



# European Journal of Science and Theology

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## ON THE USE OF FIBRE OPTIC REFLECTANCE SPECTROSCOPY IN THE UV-VIS RANGE FOR THE ANALYSIS OF ORGANIC LAKE-PIGMENTS OF A MID- 16<sup>TH</sup> CENTURY ILLUMINATED ANTIPHONARY

...  
Cochineal lake #1 was produced based on the recipe described in the Bolognese Manuscript as recipe 110 [9]. Also, as is the case for madder and brazilwood lake, W. Jacobs [11] is the most recent literature reference for the preparation of the Cochineal lake. The procedure entails: 0.262 g alum ( $\text{AlK}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$ ) and 0.131 g sodium tartrate ( $\text{Na}_2\text{C}_4\text{H}_4\text{O}$ ) was added to 130 mL of water. This solution was brought to 40 °C. 1.31 g of undyed wool yarn was added to the solution, heated to 95 °C and kept at this temperature for 45 minutes. The solution was left to cool, and the wool was rinsed with water. 0.131 g of ground cochineal was added

to 300 mL water and heated to 40 °C. The mordanted wool was added, heated to 80 °C for 60 minutes while stirring. The wool was then rinsed until the water ran clear and was left to air dry. The dyed yarn was cut into fine clippings approximately 3 mm in length and added to 50 mL of 0.1 M  $\text{K}_2\text{CO}_3$  solution. This was heated to 60 °C. The temperature was lowered to 50 °C and kept at this temperature, while stirring, for one hour. The solution was filtered using Whatman 114 paper to remove the fibres and reheated to 50 °C. A solution of 1.574 g alum and 7.9 mL water, heated slightly to dissolve, was slowly added to the dye solution, still stirring, until the efferves-

cence stopped. It was then covered and left to sit overnight. The next day, the precipitate was filtered using a Buchner funnel and Whatman 114 filter and left to dry in a desiccator [11]. To infer the effect of the alum concentration on the final colour of the lake, a second cochineal lake (cochineal lake #2) was produced by increasing the amount of alum to 0.4 g and reducing considerably the amount of water used during the dyeing process.

[...more at](#)

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## ALBERT HÖFER'S INTEGRATIVE GESTALT PEDAGOGY AS AN ANSWER TO THE CHALLENGES OF CONTEMPORARY CHRISTIAN EDUCATION

**Abstract:** Integrative Gestalt pedagogy is an educational process which focuses primarily on the personal development of students and can be compared to „constant peeling and reapplication of onion layers“. It is aimed at awakening learning impulses in students and responding to them. When applied to religious education, it uses Gestalt structure and principles, such as real-life situations, explicitness and concreteness, as well as methods which mobilize all their senses. In this way, it encourages students to realize their potentials „here and now“ while making them aware of God's salvific action in everyday life.

## PLANCK'S 'SHORT STEP' ARGUMENT FOR DIVINE REASON IN PHYSICS

**Abstract:** One standard argument for a role for divine reason in Physics is that appeal to God is necessary to explain why there are laws of Physics and Mathematics governing the physical universe at all. My own proposal is not a meta-physical proposal of this sort. Rather, I propose that the application of the laws encounters a problem within Physics itself when: (1) the laws are what I will call „optimization-type laws“ of the sort present in the Principle of Least Action or, in its modern mathematical formulation, the Variational Approach to Physics; (2) we assume a postulate: All fundamental principles in a fundamental physical theory must be explanatory and be explanatorily complete for the relevant domain; (3) we assume that the Variational Approach is fundamental vis-a-vis the alternative, Laws-of-Motion Approach; and (4) the relevant domains are those of Classical Physics and The General Theory of Relativity. The problem is due to the backwardlooking nature of least-action explanations of motion: you have to know where a ray of light is going to end up as part of the „boundary conditions“ setting up the set of possible paths, but you then do not have an explanation of why the ray of light gets to that end point. Since this latter explanandum is a part of the explanatory domain of Classical Physics and the General Theory of Relativity, this makes a physics confined to a variational explanatory style incomplete for the relevant domain. But if this style of explanation is incomplete then, I argue, it is not fundamental, contrary to our assumption. By considering the mode of application of the optimization principle to be one, not of immanence-in-nature, but of rational-agent-selects-optimal-possible-world-guided-by-rational-use-of-laws application, then, as required, you do get a complete explanation that falls fully within the variational explanatory style. The argument has both historical (Leibniz and Planck) and systematic dimensions.

## PHRASEOLOGICAL UNITS OF BIBLICAL ORIGIN IN YAKUT TRANSLATIONS OF THE BIBLE

**Abstract:** The article analyses semantic, lexical, structural and grammatical peculiarities of phraseological units of biblical origin in material from three versions of the Bible in the Yakut language (1857, 1898 and 2008). Special attention is paid to the culturally marked components of the Phraseological Units of Biblical Origin (PUBO) reflecting the history, culture, traditions and customs of the Yakut people. The combinatorial and assimilative processes of borrowed vocabulary from the Russian language characterize phonetic features of the Yakut language and, to a certain extent, indicate the entry of biblicalism into the national use.

## FROM PROTESTANT ETHIC TO HEDONISTIC EXPERIENTIAL ETHICS

**Abstract:** Hedonism is a value orientation in life which is often incorrectly and stereotypically equated with modern consumerism, individualistic and narcissistic behaviour patterns, and a relaxed attitude to life. The tradition of Protestant ethics reinforces the belief that hedonistic life activities are in direct contradiction to the values of work and performance. In affluent consumer societies, the original, religiously rooted relationship between work and simultaneous rigid rejection of the hedonistic world full of experiences and entertainment is transformed due to the influence of experiential economy and emergence of late modernist lifestyles. Work becomes an integral part of the value world of hedonism. Exemplified by three various types of non-ascetic lifestyles - predatory hedonism, bourgeois-bohemianism and alternative hedonism - the objective of this study is to support the hypothesis that traditional elements of Protestant ethics, namely relation to work, performance and success, are reflected in various reconstructed forms in late modernity manifestations of hedonistic-oriented lifestyles. In case of predator hedonism, the relationship to work and performance is primarily determined by the incentives of reaching material benefits as a prerequisite of sensual enjoyment of pleasures of life, impulsive spending and achieving consumer goals. Bourgeois bohemians also model the relationship to work and performance as a central life value, however, they don't see it as an instrument of attaining wealth, prestige, fame and fulfilling consumer goals, but they see it as a source of meaningful creative activity and selffulfilment. Finally, in case of alternative hedonists, the relationship to work and performance is moderated by voluntarily living a modest life, reducing workload and stress, and rationalizing life with elements of a creative approach to life, aesthetics and spirituality.

## DEVELOPMENT OF IDEAS OF SOVEREIGNTY SEARCHING FOR THEOLOGICAL FOUNDATIONS

**Abstract:** The article presents research into the political and legal nature of sovereignty based on the interdisciplinary approach. Considering theological ideas related to power, the author shows their influence on the development of the doctrine of sovereignty. The following methods were used in the research: generalization, abstraction, pattern recognition. It is concluded that the variety of theoretical approaches that associate the development of the idea of sovereignty with transformations of its holder can be integrated into a single conceptual model- the vector theory of sovereignty. The concept of sovereignty understood only as supremacy and independence of the state authority in domestic politics, as well as in the international arena, has become outdated. Aggravation of social problems, increasing significance of some social spheres and aspiration of state authorities to expand their influence on these spheres call for even closer attention to these factors in the course of developing new theoretical approaches to the interpretation of the idea under consideration. In a broad sense, sovereignty is a monopoly on governing the social field supported by the hegemony of possessing the mechanisms of reproduction of capital: cultural, social, symbolic and economic.

## THE IMPACT OF ARTIFICIAL INTELLIGENCE ON SOCIETY VIEWS OF ISLAMIC RELIGIOUS LEADERS

**Abstract:** The article discusses the nature of the impact of artificial intelligence on society from the standpoint of religious figures of Islam. The main method was a questionnaire using the Likert method. We analysed how artificial intelligence affects human potential. We revealed the degree of dependence of socio-cultural aspects of the society development on artificial intelligence, identified threats and risks posed by artificial intelligence. Also, the nature of the impact of artificial intelligence on religious activities was determined. The hypothesis was put forward: the influence of artificial intelligence on society is diverse, multifaceted with positive and negative biases, the depth and nature of the impact of which have not been fully studied by Islamic religious figures. The public is concerned about the risks of harming



people and society. The advantage of this article is to identify the structure of Muslim views on the nature of the impact of artificial intelligence on society, as well as to identify the ratio of positive and negative aspects of its influence. For the first time the authors examined the attitude of imams to artificial intelligence according to given indicators. The obtained results can serve as the basis for further research in the issues of the correct and humanistic use of artificial intelligence in the social sphere. Moreover, they may become the basis for the formation and development of a system of cultural and religious values in the digital economy.

#### SCIENTIFIC COMMUNICATION IN MEDIATIZED WORLD THE VISUAL INTERFACES OF SCIENCE AND THEOLOGY

**Abstract:** The aim of the article is to answer the following questions: what can digital media that are focused on multi-*plication* of visual content bring into this complexity of comprehension? Can we imagine that Science will be dominated by visual forms? Can an image be implemented into cognition and scientific dispute in this era of its ever-growing dominance? Is an image already a full-fledged interface of science, or are scientists strongly attached to textual interface, to the linearity of an argument contained in the alphabetic characters, forming words, only from time to time enriched by an image - an illustration, a diagram, a graph - where words reach their limits of their effectiveness as information and knowledge carriers? Do the digital media and the opportunities they generate, open scientists to visuality? The qualitative research conducted by the authors shows that scientists see the possibility of effective use of visual forms in scientific publications on the Internet. However, they see visuality as a supplement to the scientific text. They mention the appropriate methodology, the use of the review process and the scientific apparatus as the basic conditions for the scientificity of publications. In the future, presentation of results and arguments based on visualizations will have to exceed the habits that accompany the process of editing printed magazines, established citation standards, bibliographic specifications and – what is extremely important - habits associated with the reception of the „printed text“. Visibility will have to be present in scientific publications at the stage of preparation, conception and publication, not only as an image, but as an integral part of the publication and the process of its creation.

#### INFLUENCE OF CATHOLIC MEDIA ON CITIZENSHIP

**Abstract:** The aim of the article is an attempt to grasp the ways of engaging the society to participate in shaping proper citizenship attitudes. It focuses on the period between the wars and the Church press. The research process of the activity of the weekly „Gość Niedzielny“ (Sunday Guest), based on the analysis of media content, allowed to create a proposal to implement the model of social influence read from the past to manage the media messages of contemporary Catholic media. This would contribute to an increase in the activity of the lay faithful in the public sphere and taking responsibility for the shape of social life in the face of contemporary challenges. A clear example of this is the necessity for adaptation of the European Union countries in connection with the migration crisis and the accompanying blurring of the concept of European identity, especially in regional communities. It seems that historical experiences can be extremely helpful in this context.

#### JURGEN HABERMAS AND RUSSIAN PHILOSOPHER-THEOLOGIANS DIALOGUE THROUGH THE CENTURY

**Abstract:** During the era of the emergence of Sociology as a science of the early 20<sup>th</sup> century, the so-called Russian philosopher-theologians subjected the foundations of the Sociology of religion to powerful criticism. In opposing the idea of socialism, their counter-arguments turned out to be prophetic since the failure of the socialist society took place largely according to their predictions. However, at the time, the platform of scientific atheism emerged as dominant, thus forming the methodological atheism of the Sociology of religion. A century later, Jürgen Habermas was compelled to take cognisance of these two opposing worldviews of secular and religious societies. In this article, while the authors do not examine the reasons that prompted the pre-eminent contemporary sociologist of religion to return to this analysis, an attempt is made to compare the arguments of Russian philosopher-theologians of the early 20<sup>th</sup> century with those of the respected contemporary scholar. The aim of providing such a comparative analysis is to try to understand to what extent the 21<sup>st</sup> century views are consonant with the theological platform of the vision of social reality proposed by the Russian theological position of the early 20<sup>th</sup> century.

#### MYRRHA LOT-BORODINE THE FIRST FEMALE ORTHODOX THEOLOGIAN

**Abstract:** The article is dedicated to Myrrha Lot-Borodine who is considered to be the first female Orthodox theologian. Her pioneer studies in patristics, especially that concerning deification and Nicolas Cabasilas, initiated researches in this field in milieu of Catholic French thinkers. I also discuss the contribution of Lot-Borodine into the ecumenical movement of the 20<sup>th</sup> century. Eventually, I pay attention to her attitude towards Russian religious philosophy.

#### AN EARLY ROMAN MOSAIC FLOOR IN THE JEWISH VILLAGE OF MAGDALA, GALILEE

**Abstract:** Mosaic floors during the Early Roman period in Galilee are uncommon decorations in settlements inhabited by a population which identified with the Judean ethos. Magdala is located in the western shore of the Sea of Galilee; it was founded during the Hellenistic period. The main occupation of this settlement occurred during the Early and Middle Roman periods. The population started to abandon these regions during said periods, and the population moved towards the southern areas, where late Roman remains can be found. In 2011 a mosaic floor was discovered in what has been identified as a ritual area. Art, as a cultural expression, is the key to understand ancient daily life, ethnicity, economic status and religious beliefs. The material cultures of the Galilean and Judean ethos during the First Century share a common and unique artistic style that differs from the one that existed in rest of the provinces of the Roman empire: it was created with Greco-Roman techniques, but depicts exclusively aniconic and geometric symbols; this produced a new style known as Herodian art. This paper aims to give one more case of study on ancient Magdala, its inhabitants, and its cultural identity, through a quantitative and qualitative analysis of the mosaic floor found in one of the most characteristic structures of the site, the mikva'ot, or ritual baths area.

#### ANALYSING THE MEASURE OF CHRIST IN THE CATHEDRAL OF VALENCIA AND ITS GENUINE ITALIAN PICTORIAL TECHNIQUE

**Abstract:** This paper reports the studies carried out on the mid-14<sup>th</sup> century polychrome cloth known as the Measure of Christ („La Mida“ or „Longitud de Cristo“) currently stored in the Chapel of Saint Michel in the Cathedral of Valencia. This odd sendal depicts the image of Salvador Mundi, in a merciful and blessing but distant and somewhat inexpressive attitude. He is holding an open book in his left hand and stays above the terrestrial globe. The importance of this study



relies in the knowledge of the pictorial material of the cloth, in understanding the technology used for the pictorial execution and the detection and dating of previous restoration interventions. The purpose is to confirm or reject the hypothesis that the artwork could be made by a foreign artist, probably an Italian, or at least by someone who was very familiar to the Italian pictorial tradition. In fact, the results allow us to certify that the painter mastered some specific cloth painting techniques described by Cennino Cennini.

#### ON THE USE OF FIBRE OPTIC REFLECTANCE SPECTROSCOPY IN THE UV-VIS RANGE FOR THE ANALYSIS OF ORGANIC LAKE-PIGMENTS OF A MID-16<sup>TH</sup> CENTURY ILLUMINATED ANTIPHONARY A CHEMOMETRIC APPROACH

**Abstract:** The dye source of the organic pink-lake pigments used to produce reddish-to-pink paints present in six representative illuminated capital letters of a mid-16<sup>th</sup> century illuminated Antiphonary housed in the Biblioteca Pública de Évora, Portugal - the Manizola 116c - was studied in-situ by non-invasive Fibre Optic Reflectance Spectroscopy (FORS) in the UV-VIS range. Historically accurate reproductions of pink lake pigments were used for calibrating the Principal Component Analysis (PCA) where historical FORS spectra were projected. The chemometric approach indicated the use of cochineal to produce the reddish (cochineal acidic form) and pink-purple (cochineal basic form) hues to obtain the painting layer. Two representative micro-samples were analysed by LC/DAD/MS, confirming the use by the illuminator of cochineal in its acid-basic equilibrium to produce different shades of reddish-to-pink colours across the manuscript.

#### IMMERSIVE VIRTUAL REALITY TO VISUALISE THE VISIBLE AND INFRARED LAYER OF A MEDIEVAL ALTARPIECE

**Abstract:** This article describes the conception, development and implementation process of an interactive, immersive virtual reality experience for a museum environment, which allows viewers to virtually explore the „Retablo de San Jorge del Centenar de la Ploma“ in detail and in its entirety. This altarpiece is a pivotal work in the International Valencian Gothic style. It is also an example of Relocated Heritage, which has belonged to the Victoria & Albert Museum in London since 1864. Currently, it is exhibited there in the room housing the Raphael Cartoons. The fact that it is impossible to physically view this work in the Museo de Bellas Artes de Valencia along with other medieval Valencian Gothic altarpieces has motivated the creation of this virtual reality experience. This will enable researchers and visitors interested in this period to virtually examine the work. To produce this experience, different data-gathering technology has been used, such as visible and infrared radiation, photogrammetry and computer design programs like Blender and Unreal Engine. For the viewing, high-range computer equipment and virtual reality headsets have been implemented, which totally immerse the user in the created environment. In this experience, the viewer is taken on an aerial tour of virtually reconstructed 15<sup>th</sup> century Valencia and finally brought to the altarpiece, where a close examination can be made. This examination implements both the visible light spectrum and that of infrared radiation, enabling the contemplation of the iconography of each of its scenes and characters and the detailed study of the techniques used in the creative process of this emblematic altarpiece.

#### SMARTPHONE COLORIMETRY OF FINE-PASTE WARE IN HINDU-BUDDHIST RITUALS

**Abstract:** A smartphone and a commercial mobile application named ‘Colorimeter’ are combined for the colour classification of fine-paste ware used in Hindu-Buddhist rituals. With high L\* values in the CIE colour space, the potsherds from 3 Buddhist temples as well as an ancient production site in southern Thailand are consistent with the white fine paste ware. By contrast, the artefacts from an archaeological site in north Sumatra of Indonesia are characterized by much lower L\* and b\*. Classified as the red fine-paste ware, the artefacts from Myanmar and India exhibit uniquely high a\* values at their outer layer. The RGB space as well as chroma and hue angle can complement the CIE space in describing colours of religious artefacts but they are only effective in the case of distinct colours.

#### THE CAPITAL OF ‘MAGISTER GUILIELMUS’ EXPOSED IN THE COLLE DEL DUOMO MUSEUM IN VITERBO HISTORICAL-ARTISTIC ANALYSIS THROUGH 3D GRAPHIC DOCUMENTATION

**Abstract:** The present study is focused on the study of a medieval marble capital found in 1987, during the restoration works on the Romanic church of Saint Silvestro in Viterbo, a town in Northern Lazio (Italy). The carvings on the capital represent the Adoration of Magi and on the artefact base a signature in Gothic characters is readable thus allowing its attribution to ‘Magister Guilelmus’. The artefact, now exhibited in the archaeological section of the Colle del Duomo Museum in Viterbo, must have originally had three sculpted sides, but currently, one is completely lost. The paper reports the results of both arthistorical analysis and 3D model realization, the latter being particularly relevant to the stylistic comparison of the artefact. The two approaches of the research are complementary, thus allowing defining the artefact from the historical-artistic point of view and advancing some reconstructive hypotheses concerning the parts of the capital which are no longer preserved. Finally it was possible to date the capital back and set it into the cultural context of the 12<sup>th</sup> century.

#### HASMONEAN AND HERODIAN SYMBOLS ON THE ANCIENT COINS OF MAGDALA, IN GALILEE

**Abstract:** In Magdala during the archaeological investigations, directed by the Anahuac University from 2010 to 2017, around 2,500 coins were found in the excavated areas. A large number of the Jewish coins found in Magdala were minted in Jerusalem by the Hasmonean dynasty and the Herodian dynasty. These coins shared Jewish and Greek-Roman symbols. The symbols represented the political, ideological and social power that could have influenced the settlement during the 1<sup>st</sup> centuries BCE-CE.