necessary data so that each character is searchable. Although the text was put in once, each character as a separate piece of information can be transliterated into the model character, into the original character and into the Latin character. The facsimile page is devided into lines which are then presented separately as pictures. Each text line picture is placed in a net to show the height of every character. Each text line has two charts with data from the model character height and the character height in KM. The program automatically gives statistics of similarity of each character and of all characters for the scribe I, the scribe II, and both of them together. Every step of research is transparent. The degree of similarity of KM and the model characters of Vasil Yonchev is very high: 88.4%. Thus the normative model of the Glagolitic script may be accepted as the Glagolitic prototype of the KM. Even more, the model interprets the origin of the Glagolitic script in the best possible way and gives the Glagolitic paleography a platform for interpretation of development of more recent Glagolitic types. The research and the results are presented in an electronic book: Marica Ćunčić, Antonio Magdić: *Dekodirana graficka struktura Kijevskih listica* (Decoded Graphic Structure of the Kiev Missal) Staroslavenski institut, Zagreb 2008 [http://kiev.stin.hr](http://kiev.stin.hr). This is a unique type of research in the world. It is
almost impossible to publish this kind of research on paper. The electronic book is an ideal
media because of several levels of data appearance and unmistakable geometry and
mathematics. In fact one can say that the possibility of the electronic expression of data
influenced the process of research.

E-book: M. Čunčić, A. Magdić: Decoded Graphic Structure of the Kiev Missal
www.kiev.stin.hr, two different charts of 4v 8 show similarity of character heights
between Kiev missal and the normative model

The Croatian Glagolitic sources from 11th - 13th centuries contain the elements of the
Glagolitic script development from its very beginning. In few years a systematic presentation
of all character forms and their comparison should be online. It would enable exact insight
into the paleography of early Croatian Glagolitic inscriptions and manuscripts. Their
facsimiles will be published online. Individual source will be presented by its paleography
identity card and the comparative character table. A special computer program will be
constructed for that purpose. The facsimiles of the Croatian Glagolitic sources from 11th-13th
c. with their paleographic identity cards and comparative character tables will be published as
three e-books respectively.

Another part of paleography research deals with miniatures in the Glagolitic manuscripts. The
artistic school and/or painter of the miniatures of Hrvoje's Misal from 1404 will be identified
in a doctoral thesis. It is the most beautifully illuminated Croatian Glagolitic codex and the author of the miniatures is still unknown. We have a computer program constructed with necessary data from the theory of the history of art. It will enable manipulation of hundred of miniatures and their numerous artistic characteristics [http://minijature.stin.hr/](http://minijature.stin.hr/) (for members only). All miniatures will be searchable and we plan to include them in our online digital library of Glagolitic sources.

What type of the Glagolitic script is easier to read and learn is a question for the colleagues at the Psychology Department of the University of Zagreb who deal with perception. The rounded Glagolitic script type is more legible and easier to learn than the triangular type. Square type is more legible and easier to learn than rounded type. It is possible to prove or disprove these hypotheses by experimental research of perception in laboratory. The relative legibility and speed of learning will be defined on the level of isolated characters, syllables and meaningful words written in different Glagolitic script types in order to define them as exact as possible on the level of perception. For the laboratory research with students at the Department of Psychology at University of Zagreb we have constructed a special computer program which enables learning and reading different versions of the Glagolitic script with statistics of right and false answers. It is a modul for Scriptrunner 4 Web Application [http://scriptrunner.fsb.hr](http://scriptrunner.fsb.hr) which presents Glagolitic characters in different very short exposition times, remembers the number of series that a student has repeated while learning or reading, and produces different statistics.

The Croatian and European Medieval Literature

“The long term and final aim of our research is to study all literary texts of the Croatian Middle Ages, examine the important literary kinds and textual corpora, propose a new classification of genres in the Croatian medieval literature, and to study the Croatian literary Middle Ages from the newest viewpoints of European literary theory. Building on existing trends and subjects of research of the Croatian and European medieval literature, this Project also introduces a whole new range of fields of research, new issues, new literary kinds and entire corpora of the Croatian and European medieval literature.

The first step is to find and identify single texts and works, textual kinds or entire collections of texts, which are bibliographically categorised and the manuscripts in which the texts are kept are described in detail. That way a literary corpus of texts or genres is formed and placed within the history of genres in the Slavic and Western European literatures. It is studied from viewpoints of literary history and textology, as well as from the points of view of the most recent literary theory. We plan to publish as many Croatian Glagolitic texts in Latin transliteration (or transcription) as possible.

In this project we investigate the following literary themes: I. Croatian and European hagiography, literary history and textology: 1. Latin hagiography (texts on martyrs and local saints of Dalmatia and Istria, from their Antique roots to the end of the Middle Ages, Passions of Pannonian martyrs from the late Christian Antiquity, Codices of the Metropolitan Library in Zagreb). 2. Vernacular Glagolitic hagiography (nonliturgical texts from 14-17th c.) 3. Latin script hagiography (Latin script Croatian literature of 14-17th c.) II. Biblical and apocryphal texts: textological and lexicographical analysis of the Croatian Glagolitic Biblical texts translated from the Latin Vulgate; Sources of the Croatian Glagolitic Protoevangelium Iacobi). Textological analysis of the biblical texts will enable reconstruction of remnants of the primary Cyrillomethodian translation of the Old Slavonic Bible according to Greek sources, and determine the corpus and literary quality of more recent texts translated from Western Latin sources. III. Literary theory: the structuring of certain literary genres is
determined from viewpoints of poetology and narratology. IV. Analytical bibliography of 11 Croatian Glagolitic breviaries. The structure of content and an analytical bibliography of the Proper of Saints (Proprium Sanctorum) and Commons (Commune Sanctorum) from eleven Croatian Glagolitic breviaries from 14-16th centuries will be completed.

Parts of research – particularly on hagiographic literature, legends, Biblical and apocryphal works – published in French, English and Italian introduce Croatian literature and culture into literary histories and encyclopaedic overviews of medieval Christian culture of Western Europe.


The whole corpus of the Croatian Glagolitic biblical texts has been formed through analytical bibliography. Cataloguing the biblical, homiletic, and legendary texts is performed with the bibliographical method. For this purpose a special computer program BIB has been constructed. Bibliography of biblical readings in the Croatian Glagolitic Liturgical Codices and incunabulas kept till now in paper card catalogues may be now put in and search at http://bib.stin.hr Till now about 14.000 records and 700 titles have been oput in and can be searched. It is not yet completed and is not available for the public.

Dictionary of the Croatian Redaction of Church Slavonic

This project started in 1959 by a team of researchers under the direction of Josip Hamm and Vjekoslav Štefanić according to the principles established in Slovník jazyka staroslovenského\(^3\) with some orthographic and graphic modifications as required by the Croatian Glagolitic texts.\(^4\) The corpus consists of 62 Croatian Church Slavonic (CCS) sources written from 12\(^{th}\) to 16\(^{th}\) centuries and four additional CCS sources. The sources are the Glagolitic manuscripts and printed biblical and liturgical books, early fragments of biblical, liturgical, and legendary-apocryphal manuscripts, as well as certain texts within miscellanies. The corpus contains all fragments from the 12\(^{th}\)-13\(^{th}\) century (the Acts of the Apostles, Missals, Breviaries, homiliaries, apocryphal texts, and legends), the most complete and oldest manuscripts of the Missal, Breviary, Ritual, and Psalter, as well as certain texts taken from miscellanies.\(^5\)

The excerpted texts for the Dictionary have been handwritten on cards which were multiplied by an old technique available at the time. The number of copies of a card was determined by the number of words selected as entries from the text on a card. The copies were then distributed in two catalogues: the Source Catalogue (about 340.000 cards) and Glagolitic alphabet Catalogue (more than 400.000 paper cards).

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A close look at the Glagolitic alphabet paper card catalogue

Latin and Greek indices card catalogue

Each card consists of a sentence or two taken from the CCS Glagolitic source and handwritten in the Old Cyrillic transliteration. One word is underlined in the sentence and put as a CCS entry in the upper left corner with the grammatical content and a Latin or Greek parallel word. Data about a source, folium and lines are in the right upper corner. Underneath of the CCS sentence(s) there is a Greek or Latin parallel text with exact source and folium.

Since 1991 fourteen fascicles have been published: 1 (1991 – 14 (2007). Each year one fascicle is produced. The first ten have been binded as the first volume of Rječnik crkvenoslavenskog jezika hrvatske redakcije I. svezak a-vrèd’ ed. B. Grabar, Z. Hauptová, F. V. Mareš, Staroslavenski institut, Zagreb, 2000. “It is an encyclopedic format, with CCS entries accompanied by the modern Croatian and English translations, parallel Old Greek and Latin words, literal and figurative meanings, principal nuances, contextual documentation, and notes describing written and phonetic variations. Each dictionary article consists of an entry normalized in CCS. Under grammatical determinant and grammatical discription of the entry, the scriptions (graphic, phonetic) found in the dictionary material of the analyzed lexem are annotated followed by the list of the Croatian Glagolitic sources in which the lexem is attested. In the semantical lexem analysis efforts are made to produce a dictionary article with all the different meanings used in the sources. The meanings are translated into Croatian and
English, with Greek and Latin parallels cited. If the Latin parallel is not attested or does not correspond to CCS the equivalent Latin translation is suggested. The examples (citations) – in Latin transliteration – are chosen to illustrate and explicate in the best possible manner all the meanings of the lexem, its form in the manuscripts of different periods, different geographical and genealogical origin and different content. After each example the abbreviation of the source, the page and Croatian Glagolitic variants from the compared manuscripts are listed, again with the abbreviation of the manuscript and the page. If they exist, Greek and Latin parallels are noted down. For the biblical texts, the chapter and the verse are registered. Biblical and other names are identified by a short encyclopedical explanation in Latin. For non-biblical texts the Greek and Latin texts are brought according to the best yet available editions. At the end of the complete citation for a textual excerpt (including Greek or Latin parallel), variants of the given location which belong to a different article are cited.

Rječnik crkvenoslavenskog jezika hrvatske redakcije, I. svezak a-vrđ

Digitization of the Dictionary is very complex because of the quantity of information that has to be put in computer, and even more complicated when it comes to continuation of the already published part. We have started digitization by scanning the source catalogue. This is the first step on our way to make fully searchable digital copies of Dictionary which will be implemented by web version of sources. The picture of a card on the screen will enable Latin transliteration of the content of a card in a special program which we will have constructed for the Grammar and Dictionary. The scanning of the card catalogue will enable dislocation of

the material on an external disc for safety reasons and working on copies, not on the original cards, which is important for the protection of the archive material which fortunately survived during the recent aggression on Croatia when the Serbs were bombarding Zagreb and one shell fell on the building of STIN.

We also have the material for the Greek - CCS Index (about 60,000 cards) and for the Latin – CCS Index (about 200,000 cards). The cards have only a Latine (or Greek) word and a CCS word without description. This index will be automatically generated by the Dictionary web application on demand.

**Grammar of the Croatian Church Slavonic Language**

Croatian Church Slavonic (CCS) is a language system which is neither fully congruent with Old Church Slavonic nor Old Croatian (Čakavian) norms. It has not evolved only as a result of the decay of Old Church Slavonic norm under the influence of the Čakavian vernacular, but its development has its own internal pattern and peculiarities.

The aim of the project is the compilation of the Grammar of CCS, and the determination of the subsystems within CCS, as well as the differences between the groups of sources and between different scriptoria. Systematic grammatical description will considerably broaden our knowledge of the Croatian Glagolitic texts and open new perspectives of the history and development of modern Croatian language. We expect that the grammar will be completed until the end of 2010. It will be the first systematic description of that language, one of the first redactional grammars of any Church Slavonic language in general.

We have compiled the corpus for morphological research of pronouns, adjectives, numerals, verbs, invariable word-categories (adverbs, prepositions, conjunctions and particles), as well as for syntactic research by excerption of examples from the material for the Dictionary of Croatian Redaction of Church Slavonic in STIN, and from other Croatian-Glagolitic texts, which are not included in Dictionary. Now we do analysis of the compiled material in order to establish the representative morphological paradigms and determine the subsystems and variation in individual sources as well as in groups of codices. We have explored the vocabulary of the oldest Croatian-Glagolitic fragments, the relationship between the grammatical categories of animateness and definiteness, as well as the language of the Academy Breviary from 1384. We will write the chapters on the morphology of the mentioned word categories, on syntax, as well as the introductory chapters about the history and periodization of CCS, its relationship with OCS and Old Croatian, and about sources included in the corpus. The results of the research will be important in further compiling the Dictionary of Croatian Redaction of Church Slavonic, the historical grammar and the historical dictionary of the Croatian language, as well as for the study of the history of the Croatian language in general. The Grammar, once published, will be a useful manual for teachers and students of the Croatian language and literature, and for all those who are, for any reason, interested in the Croatian mediaeval culture.\(^7\)

Using data from the results of the Grammar of CCS Project, we started digitization in 2006 by a construction of a computer program with all grammatical elements in CCS. The program is not yet in use. It will be realized together with a Dictionary program which will enable interaction with all words in the Dictionary Project.

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\(^7\) Milan Mihaljević, Document on the Scientific Program of Staroslavenski institut sent to the Ministry of science, education and sport of the Republic of Croatia in 2007.
“STIN has been devoted to the research of the Croatian language and literature from the time of the first centuries development of the Croatian language and literature when the Croats in their principality, and later in their kingdom, participated with other European peoples in establishing the historical, political, spiritual and civilization foundations of the contemporary Europe. The continuation of research, more profound and wider study of the Croatian Church Slavonic language, the Glagolitic paleography and the Croatian mediaeval literature has a significant place in a long-term development of the Croatia’s cultural profile among other European nations because the Croatian Glagolitic heritage is one of the first and the most important guardians of the Croatian national, historical and cultural identity. In the same time, together with the Croatian Latin heritage, it is a witness of the Croatia’s millenium participation in the cultural development of the history of Europe up to the present days.”

By making our Glagolitic heritage available on web we will bring it closer to researchers, to the European public and the world.

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Some scientific literature on the topics according to the projects:

**Croatian and European Medieval Literature**


**Croatian Church Slavonic Grammar**

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16. Sudec, Sandra: Deklinacija aktivnoga participa prezenta u hrvatskome crkvenoslavenskome jeziku (Declension of the Present Participle Active in Croatian Church Slavonic), *Slovo: časopis Staroslavenskoga instituta* 56-57 (2008); 517-529.

**Dictionary of the Croatian Redaction of Church Slavonic**


8. Klenovar, Marija: galerii, gvozden6, gibati1, gibati2, gnevati, golina, goneziti, goneznuti (Galerius Maximus, partaining to iron, move, perish, make angry, poverty, save oneself, save) *Rječnik crkvenoslavenskoga jezika hrvatske redakcije* 2006.


11. Mulc, Ivana: bogoljubiti; bol6; bućni
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19. Gadžijeva, Sofija: Omonimija abstraktnih morfoloških glagolov (staroslavjanskij i horvatskij cerkovnoslavjanskij material) (Homonymy of the abstract morphological verbs (the data of Old Church Slavonic and Croatian Church Slavonic) ) Slovo 54-55 (2006); 125-168.


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Summary

The Scientific Program of Staroslavenski institut

The Scientific Program of the Old Church Slavonic Institute (Staroslavenski Institut - STIN) consists of four projects: 1) Grammar of the Croatian Church Slavonic Language 2) Dictionary of the Croatian Redaction of Church Slavonic 3) Croatian and European Medieval Literature, 4) Glagolitic Paleography. STIN is the publisher of Slovo and Radovi. The process of digitization takes place in the frame of the project of Glagolitic paleography for all the projects and publications. At the end of the article there is a list of some works from each project.

Key words: digitization, Scientific Program, Scientific Projects, Staroslavenski institut, Old Church Slavonic Institute, Glagolitic paleography, Croatian Church Slavonic, Grammar, Dictionary.

Marica Čunčić

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