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CULTURAL ASTRONOMY DEGREE IN HONDURAS: THE NEXT FORMATIVE STEP FOR THE DISCIPLINE

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ABSTRACT

The need for a university training program in Cultural Astronomy has been pointed out by several academics for years. The arrival to the discipline of professionals from different fields has resulted in a lack of standardization in the field studies. This paper describes the process of design, creation and implementation of the first Cultural Astronomy Degree carried out by the Department of Archaeoastronomy and Cultural Astronomy of the Space Science Faculty of the National University Autonomous University of Honduras (UNAH). The conception of the program through the analysis made of the academic tendencies in Cultural Astronomy on a global scale is summarized below. The program itself is described, detailing each of the subjects and modules that make up the program and the different competences that complement the knowledge of the graduates. Finally, the academic and social objectives pursued by the implementation of this program in Central America are explained.

KEYWORDS: Cultural Astronomy, Degree, Inclusion and Equity, Cultural Pertinence in Education

1. INTRODUCTION

Development and conceptualization of the discipline by Stanislaw Iwaniszewski in the 1990s has provided the framework for disciplinary growth and methodological standardization (Iwaniszewski 1990, 1991, 1994). We agree that there are, since its disciplinary inception, large and numerous challenges to achieve conformity of the field, but perhaps the most fundamental one is the need for a common and coherent academic formation possibilities that will allow quality standards in studies by different professionals in the area around the world, Duane Hamacher made an interesting explanation of the heterogeneous path to became a professional in Cultural Astronomy through academic studies (Hamacher, 2014). Making this possible was the motivation behind the development of the very first Cultural Astronomy degree, made possible through a curriculum contextualized in the disciplinary historical moment and Central American, specially applied to the case of Honduras, social reality which is shared by most countries of Latin America and the world.

This academic program has been developed over the last three years by the Archaeoastronomy and Cultural Astronomy Department at Universidad Nacional Autonoma de Honduras (UNAH). It is the result of a condensed experience in research, outreach and teaching of the department's nine years of existence.

Figure 1: Global Spatial distribution of Cultural Astronomy academic programs (1: Universidad Nacional Autónoma de Honduras, 2: Colgate University, 3: Politecnico de Milano, 4: Universidad Complutense de Madrid, 5: University of Leicester, 6: University of Wales, 7: Universidad Nacional Autónoma de México, 8: Ilia State University)

The program's design process was initiated by means of a diagnostic of similar educational experiences worldwide (Mejuto, 2015). Following this vision, we focus on the Honduran and Central American reality, including -as a result- equity and inclusion values and competencies. The aim to include this is that graduated students work as promoters of social changes through cultural astronomy. This approach will break the classical paradigm of researcher and object of study in ethnoastronomical studies.

2. METHODOLOGY

Prior to the curriculum design process, a comparative approach to the global tendencies and academic programs was developed focused in the following main parameters:

- Only European and American universities were considered because we couldn't find any information regarding currently formal studies in other countries or continents.
- Only official university courses were taken into account, non-periodical courses or workshops were not included. Usually this non formal or periodical courses have a very different learning outcomes than a degree.

These subjects were divided in 4 groups: elective subjects in undergraduate program, selective subjects subjects in posgraduate program, subjects in master program and subjects in PhD program subjects. Among the parameters that were included in this comparison were also taken into account if previous studies are needed to study the subjects and, if so, which and to what degree. As a result of this comparison we could make a spatial distribution map (see Figure 1) which gives a general idea of

which cultural areas are more commonly studied and by which countries' researchers.

Also, in Table 1 the distribution by type of study can be seen. For further research and information the institutions and programs are shown in original language. If type of academic programs does not appear means it is program independent or it is a complete program itself.

Table 1: Academic programs and subjects [E=Elective, S=Selective, M=Mandatory]. Subjects and institutions are in original language for comparison.

	SUBJECT	TYPE	INSTITUTION
UNDERGRADUATE	Introducción a la Arqueoastronomía	E	Facultad de Ciencias Espaciales, UNAH
	Introducción a la Arqueoastronomía Maya	E	Facultad de Ciencias Espaciales, UNAH
	Astronomy in Culture	E	Colgate University
	Comparative Cosmologies	E	Colgate University
	Archeoastronomia	M	Scuola di Architettura Civile, Politecnico de Milano
POSGRADUATE	Exploración geofísica y orientación topoastro-nómica de yacimientos arqueológicos	S	Facultad de Ciencias Físicas, Universidad Complutense de Madrid
	Seminarios en Arqueoastronomía	S	Facultad de Ciencias Espaciales, Universidad Nacional Autónoma de Honduras
	MA Cultural Astronomy and Astrology	____	Sophia center for the study of cosmology in culture, University of Wales
	Ph.D program in cultural astronomy and archaeoastronomy	____	School of Arts & Sciences, Ilia State University
NON - FORMAL	Diplomado en Arqueoastronomía Maya	____	Facultad de Ciencias Espaciales, UNAH
	Seminarios en Arqueoastronomía	____	Escuela Nacional de Antropología e Historia, Universidad Nacional Autónoma de México
	School Research Seminar Series	____	School of Archaeology & Ancient History, University of Leicester

Once this first comparison of the academic programs was made, a survey that explored the needs and interests of the future students of the Degree in Cultural Astronomy was carried out, as well as those of their future employers. To this end, this survey was conducted on the following focal groups: high school students of the final year, university students of the National Autonomous University of Honduras, students of subjects taught by the Department of Archaeoastronomy and Cultural Astronomy, field professionals, potential employers in the country and the public general. The distribution of the samples made between the focus groups can be seen in Figure 2. The distribution of the country of origin of the surveyed professionals is shown in Figure 3.

3. RESULTS AND DISCUSSION

3.1 Cultural Astronomy in Academy

Currently there are very few examples of academic programs in cultural astronomy (see Table 1), in comparison with other disciplines. As previously mentioned, their inclusion by universities as taught programs level is still minimal. Either way, they can be divided into three major groups: undergraduate studies, postgraduate studies and non-formal courses.

Among the undergraduate studies we have five related to cultural astronomy that are divided into four general elective subjects and one compulsory in a degree from another discipline. Among the postgraduate studies we have four that are divided into an optional subject in a master's program from another discipline, a mandatory subject in a master's degree from another discipline, a master's degree in cultural astronomy and a doctoral program in Cultural Astronomy. Finally, as non-formal studies we have a diploma and 2 research seminars.

In Europe the most traditional studies in Cultural Astronomy are located in England, in the Faculty of Archaeology and Ancient History of the University of Leicester. Their courses in Archaeoastronomy con-

tain a general elective subject that covers introductory aspects of the discipline and is being managed by Prof. Clive Ruggles. It is an 11-week course divided into four thematic blocks: nature and development of Archaeoastronomy, Astronomy in prehistoric Britain and Ireland, Archaeoastronomy of the world and field trips.

Also, general electives are the subjects of the only university department of the discipline, the Department of Archaeoastronomy and Cultural Astronomy in the Faculty of Space Sciences of the National Autonomous University of Honduras. These two subjects are: Introduction to Archaeoastronomy and Introduction to Maya Archaeoastronomy. As its name indicates, they are of an introductory nature with a strong knowledge component in Mesoamerican cultures. The subjects are taught 3 times in the academic year with several sections for each of the subjects, exceeding 300 students in the course in both cases.

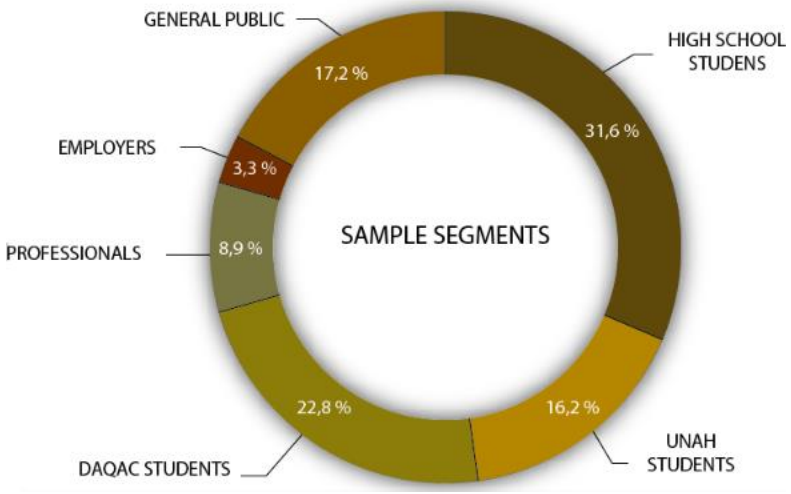

Figure 2: Sample segments for pre-program survey

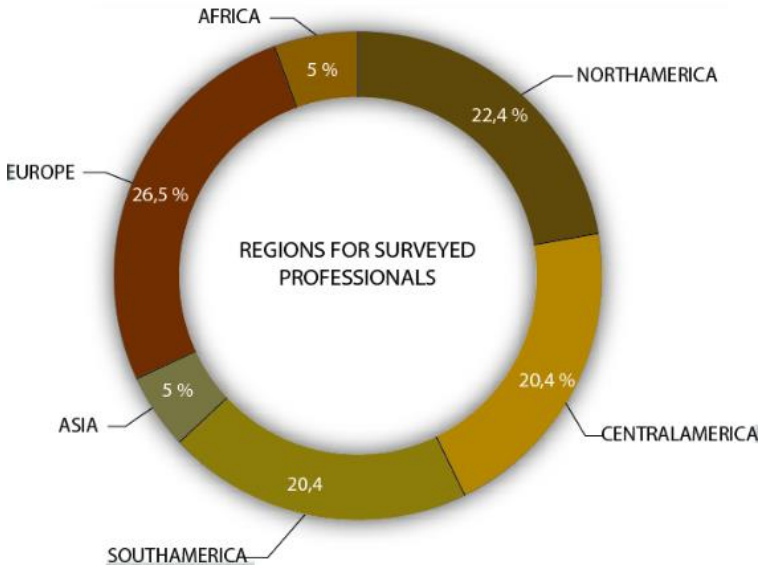

Figure 3: Professionals asked by country for pre-program survey

The following course, Archeoastronomia, taught by Giulio Magli, is included in the curricula of the Architectural Design degree program of the Polytechnic Institute of Milan. It has a strong component of Roman and Egyptian cultures, because they are the areas in which Magli has been researching during his professional career.

The latest undergraduate subjects are those taught by Prof. Aveni teaches at Colgate University within the program for Native American Studies. The two subjects: Astronomy in culture and Comparative cosmologies are part of the elective subjects eligible for the graduates of the Native American studies program, as it is obvious, they deal with aspects of American Indian cultures and do not deal with other cultural or geographical niches.

Now changing to postgraduate studies, we will begin with the optional subject Geophysical explora-

tion and topoastronomic orientation of archaeological sites, within the Master in Geophysics of the Faculty of Physical Sciences of the Complutense University of Madrid. It is taught by María de Gracia Rodríguez-Caderot and María Luisa Cerdeño who, in turn, run the research group in archaeoastronomy of the Universidad Complutense de Madrid, with which Juan Antonio Belmonte directs in the Canary Islands are the two current research groups in the most relevant field in Spain.

Again, in the Department of Archaeoastronomy and Cultural Astronomy of Honduras we find a subject, Seminars in Archaeoastronomy, within the program of the Central American Regional Academic Master's Degree in Astronomy and Astrophysics (MARCAA). It is a subject based on research carried out in the department itself and aimed at students knowing the basic disciplinary notions as well as the techniques of Cultural Astronomy.

The two following programs are the only two cases that we have until the moment that can be considered as degrees in Cultural Astronomy. This is the Master in Astronomy Culture and Astrology taught since 2002 (Brady and Bird, 2013, Campion and Malville, 2011), and since 2008 only in virtual mode, within the Faculty of Archeology, History and Anthropology of the University of Wales. The master's degree consists of 180 ECTS credits, with compulsory modules of 20 ECTS credits each: Introduction to cultural astronomy and astrology, Research methods: Ethnography and field work, History of astrology. The course is completed with the choice of one of the three itineraries: The inner cosmos, Stars and stones and Earth and Sky, and a subject from one of the other two remaining along with a dissertation.

Finally, the PhD program of the School of Arts and Sciences of the Ilia State University that includes in its curriculum: Special Course of Astronomy, Cultural Astronomy and Archaeoastronomy, Landscape Archaeology, Ancient History. According to their curriculum information that shows the doctorate, to be a free 4-year program.

3.2 Cultural Astronomy degree

The definitive Cultural Astronomy degree program is a competency-based program and it will consist in a 47 subjects grouped into 4 major groups that correspond to the different epistemologies that make up the interdisciplinary nature of Cultural Astronomy: Social Sciences, Natural Sciences, Specific subjects in Cultural Astronomy and other subjects related to other disciplines and some subjects that are of forced inclusion due to the Honduran educational system (Honduran History, Spanish, Sociology, Philosophy, English, 2 elective subjects in sports and natural sciences).

The subjects are grouped as follows:

Social Sciences module:

Anthropology, Mathematical Logic, Fundamentals and Methodology of Archaeology, Cultural History, Ethnology, Fundamentals of Linguistics, Physical Geography, Human Geography, Tradition and Oral History, Ethnohistory, Epigraphy, Cultural Heritage and its Management.

Natural Sciences module:

Mathematics, Geometry and Trigonometry, Calculus, Vectors and Matrices, Physics, Introduction to Astronomy, Position Astronomy, History of Astronomy and Statistics.

Cultural Astronomy module:

Foundations of Cultural Astronomy, History and Theory of Cultural Astronomy, Foundations in Epistemology, Cultural Astronomy in Oceania, Africa, Asia, America and Europe, Methods in Cultural Astronomy, Ethnoastronomy, Compared cosmologies, Cultural aspects of calendars, Fieldwork, Research seminar and 3 elective subjects -between Urbanism and Astronomy, Astronomy in the art and architecture, Cultural aspects of the mesoamerican ballgame, Nahuatl, Indigenous and autochthonous honduran languages, Mesoamerican languages, Archaeoastronomy in Honduras, Cultural Heritage in Honduras and Cultural Tourism.

In addition to these subjects a series of cross module competences will complement the training of the graduates. These competences will be: Outreach, Research and Diversity, inclusion and equity.

4. CONCLUSIONS

This formative experience is intended to cover one of the most pressing needs in Cultural Astronomy, the need of standardization of professional academic formation. The inclusion of formative processes in the academic environment is key in order to obtain Cultural Astronomy recognition between archaeologists, astronomers and other disciplines that traditionally have a very difficult relationship with Cultural Astronomy. Additionally an interdisciplinary and multidisciplinary amalgamation will provide best tools for future professionals to obtain the ultimate disciplinary development. Finally, a standardization of the methodologies will avoid the one previously referred by Iwaniszewski as "methodological chaos" allowing a dialogue between field professionals.

Professional possibilities were also considered in the design process, including most common work areas for cultural astronomers nowadays. The program reflects a mesoamerican approach but can be easily adapted to any cultural context and can be developed in any country; this is possible because in

its very core, the program includes the global tendencies of the discipline and labor niches.

The process of creating this program is based on the experience accumulated by the Department of Archaeoastronomy and Cultural Astronomy at Universidad Nacional Autonoma de Honduras for almost ten years. This academic department is immersed in the Central American social and cultural reality and as consequence it is devoted to social development of the Central American countries. Trying to achieve this aim we search for a deep understanding of contemporary peoples and their cultures in the mesoamerican region with clear archaeological roots. This peoples have been historical and systematically excluded by a postcolonial society. It is expected that a respectful and non-colonial based approach to their astronomical heritage will have a positive impact on the social recognition improving public policies that benefit the excluded original peoples and, therefore, to the entire population in the Central American society.

To conclude, just commenting that the implementation of the program is at the expense of final approval by the management of Higher Education in Honduras and it is expected that it will be approved in 2018.

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