

BOOK OF ABSTRACT

SESSION V (S5)

CULTURAL ASTRONOMY



**SKYSCAPES**  
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# “Homage to a Child of Jupiter”: recovering an old astrological reading for a Giorgionesque painting in the National Gallery

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*keywords:* Children of Planets – Astrological Iconography – History of Astrology – Giorgione – Renaissance Art.

## ABSTRACT

The so-called "Homage to a Poet" in the National Gallery (NGI 173) is one of the most contentious Giorgionesque paintings, frequently regarded as a work by the master himself during the early stages of his career. As is often the case with the paintings in Giorgio da Castelfranco's catalogue, the interpretation of the bizarre subject is particularly controversial. Art historians have proposed a very large number of readings, including the tribute to an unknown poet laureate, the hero Jason with his sons Plutos and Philomelos, and the engraver Girolamo Campagnola honoured by his lutenist and painter son Giulio (the real author behind the painting?). The most recent hypotheses appeared to be the most plausible, offering explanations for numerous details of the scene. The interpretation proposed by Dal Pozzolo (2009) regards the "Homage" as a representation of the reign of an exiled Saturn, evoking both an astrological and a Jewish theme that would have been particularly appealing to Giorgione and his collaborator Campagnola.

Ludemann (2013) identifies the main figures as Apollo and Phaeton, depicted in Ovid's Palace of the Sun, thereby reiterating the astral dimension of the work. In the present study, I propose the recovery of an old astrological reading of the painting by Pigler (1950), which interpreted the scene as a variation of the classical medieval iconography of the Children of the Planets (in this case Jupiter) and drew a parallel with some similar paintings by Hieronymus Bosch from the same years. A tentative explanation of the heterogeneous elements and details visible in the landscape (some birds, a leopard, a presumed hermit, four books, a lute, a bowl with flowers, an eastern or Jewish hat) according to the "Planetenkinder" scenario will lead to a new possible identification of the sovereign: the Epirote humanist and Hellenist Nicholas Leonicus Thomaeus, at the time of his "coronation" as a lecturer of Greek at Padoa University (1497). If this is the case, the painting is an ironic and playful homage that manipulates the idea of planetary influence, showing the process of evolution and adaptation of astrological theories and iconographies in the making.

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# On the probable use of a synesthetic method in the composition of Scorpio by Karlheinz Stockhausen

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## ABSTRACT

With this study, I intend to advance a hypothesis regarding the method chosen by Karlheinz Stockhausen to compose Scorpio, one of the twelve pieces of the Tierkreis suite dedicated to the twelve zodiacal constellations. It is known that the constellation of Scorpio, among all the others distributed along the ecliptic, is the most easily recognizable for the particular arrangement of the stars that compose it, which seem to draw the real shape of that arachnid. The peculiarity of Stockhausen's piece dedicated to it, a characteristic that makes it appear different from the other eleven, is that, instead of being based on the application to the sonic material of numerical methods similar to those already used in the rest of the suite, it seems rather to have been composed by drawing inspiration from the particular shape of that constellation.

It will be tried to demonstrate, in fact, how Stockhausen tried to "draw" that sinuous shape of the arachnid both from a graphical point of view - therefore reproducing its silhouette with the particular arrangement of notes adopted on the score -, and using the ascending and descending sequences of sounds that the synesthetic note pattern produces. Beyond the methodological-compositional aspect, I therefore hope that this study may have a certain relevance also in the possible understanding of the mental mechanisms that, through appropriate musical writing, allow us to translate a purely visual perception into another one totally acoustic. In other words, through this analysis, I try to highlight one of the possible ways in which the transition from a pure visual pareidolia to auditory pareidolia occurs.

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# Restoration of astronomical photographs on glass plates

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*keywords:* Photographs – Restoration – Glass plates – Solar Pictures – Museum material

## ABSTRACT

Glass plates were used since 1816 to fix images using different types of light-reactive chemical emulsions. These plates fixed positive and negative images until the use of the Daguerre method became popular at the end of the 19th century. Successors of this process and through emulsions in variants of Silver Bromide, towards the beginning of the 20th century they were already used to capture astronomical images and study them as part of the observational process.

In the present work we will focus on solar pictures taken at the San Miguel Cosmic Physics Observatory between the years 1940 and 1970. These plates were abandoned for 23 years and stored, if it can be considered this way, in conditions that were not always satisfactory, for which deteriorated in various ways. This work explains the techniques and processes to which parts of the plates were subjected, how they were cleaned and the images that were obtained from them for their subsequent catalogue, use and study.

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# Quantifying The Lives of Astrophysics

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## ABSTRACT

ASTROMOVES is a qualitative study of the lives and career moves of astrophysicists and those in adjacent sciences. UKRI provides a good overview of qualitative research as research “focused more on the meaning of different aspects of people’s lives, and on their accounts of how they understand their own and others’ behavior and beliefs.”

ASTROMOVES data collection used semi-structured interviews with 43 scientists. However, in order to report on the project, provide context and explore trends, it was necessary to create and assign numbers to the qualitative data.

This presentation shows the details of how the rich content of the interviews were reduced to numbers and the decisions that went behind those numbers. Numbers are necessary to capture the demographics of the interview sample. Other numbers were generated in order to compare to the results found by others doing statistical surveys. Career age was a key number important to many parts of my analysis.

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# Geological and geomorphological approach to the study of some rocky sites in Sicily (Italy)

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*keywords:* geology; Sicily; protohistory, geomorphology, archaeology.

## ABSTRACT

A modern, multidisciplinary approach to the study of a potentially astronomically-oriented site, primarily in the "megalithic" field, cannot prescind from a thorough territorial examination, which should consider both geologic and geomorphologic evidence. Terrain analysis, as well as the study of rocks and in particular of any potential erosional process, can indeed help to identify sites which underwent a clear anthropic intervention, distinguishing them from those more likely to hold a "natural status". This study aims to analyze 4 sites located mainly in Oriental Sicily and featured by diverse geologic and geomorphologic characteristics:

- Motta Camastra (Valle Alcantara – Messina): site characterized by the outcrop of sedimentary rocks named "turbidities" (TINTERRI ET AL. 2012), which feature multiple "natural" holes that are interpreted as possible solar calendars;
- Cozzo Olivo (Gela - Caltanissetta): site characterized by the outcrop of sedimentary limestone rocks and gypsum (BENEO ET AL. 1955), which feature particular "natural" dissolutions engendered by the action of weather elements. The site shows an acclaimed presence of archeological evidence (rock-cut tombs) and, according to some scholars, even possible evidence of solar calendars (MAURICI ET AL. 2019);
- Monte Petrulla (Licata - Agrigento): significant upland featured by the presence of a settlement of indigenous residential units relative to the "Castelluccio Culture" (Early Bronze Age, XXII-XVI centuries BC) and by the presence of groups of rock-cut tombs scattered around a wide area. Furthermore, more important and monumental burials characterized by lesene fronts are retrieved on the highest peak of the mountain. It has been surmised the presence of holed stones with the function of solar calendars which may actually have a "natural" origin given the outcrop of sedimentary rocks (Base Limestone) (GRASSO ET AL. 1997) that feature particular "natural" erosive ridges engendered by the action of weather elements;
- Santa Maria di Licodia (Catania): the Pietra Pirciata (holed stone) is a characteristic sedimentary rock belonging to the Flysch Numidico (MONACO ET AL. 2012); it features, in the upper part, a clear entrance of a rock-cut tomb which, according to legend, was created by the Cyclopes Carlapone. A wide hole in opposition to the main opening is interpreted to work as a 'solar calendar'. Both holes appear to have an anthropic origin since similar geomorphologic evidence was not detected in the surrounding rocky outcrops.

These 4 cases display a study method applicable to any site potentially featured by an archaeoastronomical significance which can help to highlight any possible anthropic activity in the realization of the aforementioned sites.

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# The Universe in the Russian Icon: Cosmology of Raymond Lull in the Icon of the Mother of God “Joy of All Who Sorrow”

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*keywords:* astronomical models, geocentrism, Russian icon, Ramon Lull

## ABSTRACT

This presentation will investigate the astronomical connections found in Russian icons, focusing specifically on the portrayal of the Mother of God known as "Joy of All Who Sorrow".

During the latter part of the 17th century, icons depicting the Mother of God as the "Joy of All Who Sorrow" began to appear in Russian iconography, drawing influence from Western European iconographic traditions. This image has been depicted in various forms due to its diverse pictorial sources. The icon derives its name from a passage in the stichera that describes the Intercessor as bringing joy to those who mourn and suffer. One notable version of this icon is preserved in the State Historical Museum in Moscow, offering a particularly detailed and nuanced interpretation of the iconography with rich semantic content.

The icon's composition reflects prevalent 17th-century Russian intellectual beliefs regarding the Universe's structure. Divided into three sections, the icon portrays Earth, Heaven, and the "Kingdom of God" - Paradise. The upper segment symbolizes "The Kingdom of God," featuring central figures such as the Savior, the Blessed Virgin Mary, and celestial beings encircled by a mandorla, with groups of individuals seeking divine assistance on either side. The middle section presents a unique depiction of the sky separating the "Kingdom of Heaven" from the earthly realm below, showcasing celestial phenomena like the Sun, Moon, stars, and zodiac signs moving across eleven concentric celestial spheres above the Earth. Additionally, seven planetary bodies are shown beside each celestial sphere, with angels descending towards Earth through this celestial archway. Although the religious and edifying meaning of the icon is clear, a third theme – the world order – finds powerful resonance in the icon. The artist sought to depict the intricate structure of the firmament based on a developed astronomical system. What kind of system is this?

The research investigates potential astronomical influences on the portrayal of the central celestial aspect of the icon. The methodology employed in this study involves a comparative examination and analysis of cosmological models prevalent in Russia during the relevant historical period. These models are evident in texts such as "Christian Topography" by Cosmas Indicopleustes (15th century), "Lucidarium" by Honorius of Autun (16th century), and "Great and Wonderful Science" by Raymond Lull, which was translated into Russian in the 17th century and gained popularity among educated Russians. Each source will be scrutinized to identify the astronomical model based on criteria such as the structure, quantity, and arrangement of celestial spheres, the sequence and nomenclature of planets, and the zodiac signs delineated in these writings. The objective of the study is to demonstrate that Lull's astronomical framework was intricately mirrored in the cosmic configuration of the icon, serving as a blueprint for the artist in illustrating the cosmic order.

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# Count Ermanno Stradelli, the “legend” of Jurupari and the constellations of the Amazonian peoples

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*keywords:* Jurupari, Ermanno Stradelli, Amazonian constellations, Pleiades, Ethnoastronomy, Legends.

## ABSTRACT

The Italian-Brazilian Count Ermano Stradelli (1852-1926) spent a significant part of his life in the Amazon jungle, between Brazil and its geographic limits with Venezuela and Colombia, developing ethnographic work of significant importance for the areas of Anthropology, Linguistics, and Cultural Astronomy. Some indigenous groups from the North and Northwest of the Amazon narrate versions of a cosmological myth, about a character known as Jurupari.

The Franciscan religious in this region between the end of the 19th century and the beginning of the 20th century associated the figure of Jurupary with evil, and the devil himself. When publishing, in 1890, the *Leggenda dell'Jurupary*, in the *Bollettino della Società Geografica Italiana*, Stradelli presents a detailed narrative of an origin myth and a ceremonial complex of punishment with the death of women who enter the universe of male knowledge.

The main characters in this narrative help us interpret part of the worldview, ritual cycles, and astronomical calendar of the indigenous peoples of the North and Northwest Amazon. Thus, in addition to Jurupari associated with the Sun, the Pleiades cluster, and the planet Venus, we can describe Pinon, a snake generally related to the Scorpion constellation (Scorpius), an otter in the vicinity of the western constellation Orion, and the Manatee associated with the constellation of Southern Cross (Crux). The “legend” of Jurupari appeared in different versions, in the voices of explorers and missionaries who were contemporary to Stradelli, but his impeccable work in collecting data and information was essential for understanding the extent and depth of this myth.

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# Schickard's original multiplication cylinders identified in Uppsala

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*keywords:* old calculators, Napier's bones, Schickard's calculator

## ABSTRACT

In August 2004 the Director of the Astronomical Observatory in Uppsala asked me to write a report about the old calculators, clocks and telescopes at the Observatory. The only expected problem was described as "Calculator from the 16th or 17th century". I realized that it was not a complete calculator, only a part on top of a box with a mechanism that could rotate the cylinders. It seemed reasonable to believe that the cylinders was placed in a box with vertical and horizontal slits that allowed only one number to be visible on each cylinder.

With this idea in mind I ask for "ancient calculators" on Internet. One alternative was "Napier's bones" that agreed perfectly with the arrangement of the numbers on our cylinders (Napier 1617). The section "Kepler's lost calculator" showed a sketch depicted in a letter from Wilhelm Schickard to Kepler (Hansch 1718).

This sketch corresponded well to my expected image of our calculator and I told the Director about the possibility that we may have parts of "Kepler's lost calculator". He moved immediately the enigmatic object to the safe box. However, in 2024 I realized that we have Schickard's six original multiplication cylinders and an unidentified seventh cylinder. The axis of five of the cylinders is very worn. These five cylinders have numbers similar to Schickard's numbers in his illustrations in Kepler's *Harmonice Mundi*, Linz 1619.

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# Towards an Evolutionary Semiotic Approach to the Sky: From Ecosemiotics to the Semiotics of Culture

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*keywords:* ecosemiotics, landscape semiotics, skyscape.

## ABSTRACT

In a paper read at the SEAC 29 Meeting at Timisoara, I explored the concept of the sky as a semiotic phenomenon, but I needed more space to complete the discussion. While in the previous paper, I discussed celestial semiotics with the help of phenomenology, ecosemiotics, Peircean semiotics, and Gibson's theory of affordances; in this paper, I chose to discuss the topic from the position of cultural semiotics. In such a tradition, the sky is conceived as being analogous to a text with its language. Therefore, in contrast to the previous one, this type of research examines the ways in which specific cultural meanings are invested into astronomical events and phenomena. Since cultural meanings are culture-dependent, and there may be no readable relationship to an object or concept for an external observer, and their association must be learned, the dyadic relationship between the signifier and signified may offer important insights into the nature of celestial signs.

My proposal entails a two-stage operation. When studying hunter and gathering groups, we can semiotically analyze their celestial environment, commencing the process with ecosemiotics. This allows us to infer how these human groups 'read' and interpret their skies. However, when dealing with more intricate groups such as sedentary bands, chiefdoms, or early states, researchers must also incorporate the Saussurean dyadic structure of semiotic inference. These socially more complex groups inhabited transformed or built landscapes saturated with culture-specific meanings, necessitating a more nuanced approach.

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# AN UPDATE ON PROBLEMS IN ANCIENT NEAR EASTERN SOLAR ASTRONOMY AND MYTHOLOGY

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*keywords:* Ancient Mesopotamia and Anatolia, II-I millennia BC, pre-scientific solar astronomy, cult centers, solar worship.

## ABSTRACT

The present discussion tackles several main issues in the pre-scientific conception of the Sun, which are well attested in the records from ancient Mesopotamia and then followed by those from ancient Anatolia. This especially entails issues of if and how various mythological conceptions are related to pre-scientific forms of solar astronomy or to the observable astronomical events. Crucial topics of investigation are as follows: where does the Sun go at night? What are the main theoretical models that ancient Near Eastern mythology uses in descriptions of the sky (heaven)? What is known today about the ancient clusters of individual stars and constellations associated with the zodiac? In this context, different theoretical models, which can be traced back to the pioneers of ancient Near Eastern astronomy, will be presented and re-evaluated, with the aim of moving forward on these issues.

The second part of the discussion will be devoted to solar worship on Earth. In particular, comprehensive studies on the location and use of the former cult centres dedicated to the ancient Near Eastern solar deities have been neglected by research. The latter may be due to the changing history and subsequent destruction of these buildings. Nevertheless, individual buildings are known from ancient records and present-day excavations. The joint study of the ancient Near Eastern understanding of the Sun and of major cult centers of solar deities will contribute to filling the gap between modern science and ancient practices that include pre-scientific astronomy and solar worship.

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# Differences and similarities between star and sky related mythology motifs

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## ABSTRACT

Skylores are an essential component in cultural astronomy. Understanding the culture and creation stories enriches the scope and relevance of Archaeoastronomical studies (Gullberg, 2020; Hamacher, 2023). Cultural knowledge is often only partially available or may sometimes have disappeared entirely. Comparative studies help complete the recorded information in a tradition by analyzing different recurrent myths in a particular region.

The database by Berezkin (2015) is probably the largest database of myth and folktale motifs and contains the absence/presence of over 2200 motifs in almost a thousand different traditions. The database has specificities that make it ideal for areal studies. The motifs cover the whole world, contrary to other databases covering mainly Europe and Eurasia. At the SEAC 2023 conference, we have shown, using state-of-the-art classification tools, that sky-related motifs form clusters very well correlated to the clusters obtained on the complete database.

This presentation will introduce new results showing the similarities and differences between sky-related and star-related motifs in mythology and folklore. Sky-related motifs include motifs broadly connected to the sky, such as thunder, lightning, sun, and moon, and motifs like the one of a ladder leading to the sky. The star-related motifs relate to constellations, particular stars, the Milky Way, or Venus as the 'morning or evening star.' Our study suggests that the distribution of sky-related and star-related motifs is different, and we would like to propose some possible explanations based on analyzing their geographic distribution using classical approaches and data analytics. Using various examples, we will discuss the main hypotheses on why some Starlore motifs are so widespread worldwide and identify factors that stabilize or destabilize motifs geographically and over time.

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# Astronomical terminology at the beginning of the 17th century

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*keywords:* history of astronomy, natural language processing, topic modeling, terminology

## ABSTRACT

In 1543, Nicolaus Copernicus published his magnum opus, *De revolutionibus orbium coelestium* (translated as “On the Revolutions of the Heavenly Spheres”). This pivotal publication represented a notable change in the comprehension of the universe and not only transformed the landscape of astronomical inquiry, which had previously been intertwined with astrology, religion, mythology, medicine, and other disciplines, but also necessitated a complete overhaul of astronomical terminology. Following this significant publication, renowned astronomers such as Galileo Galilei, Tycho Brahe, Johannes Kepler, and Maria Kunitz shared the outcomes of their individual research efforts (Taton and Wilson 1989), frequently writing in Latin.

Previously, Inga Elmqvist Söderlund has had a look into frontispieces and illustrated title pages in 17th century books on astronomy (Elmqvist Söderlund 2010). I have decided to analyse astronomical *termini technici* in a selection of the works mentioned above using topic modeling for a quick overview of the diverse subjects in the large book corpora. This analysis involved utilizing several Python packages (TextBlob, SpaCy, NLTK) for natural language processing (NLP), including frequency and sentiment analysis, as well as word clouds, to detect shifts in astronomical terminology. A similar survey for English books using Google Books n-gram Viewer has recently been conducted by Roberto de Andrade Martins (Martins 2021).

I will present some examples of astronomical terminology and the change over time. While I would have liked the analysis to be more conclusive, it yielded the result that my text selection was not broad enough and that I need to extend the time period and incorporate more texts.

## References

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