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Thesis Summary

CONTRIBUTIONS TO THE AUTHENTICATION, DATING AND ASSIGN PROBLEM FOR ICONS ON WOOD PANEL OR GLASS USING IMAGE DIGITAL ANALYSIS THEORETICAL RESEARCH, IMPLEMENTATION OF SOFTWARE. ORGANIZATION OF IMAGES DATABASE

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Keywords

Icon on wood, glass icon, simple radiological image, digital radiological image, interpreting data, database, query, analysis by X-ray fluorescence, digital microscopic image, side by side comparison, comparison by joining, graphical analysis, pigments, support , wood essence

ABSTRACT

Orthodox iconography is an extremely large, approaching an impressive number of authors from different positions - theological, aesthetic, historical - that have done outstanding work in the field. However, although studies on multiple levels, the icon remains a general theme of research, especially given the broad lines of speech are subject to strict rules, we observe various interesting and plastic expression, determined by the historical context of the period in which they were painted, with features related to a particular geographic area and obviously specific elements expressing the painter. It is a fascinating area to watch the work of a painter, to realize that these works contain masterfully executed often extremely modest means.

This research involved the continuation of efforts to address and promote multi and interdisciplinary methodologies, only able to meet the needs of the synthesis and analysis of enormous amounts of information characteristic of our age or to capture aspects impossible to see with traditional means .

We believe, from this moment, as needed to clarify concepts and areas of our investigation, a series of short explanations required when referring to the integration of science areas and that contribute to our research. Distinguishes three types of integration. When we speak of multidisciplinary sciences research associate without being modified each own optics. It is very intense interdisciplinarity when substantive exchanges lead to the development of language and a common methodology that affect fund competing disciplines,

modifying it. Finally, when talking about transdisciplinary integration is so strong that the results are outside the field of classical subjects.

From these general, my interest was particularly grabbed by the icon on the panel or glass made through the crucial restoration without neglecting theological and artistic achievement. Obviously years of study in the university training were decisive in the opening of this road, which is a complex issue, restore these artifacts assuming a good knowledge of the aesthetic dimension, theological, historical, and especially of the material. The key to the whole process of restoration - conservation lies in the relationship between structure and material aspects of the artwork and, as Cesare Brandi said, "restoration is required to submit with skill and prudence, any change in the structure must remain unaltered appearance of the opera" (Brandi 1996 , p. 17) .

CHAPTER 1. ICON: HISTORY, SPIRIT, ART

Since the appearance icons have been the subject of disputes that are extended to the contemporary period, discussions culminating in the iconoclastic period . Beyond which means divided on the appearance of icons, their meaning and need, we can sense a number of disputes among those searching phenomenon, propose different views regarding the timing or assigning icons. Both theological controversies and historiography continues, especially that related to interest researchers representing Orthodox Christian art is more prominent now in landscape art historiography, the study of the theological significance of the icon, which means the recovery this heritage by organizing exhibitions and publishing catalogs through thematic research often tend to be serious repertorying heritage still exist in collections and in the field, with new work assignment and identification of the painter, often analyzing historical context, topics under investigation are extremely well anchored in it.

The icon is a sacred image, expression of Christian piety that is visible on the "invisible" and dating, according to iconography of the fifth century, is a support for meditation that leads us to the contemplation of "invisible." Theology in Pictures" (Quenot 1993, p.10), announces the icon colors and makes present what gospel spread by word. In the image, word and picture dialogues, intertwine and enable discovery transcendent. Heir of Judaism, in which God is known only by word discovers Christianity through the incarnation saw the image of God and we can say that "image is part of the order essential manifestations of Christianity with the same level of expression as the word" (Evdochimov 1992, p.7).

This chapter is a short introduction to capture succinctly increase throughout history, the spiritual content and aesthetic principles underlying art icon. Christian art was manifested in the catacombs, where persecutions get harder. There was a time when the arts knew a profound mutation. Christian painting emerged from the canons of painting profane, became sober, simple to play renouncing human body shapes and volumes (Țepelea 2005, p 6), the work is conceived as a journey from general to particular historical coordinates as entries.

The Christian catacombs of Rome are preserved paintings from the early centuries. The earliest painting dates from the late first century, the others being century II and III (Țepelea 2005, p 11). Due to the harsh conditions in which they arose early manifestations of sculpture and painting in the early centuries of Christian representations are symbolic and fascinating simplicity. Old paintings found in Cimitero di Domitilla (Savior as a teacher in the middle of the Apostles), the Catacombs of Priscilla, that of Comodillei, of Pontian and that of Trason, of St. Saturnin and Holy Ilaria (Țepelea 2005, p 6). Symbols will be used exclusively in Christian art until the time of Constantine the Great, who in 313 granted freedom of expression new religion (Uspensky, Lossky,

2003, p 34). Throughout history is extremely shaken by the victory of Orthodoxy (843) when fully stated in the three periods extremely beneficial: rebirth macedoneeană (IX-XI centuries) era Comnenus (sec. XII) and Paleologos era (XIII -XV). The icon represents and signifies a completely different reality than the picture - artwork being accepted in New Testament worship as a simple aesthetic necessity, but as a "window of glory and heavenly light" meant to mediate the real presence of the prototype that they represent (BIZĂU 2005, p. 87).

Chapter 2. ICON IN ROMANIAN COUNTRIES

Romanian territory is one in which Christian orthodoxy found fertile ground. Consequently, we are keepers of a valuable and rich artistic heritage that has developed the outline generated by turmoil in the Church, but obviously were determined by specific historical conditions and the personality, talent and skill of painters. As evidence that events occurring early Christian archaeological discoveries in our territory are we stopping out of Martyrs Crypt Niculițel representing such a time, placing organic and harmonious in the European context, representing a true benchmark. In our Byzantine influence came through Serbian craftsmen and artists (eg tails Monastery Church, 1387). After the establishment of the Romanian Country Metropolitan (1359) Romanian rulers brought craftsmen from Byzantium (architecture and fresco Royal Church of Curtea de Arges (XIV). Roman-Byzantine relations were close and important, Metropolitan of the Romanian Country Niphon had two rows patriarch of Constantinople (Drimba 1987, p 231-232).

In Romania, the icon grows differently in the three historical provinces so that Romanian art specialists dealt with separately, sequentially, and often only in terms of artistic value throughout this phenomenon without the tie truly historical and political conditions it determines. Byzantine icons that have been

preserved are of a recent date-XIV-XVII. Ovidiu Drimba that "*SF. ANA* icon from Bistrița Monastery as - according to tradition - given in 1401 by Alexandru cel Bun wife of Manuel II Palaeologus, and the icon of Our Lady of Neamt, the emperor John VIII. There are large processional icons painted on both sides, like those of Byzantium "(Drimba 1987, p 235).

I thought that this chapter got to address the topics iconeler, starting from the earliest manifestations to wonderful examples of local creation. Obviously our speech is one that wants to create the necessary starting point for your own approach, based on a natural approach from general to particular. Likewise we considered it appropriate to insert Chapter 3 is intended as an X-ray on field research in our country. In this picture are found the names of great scholars of Romanian art from Virgil Vătășianu and going natural with Vasile Drăguț, Corina Nicolescu, Iuliana Dancu Cornel Irimie Alexandru Efremov, Marius Porumb, Corina Popa, Ana Dobjanschi, Teresa Sinigalia, Cornel Tatay Baltă or Georgeta Roșu. To these are added a number of names over the recent Ioan Podea, Ana Dumitran, Ioana Rustoiu, Vivian Dragomir, Theodora Roșca or Cosmina Berindei. Passing through this avalanche of writings, we realize that the amount of information is huge and growing, and we ask ourselves how we manage information. Immediate solution that we think is the design of databases that could contain and manage the amount of information in a practical and that it would be a very useful tool for all those studying icon: historians, curators, restorers.

A short **Chapter 4. Restoration and its influence on authentication, attribution and dating** comes with some considerations on the restoration because we have to consider that each artifact that endures to this day has its own map that, I would call history, which begins in and record the time of all times, the events through which. Icon is no exception to this and recorded in its material dimension over time. Most often this brings us face serious problems

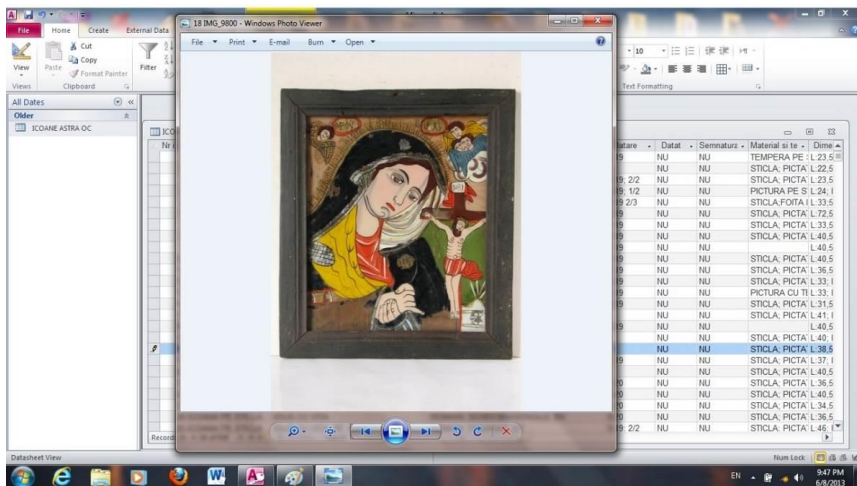
icons harm the original beauty with evolutionary degradation questioning the very existence of the play, with successive interventions in place to address the problems posed new or bearing degradation, sad, traces of vandalism. Often parts are highly degraded due to environmental factors and biological attacks, suffering serious loss support and pictorial layers. In other cases, vernier successive layers of dirt brown and sticky perception distorts the true color schemes or shields, to the impossibility of reading the composition. Restoration intervention requires good knowledge of the materiality of the object for which, before you perform any action on the artifact, is indispensable preliminary multidisciplinary research to determine the nature of the component materials, the types of biological attacks, causes degradation so that each operation we carry out is fully supported by the results of investigations. Currently, there is increasing trend in adoption of investigative methods to provide more precise results in a short time, which is extremely important to be non- invasive, non-destructive sampling or minimum of the original material object. In this regard, we believe that our approach falls well into current trends, since we use the means of digital type for knowledge, research and analysis heritage.

Chapter 5. DATABASE aims to make a brief foray into the history database of cultural institutions in our country by CIMEC bases occupying an important place. The existing achievements we went to our own detailed approach that, building a database and glass theme icons in the collections panel CNM ASTRA and database management digital radiological investigations performed on icons on panel investigations we have carried out first for Romania in 2006 and subsequently expanded the application and on the glass icons. In the next following subsection we stopped at the historic course of its existence until now, the collection of icons that I made the database and made a presentation made important icons on wood or glass, with a special

mention for a series of paintings on glass originating in western ambience of Catholic influence.

Chapter 6. Database "Icon from the collection of Cult objects"

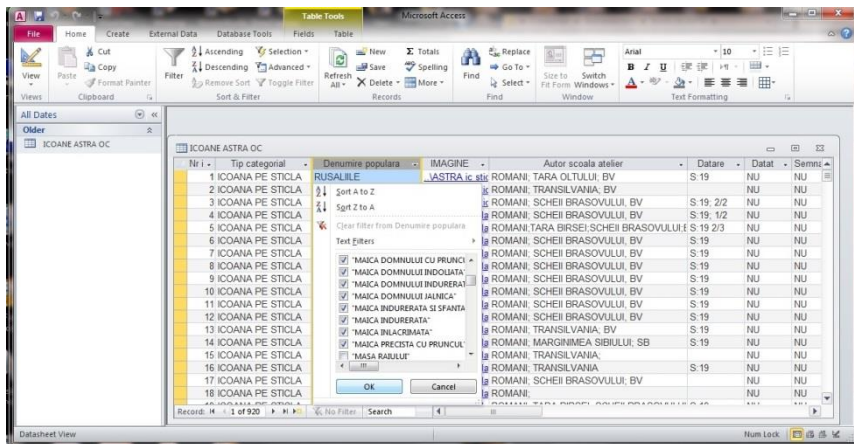
created the database, its architecture and query options. We defined 21 core columns containing data for each object (inventory number, title, author, date, studio, the date of collection, image, link to CIMEC database, etc.) to date is entered in the 1037 objects. The database can perform queries about the theme icon, copyright, dating, workshop the piece was performed in principle on any existing attributes in database architecture. Data from intergarant can be saved as such or can be exported. Access tool enables us to add new columns to remove or hide some columns very quickly. It is also noteworthy that we are able to export data from other applications based on the Microsoft Office suite.



Opening tool set default image

In practice, when we have the database can perform searches by various criteria. To do this, select the column that retrieves attribute (attributes) for which query, go to the menu bar filter (Filter) and in the window that opens, select the attributes that interests us. For example, if we want to know what icons theme Virgin Mary enroll, select the column Common name then tick

option FILTER and attributes that include terms enrolled topic (Virgin, Mother, Madonna, Maria) program will always select the database all entries select the corresponding terms in the 1037 case of existing objects based on time, 82 required for this search.



Selectarea atributelor care se înscriu temei

A database I made smaller and the data on the icons investigated using digital radiografie. If the ultimate goal in the first database is to succeed in an upper stage we can use the whole composition analysis support for reading and deciphering inscriptions and the last stage for making comparisons of the characteristics of icons of another in order to make awards, appointments at the time, and so on, the second is aimed at keeping track of inquiry, being able to add additional columns to the attributes of other types of investigations are performed, the date of the inquiry, etc.

CHAPTER 7. ICONS ANALYSIS METHOD OF DIGITAL IMAGE ANALYSIS Chapter largest totaling experimental results obtained using digital image. The first section is the radiographic image that gives us an insight that we can not seziza naked eye or other shooting options (eg photograph in UV light or IR). In our approach we presented historical data on the discovery of X-rays (1895) by German physicist Wilhelm Conrad Roentgen

(1845-1923) while he was lightning experiments in vacuum tubes, and accidentally discovered this radiation. At no time have appeared in medical applications. Using Roentgen's discovery in archeology is described in Culin's work since 1898 which is referred to the work of Dr. Charles Leonard for making radiographs of a Peruvian mummies and other artifacts of the University of Pennsylvania Museum (Lang, Middleton, 1998, p.1) . Among the earliest uses of X-radiation in the study of ceramic artefacts examnărire number of Titterington (1935) and those made by Digby and Plenderleight (British Museum -1948) . The current method is the digital media entered in this field, bringing significant improvements to the classical method. In our research we will focus just on this method if used directly on wood panel painting and glass painting icons. Our approach is one dictated by the difficulties of achieving a simple conventional radiographs. Purchase movies is difficult and where it takes multiple exposures all films must be from the same batch in order to ensure a relatively uniform result for all images (contrast and brightness). Beyond these inconveniences, the film obtained do not support post-processing operations. Thus, we turned our attention to this alternative embodiment, achieving new and powerful digital radiographs first premiere for Romania in 2006.

In our approach we have conducted several investigations of radiation which are capitalized sentence which 38 cases were performed 97 radiological exposures. The crude material was fully processed and interpreted by us and the results are listed in the chapter contents.

For example we quote the following:

BIRTH OF JESUS, icons on wood, 236-OC, Religious objects Collection (Fig. 145)

In 2009, Academician Marius Porumb, kindly consider some of the icons were restoration laboratory, especially those representing themes license

ULB Sibiu students from specialization conservation and restoration. Between songs and an icon is "Deisis" (fig.143-144) from the collection C.N.M. ASTRA, no. inv 242 - OC, which depicts Jesus Christ, the Righteous Judge stance, framed on the right by the Virgin and St. John the Baptist on the left, both standing, as holy intercessors, praying to the Savior forgiveness of sinners. After careful study of the elements that compose icon, he has floated the idea that it belongs sec. XVIII, perhaps even end it. Worthy to note is that the red background of the icon is used once, the old icons from Moldova, so we believe that the icon could be achieved by iconographer influenced by painting school in the area. The image features which are breaking Brancovan, but are greatly diminished the influence of folk. Like the location, Marius Porumb suggests central Transylvania, making reference to the work of iconographer Peter Topârcea, which he defines as "muralist and painter of icons, active in the last quarter of the 18th century, will paint in places in the central and southern Transylvania ". Whose "folk style painting contains clear links to post Brancovan southern Transylvania" (Porumb, 1998, p 289).

Among the museum's collection icons Sibiu include an icon on "Nativity", recorded in the same collection at position 236. Between the two there is an obvious similarity icons on several levels. Paint layers, so far as extant, we prove the same color gamut. Manufacturing mode of support, with frame attached to both icons and sticks being joined by the "tongue and groove" but adjusted to 45 ° is again a common element. Profile rods is the same. Support that contained defects were covered with pieces of paper that have the same look as pivește texture and color similar but more pronounced degradation for this icons, destruction by burning us appear similar in position and depth lead us to conclude that pieces were performed by the same craftsman. Moreover, on the back icon black Nativity has mentioned a 1786 number that was framed by a black outline all done lobate (fig.147), but which

is partly. We can assume that the figure is justified icon enforcement year, a year which perfectly fits the hypothesis formulated in the previous case of Marius Porumb.



Fig.143-144. Deisis, no. inv 242-OC. Whole face before and after restoration

Marius Porumb notes that "without a great illustrator [Peter's Topârcea] work impresses with warm color palette, the decorative look to their. Characters are often placed on the thrones of the same inspiration Brancovan being treated in popular spirit." (Porumb, 1998, p 289). These features we find in icon analyzed (Deisis) which allows the assumption that the master is probably formed in the same school with the Topârcea painter, but his paintings are characterized by a stronger folk.

Icon of the Nativity (fig. 145-147) having relatively small (36x30cm) for recording information on the entire surface of one exposure was sufficient. As such, there was no need for further processing of the master image. The resulting image (Fig. 146) is of good quality and reveals several features of the artifact. Thus, we see that the surface is uneven one, with fixed nodes highlighted very well in radiography, registered in the image as areas with relatively circular aspect (Fig. 149), very light (wood density is much higher

than the rest of the panel and as such have a strong attenuation of electromagnetic radiation).



Fig. 145. Nativity
Nr.inv. 236 OC,
Overview before restoration



Fig. 146. Radiological

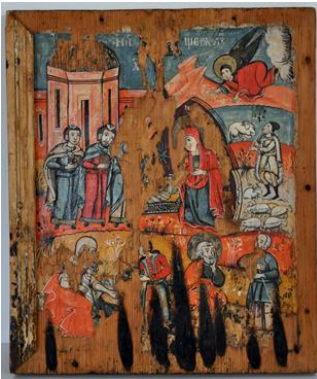


Fig. 147. Assembly after restoration



Fig. 148. Detail sided with the year
engraved on the bottom left corner

Clearly emerges metal nails top and bottom edge, the software used for viewing allowing us the appreciation of their size about 3 cm. It may very well see the nail prints were wooden rods mounted on the left side frame and highlights the preserved, which liaises with the support rod. If we look carefully, we can notice that wood grain is visible which indicates that there is a high probability that Woods is in category conifers. Abode sleeper emerges as a

horizontal band hue darker than the rest of the icon (lower thickness less attenuate radiation).

The comparison with the RX image artifact, we issue several opinions about the nature of the pigments used. In this respect, mention white areas or in combination with white light giving a signal that suggests the use of white lead. Reds were recorded as X-ray image suggests that the craftsman has used both red minium (possibly containing cinnabar) and mixture of red earths. We can see from the scan, in the exercise of inscriptions and fineness of detail.



Fig. 149. Detail Rx. It is noted nail from the wood, metal pin and node concrescent



Fig. 150. Detail back in the corresponding

Lacunar areas are quite large, in radiography recorded as areas with irregular appearance in shades of gray. We mention that the areas where we have a visible burnt dark signal which shows that supporting structure was affected. Cracks paint layers and cracks and crannies of support are also recorded the radiographic image.

For some of the songs we made further investigation. When we made ourselves some photo capture portable digital microscopy system for analysis of surface condition Dino-Lite series have sometimes resorted to analysis by X-ray fluorescence determinations were made by Dr. Geo Niculescu this time, with a portable Innov-X Systems, Alpha Series, with the Wolfram anticatod

with parameters 35 kV, 40 μ A and 30 seconds acquisition time, Si-PIN detector and Peltier cooling effect.

Both these analyzes and other (chemical and biological) gave us additional information that could be compared with their own interpretations of radiological images, confirming our views.

The last two chapters are the result of digital image analysis we used it to compare to other 16 artifacts among which the comparison of four icons with the theme of Jesus Christ on his throne no. inv 1128-OC is signed by Savu Moga and other three being awarded (inv. No. 1127 -OC, no. inv T113 -OC, and no. Inv. T79 -OC). I made the comparison view that no icon. T79 -OC inv. approaches work signed (inv. No. 1128 -OC) by a series of general and some specific items such as compositional structure, color scheme, decorative elements. But icon design is done with finesse specific Savu Moga. For this reason, if the award remains valid, we believe that performance year is 1840 when the painter probably writing skill has not reached full glass icons . However, between this image and that is dated within a maximum of one year , in this case, meaning that the painter was a period of intense work to get to safety that note in blank icon. (We can afford to advance the idea that this would be meant keeping many artifacts from that time period). We believe that the 1846 version would exclude Savu Moga copyright law because, if so, would show a decline in the art of painting of icons. Beyond that, from our observations we can say that all the icons that you have identified the presence of signs golden metallic foil. By comparing digital images through annexation vertically side by side and comparing formal context element (Fig. 354-357), was revealed by plotting the difference just the line that seems even rough comparative review. Our view is that although the two icons have a common inspiration however is not the author of this icon unsigned Savu Moga. Also the comparison of the two icons *Precestei Coronation* theme, one signed by Savu

Moga (inv. No. 1142 -OC), one attributed to (inv. No. 1126 -OC). Our analysis involved cutting a blank element - image of Jesus - in reference icon next element placement compared the overlap area corresponding cut on the icon and a comparison by comparing vertical amalgamation. The result is surprising, cutouts integrating well into the composition, even with areas of continuity, which leads us to the conclusion that truly belongs unsigned icon painter Savu Moga (fig. 360-362).



Fig. 362. Detaliu comparație

Please note comparisons using as witnesses, elements of glass icon Birth of Christ (inv. No. 1122 -OC) and the faces of the characters in composition compared to the faces shown in the icon of St. Demetrius together Holy Martyr Teodor Tiron (No. Inv . 1114 -OC).

It also presents a graphical analysis of the writing of John Pop Fagaras who use existing elements when writing icon on "Entering the church of the Virgin" (no. inv.1133 -OC CNM ASTRA). We performed and Latin transliteration texts and following general characteristics of SCI anliziei this painter we realize that it is a superior writing, calligraphy done with care, which proves an ease handling the brush. Obviously writing to fall within the books of typography and note that the letters are completed features / fine bars top and bottom. Writing is almost right, but we should mention that the 6 tilt feature and steeper inclination and number 5. Other items that you can consider

idiotism graphics - features extraordinary identify them, if point A, where there is a building loop superimposed. And if the letter D loop is more pronounced , sometimes reaching almost a line broken. Among the special features should be noted that ending the top of the letter S Is skewed. This is noticed at point E, but not so stressed and not in all cases. The letter O is oval in all cases. Ioan Pop's writings is a calligraphic letters body is almost constant thickness, shape line is made of the different position of the brush. We realize that the author has a serious exercise in making inscriptions painted in comparisons with other scripts, one of the craftsmen who have paid great attention to achieving inscriptions. His entire painting is characterized by extremely neat appearance, almost calculated, which lost spontaneity that meet the Savu Moga but excelează by accurate execution puts it among the great painters of icons on glass. After these assessments carried out and a comparison with the icon of *Jesus on the throne*, no. inv.134 -OC, icon writing containing some elements of which the most important is the text that the Holy Book open. We see and we have a comparative element writing evolved, care that is composed of letters with the body of a nearly uniform thickness, the letters that have straight lines , horizontal line endings neatly accentuates the writing. We really appreciate the way the author brush moved significant milestone chart. When referring to aspects of special characters notice a resemblance to characters in the background graphics that support opinions that assigns icon painter Ioan Pop.

Chapter 8 comes with requisit **conclusions and outline directions for future research.** Regarding digital radiological image recall that we adopted the usual practice taking into account all the advantages, not least in collaboration with other specialists investigators. We can not have a truly complete picture of the object of art, the nature of the constituent materials of the causes that led to the degradation artifacts without input specialists in chemistry, biology, physics. Because our performance internationally to

become one, it is natural to turn our attention to the most modern methods and current data management, investigation and effective intervention. Notices that I supported method has been adopted by other specialists, yet sporadically since there are issues related to access to the necessary equipment. What we have achieved in Sibiu, the application of such investigation to the icons on the panel, remains a national premiere in Romania. Following the presentations of scientific sessions and already echoed method is promising attempts to Bucharest and Cluj. Regarding digital image analysis, comparability of type information that we consider just getting started, the two ways in which we approached the only first tiles of a road can be very long. And you probably will not be easy to build. But we know for sure that if we reach the end, we feel a sense of fulfillment, contentment bittersweet taste of hard work-accomplished.

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