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ASTRONOMY AND THE CULTURAL HERITAGE

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Özet

Ünlü Stonehenge veya Carnac'dan, tapestrilere (Bayeux), arma sembollerine, güneş saatlerine, eski gözlemevleri ve elyazmalarına kadar tüm dünyada astronomik kültürün kanıtları vardır. Hepsi, evren ve gökyüzü hakkında yüzyıllar boyu birikmiş bilgiyi; taş, tahta, seramik, metal veya kağıt şeklinde korumuştur.
Bütün dünyaya yayılmışlardır. Bazen iyi kataloglamış, araştırılmış ve korunmuşlardır. Yine de nadiren çok az bilinirler ve çok kötü korunmuş hatta yok olmak üzeredirler. Belli bir epoktan bir güneş saatinin nerede olduğunu bulmak isteyebilirsiniz ancak nasıl bilmezsiniz. Bazı olayların ilk kez ne zaman kaydedildiğini bilmek isteyebilirsiniz ve bu çaba için araştırmalar zordur. Astronomik amaçlar için de kullanılmış bir tapınağın restorasyonuna destek vermek isteyebilirsiniz, ve böyle bir operasyonun gerektirdiği bazen çok yüksek masrafları karşılayacak yeterli kanıtınız yoktur.
Tüm bu bilginin içerisinde toplanacağı bir veri bankası, uluslararası boyutta bir elektronik kütüphane; araştırmayı kolaylaştırmak ve bu gezegendeki uygarlığın hazinelerini oluşturan sanat, bilim ve tarih anıtlarının korunmasına destek vermek için en doğru şey olacaktır.
İşte bunlar kısaca, "Arkeoastronomik Miras" adında yeni bir çalışma grubunun oluşturulmasının sebebir. (http://www.archeoastronomy.org/) Bu zengin mirası tanımlamak ve korumak isteyen herkes bu etkinliğe katılmaya davetlidir.

Abstract

In the entire world there are proofs of astronomical culture, from the famous Stonehenge or Carnac, up to tapestries (Bayeux), heraldic symbols, sundials, old observatories or manuscripts. All of them preserve in stone, wood, ceramics, metal or paper the knowledge gathered throughout the centuries concerning the sky, the cosmos.
They are spread all over the world. Sometimes they are well catalogued, researched or preserved. Nevertheless, very often they are very little known and very badly preserved, sometimes about to disappear. You want to find out where there is a sundial from a certain epoch and you do not know how. You want to know when some phenomena were recorded for the first time and researches to this effect are difficult. You want to support the restoration of a sanctuary, also used for astronomical purposes, and you do not have enough proofs to motivate the sometimes very high expenses required by such an operation.
A data bank in which all this information should be gathered, an electronic library of international size, would be the exact thing to facilitate research, to support the conservation of the art, science and history monuments, which together make up the thesaurus of civilization on this planet.
This is shortly the reason why a new working group "The Archaeoastronomical Heritage" (http://www.archeoastronomy.org/) was set up. Everyone interested in identifying and preserving this rich heritage is invited to contribute to its activity.

1. Introduction

Soon the international astronomical community will celebrate four centuries since Galileo Galilei directed the first refractor to the sky. This is an important reason for us to turn to the past and see what was the progress of knowledge about the cosmos, about astronomy, since the first questions man asked himself about the sky to the astonishing success registered by ground-based and space astronomy in the last years.

There are many very well known facts: who has not heard about Aristotle or Ptolemy,

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Copernic or Galilei, Kepler or Newton? Who has not admired at least the photos of Stonehenge or Carnac?

But how many people know what was the evolution of astronomy in countries like Turkey or Romania? Astronomers, archaeologists, historians, or we still know very little about what happened on our lands.

The solution is to identify any object, site, building, instrument, book that can tell us something about astronomy throughout time in these places or anywhere in the world.

As we identify them we shall try to find out as much as possible about them and introduce them into a database.

Then, the database will be accessed by anyone who wishes to study and compare them, to contribute to the history of astronomy, to the researches in this very fascinating field. Last but not least, this database will contribute to render sensitive the local, national or international authorities, as well as the general public concerning the conservation of these values.

2. SEAC - Archaeoastronomical Heritage Committee

These are the reasons why the European Astronomical Society initiated during SEAC XIIth Conference - 2004 Kecskemet (Hungary) the archaeoastronomical Heritage Committee. Its intention was to support the efforts of UNESCO World Heritage Centre (http://whc.unesco.org/) to contribute to the implementation of the Thematic Initiative "Astronomy and World Heritage" elaborated during the first international meeting held in the UNESCO Bureau for Science in Europe (ROSTE) in March 2004.

Its website http://www.archeoastronomy.org/comittees/heritage.htm contains several columns: „Some answers, comments, expressions of interest", the "Guest book", with signatures and commentaries of the visitors, articles published, image gallery.

Naturally, it is continuously subjected to improvements also through the effort and talent of the webmaster or of Dr. Michael A. Rappenglück.

Being an activity in which a number as large as possible of persons interested can participate, irrespective of specialty or activity field, professionals or amateurs, young or old, I shall try to make a review of the steps we have to take.

3. Objectives

Adapting the UNESCO's tasks for our special purpose, we could say that our objectives are:

- to encourage the protection of the natural and cultural heritage related to astronomy;
- to encourage the authorities to nominate sites related to astronomy within their national territory for inclusion on the World Heritage List;
- to encourage the participation of the local population, especially of young people in the preservation of the cultural and natural heritage related to astronomy;
- to encourage international cooperation in the conservation of our world's cultural and natural heritage related to astronomy.

What might such a database contain? The simplest answer would be Everything, namely everything that belongs to the history of humanity and has astronomical significance or is connected with the knowledge of the sky throughout time.

An entirely tentative list would be the following:

- sites,
- sanctuaries,
- buildings,

- sundials,
- instruments,
- drawings,
- ancient book.

Naturally, the list remains open. For instance, in many places the meridians are materialized by means of metallic rods, metallic washers, etc.

4. Examples:

4.1. Paris Meridian

I shall begin with a famous example (the meridian in Paris) exactly because it seems less interesting for such a database.

It is a line which crosses the city, materialized through 135 medallions of a 12 cm diameter, fixed to the ground throughout Paris meridian, marked with the name of Arago, as well as with an N indicating the North and an S for the South.

Figure 1: Meridian of Paris

What should be noted here?
-the location of the meridian line: Paris, longitude 2°20' E
-the main parks, as well as the buildings it crosses
I have quoted them in French, exactly as they appear on the site
http://www.amb-pays-bas.fr/fr/ambassade/pcz/arago.htm

XVIIIe arrondissement :
· 18 av. de la Porte de Montmartre, devant la bibliothèque municipale
· angle rue René Binet / av. de la Porte de Montmartre
· 45/47 av. Junot
· 15 rue S. Dereure
· 3 et 10 av. Junot
· Mire du Nord, 1 av. Junot, dans cour privative, accès réglementé
· 79 rue Lepic
IXe arrondissement :
· 21 boulevard de Clichy, côté trottoir et sur le terre plein central
· 5 rue Duperré
· 69/71 rue Pigalle

· 34 rue de Châteaudun, cour intérieur du ministère de l'Education nationale
· 34 rue de Châteuadun
· 18/16 et 9/11 boulevard Haussmann, devant le restaurant
· angle rue Taitbout, devant la brasserie et 24 boulevard des Italiens
IIe arrondissement :
· 16 rue du 4 septembre
· 15 rue saint Augustin
Ie arrondissement :
· 24 rue de Richelieu
· 9 rue de Montpensier
· Palais Royal: péristyles de Montpensier et de Chartres, galerie de nemours, passage sous voûte côté place Colette et place Colette devant le café
· angle place Colette et Conseil d'État, rue saint Honoré
· place du Palais royal, côté rue de Rivoli
· rue de Rivoli, à l'entrée du passage sous voûte
· Louvre, aile Richelieu: salle des sculptures françaises et devant l'escalator Louvre, cour Napoléon, derrière la pyramide
· Louvre, aile Denon: salle des antiquités romaines, escalier et couloir
· Quai du Louvre, près de l'entrée du pavillon Daru
· port du Louvre, non loin du Pont des Arts
VIe arrondissement
· port des Saints-Pères
· quai Conti, un à l'angle de la place de l'Institut
· place de l'institut, passage rue de Seine
· 3 et 12 rue de Seine
· angle rue de Seine / rue des Beaux-Arts
· 152 et 125-127 boulevard Saint-Germain
· 28 rue de Vaugirard, côté Sénat
· Jardin de Luxembourg, sur espaces asphaltés ou cimentés
· rue Auguste Comte, à l'entrée du jardin
· av. de l'Observatoire sur trottoir côté jardin
· angle av. de l'Observatoire / rue Michelet
· jardin Marco Polo
· angle av. de l'Observatoire / rue d'Assas
· place Camille Jullian
· sur terre plein angle av. Denfert Rochereau / av. de l'Observatoire, côté Observatoire
· av. de l'Observatoire
XIVe arrondissement
· cour de l'Observatoire de Paris
· à l'intérieur de l'Observatoire
· terrasse et jardin haut, dans l'enceinte protégée de l'Observatoire
· boulevard Arago / place de l'Ile de Sein
· 81 rue du faubourg Saint Jacques
· place Saint Jacques
· parc Montsouris
· boulevard Jourdan
· Cité universitaire, axe allant du pavillon Canadien au pavillon Cambodgien, le dernier se trouve derrière ce pavillon.

-designer/constructor: Jean Dibbets, a Dutch artist (born 1941)
-construction year: 1994
-photos (see 1)

4.2. The Sanctuary of Sarmizegetusa Regia (Romania)

I shall continue now with a sanctuary, very little known in the world, but which I know very well, being in my country, Romania. (see 2)

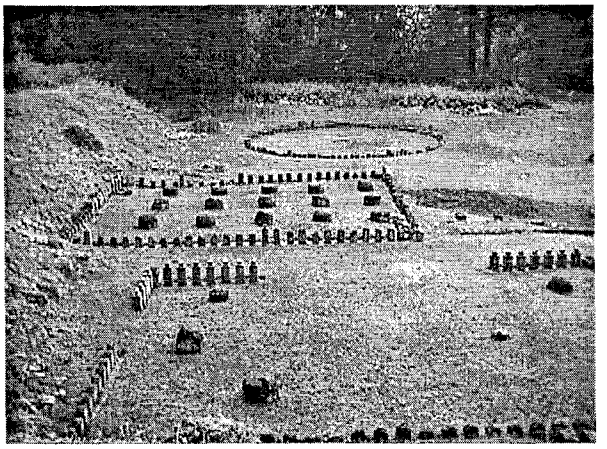

Figure 2: Sarmizegetusa Regia

PRECISE LOCATION

Country: Romania

Province or Region: Gradistea de Munte village, Orastioara de Sus commune, Hunedoara county *Name of the asset*: Sarmizegetusa Regia – the capital of the Dacian kingdom.

Geographical coordinates:

-Latitude 47°27' – 45°497' North,

-Longitude 23°09' - 29°31' East,

-Altitude 1200 m

SHORT DESCRIPTION.

It was the most important Dacian military, religious and political center. Erected on top of a crag 1200 meters high, the fortress was the core of the strategic defensive system in the Orastie Mountains, in Romania, comprising six citadels. The fortress, a quadrilateral formed by massive stone blocks (murus dacicus), was constructed on five terraces, on an area of almost 30,000 m². It also had a sacred precinct - the famous Circular Calendar Sanctuary is included among the most important and largest circular and rectangular Dacian sanctuaries.

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http://www.cimec.ro/Monumente/UNESCO/UNESCOen/index2C61.htm3.

4.3. Ancient Books

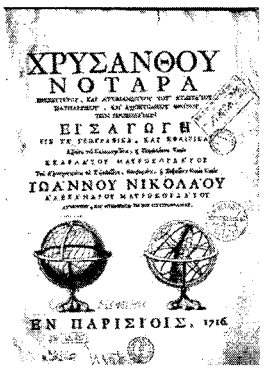

Figure 3: Notaras' Book

Author: Hrisant Notaras
Title: Introductio ad geographiam et sphaeram
Publishing house: not mentioned
City: Paris
Year of publication: 1716
Short description: 176 files and 2 plates. On the file 1, verso, is the portrait of the author. On the file 2 the Greek title and on the file 3 the Latin one: *Chrisanti Notara presbyteri et arhimandritae sanctissimae patriarchalis et apostolicae sedis Hierosolymae. Introductio ad geographiam et spheram. In gratiam illustrissimi, ac spectatissimi Domini Scarlati Maurocordati, dignissimi filii celsissimi, piisimi et sapientissimi Domini Ioannis Nicolai Maurocordati principis ac Domini totius Vallachiae.*

Further editions or translations: No one
Where could it be found?
-Library of the "Al. I. Cuza" University, Jassy, Romania
-Library of Antim Monastery, Bucharest, Romania

4.4. Sundial:

1. *Location*: Piata Unirii nr. 31, Cluj-Napoca, Romania
2. *Owner*: Romanian Bank
3. *The year or epoch of construction*: "The dial is unique in Transylvania, because it is the only one left from the 16th century"
4. *Short description*:

Semicircle, divided in parts which indicate the hours. In the middle of the semicircle, on a nail hang a wire whose shadow measured time, in keeping with the Sun's trajectory in the sky.

The house on which it was placed began to be built in the 16th century, in Renaissance style, at the order of Adrianus Wolphard, a vicar, then episcopal vicar and counselor at the

court in Buda. Wolphard studied the humanities at the University in Bologna and after he returned to Cluj he began the construction of the building.

Unfortunately he died before the work was finished, the house being continued by his brother, Stephanus, the mayor of the town and a renowned mathematician and astrologer. During his lifetime the first floor of the building and the back of the yard were it was build; the sundial might be also due to him.

The building was finished after the death of Stephanus, when his wife remarried Stephanus Kakas, a member of a family from Hungary, who took refuge in Transylvania.

The entire house is a prototype of the civil architecture of the Transylvanian Renaissance century and it is the more valuable as it has been preserved in a state close to the original one.

5. *Photos* (see 4.)

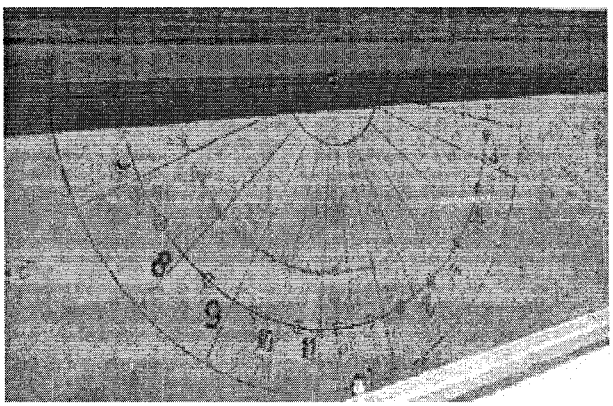

Figure 4: Cluj Sundial

5. Conservation State

I have left for the end a chapter that should be mentioned for each object described not only in order to draw attention to its present state, but also in order to warn the authorities about their salvation.

Most of them have not even been identified so far, or if they have been for some time, they need urgent restoration or protection against those who do not appreciate them for their real value.

Consequently, the place where they are situated is very important for their conservation.

Many are situated in the middle of nature (necropolis, sanctuaries, churches, peasant gates, etc.), others in monasteries (books, paintings, artworks), museums (books, paintings, artworks), personal or official libraries (books, paintings).

Naturally, their exposure to the open air, at the mercy of weather and also of the malevolent people has lead to the degradation of many of them. This does not mean that if they were kept inside or were well guarded, they have been well preserved. The humidity, abundant light, the lack of restoration funds has led to the irreparable loss of many vestiges of old astronomy.

If we add to all this the careless alienation of some patrimony goods by persons interested only in money, we realize that our efforts have to be intensified before it is too late.

6. What Has To Be Done?

We believe that a campaign of identification of all the objects, which belong to the cultural heritage of our countries, is the first step we have to take.

The next one would be the gathering of all information concerning those objects. Obviously, all of this will be included in the database.

Last but not least, we have to propose the most important ones to the UNESCO commission for conservation.

Everybody who wants to associate with this noble mission is invited to join us on:

http://www.archeoastronomy.org/comittees/heritage.htm

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