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THE RELATIONSHIP BETWEEN HUMAN AND APPLIED SCIENCES IN ARCHAEOLOGY AND ITS ROLE IN EXCAVATIONS AND ARCHAEOLOGICAL STUDIES

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Abstract

With regard to the recent trend of science in detecting the archaeological remains that are still preserved in the ground, we know that the archeologists were and still rely entirely on the manual excavation, with what in this excavation of hardship and intransigence, and it remained so until the turn Some of these researchers have recently come to the modern science to help them and facilitate their work and provide their effort, time and money. They focused on the places where the devices can indicate the possibility of having traces in them. This trend has taken place since the last century when science directed its research and studies into intangible matters, especially electromagnetic waves and X- and Cosmic, and others in constant attempts to benefit from the application of them, and has undoubtedly reached many achievements in this regard.

As a result of this, the auxiliary sciences have emerged to reveal the buried treasures or treasures in the ground without resorting to manual drilling, and the auxiliary sciences of archaeology have an effective role in the study of man and his civilization, including human and applied sciences. In order to obtain adequate information on human beings and civilizations throughout the world.

The archeologist should be familiar with the archeological sciences that assist the researcher in the interpretation and rooting of phenomena. The auxiliary sciences can be classified into several categories in the field of historical and human sciences, environmental geosciences, mathematical sciences and technical and technical knowledge.

In any case, it is not possible to limit the sciences that assist archeology. The archeologist, like the medical surgeon, fulfills all the sciences and improves his work by the development of techniques. In this regard, it is possible to say that human biology is a science that provides clear services for archeological research, in terms of its study of ancient bones and mummies, Physical characteristics, diseases they have experienced and methods of ancient medicine.

Key Wards: Archeology, Manual excavations, Treated Treasures, Applied Science Laboratory, Historical Sciences, Humanities, Environmental Geosciences, Mathematical Sciences, Technical Knowledge.

1. Anthropology and Ethnology

Anthropology [1] and ethnology such as history, are among the most important disciplines in the field of archeology. The former deals with the natural historical development of man, the second examines its cultures, customs and traditions.

The best of this science is what the American researcher Margaret Med wrote: "We are half the human and biological characteristics of humankind over time and elsewhere, and half and analyze the local biological and cultural qualities. As well as through the use of sophisticated models, standards and methods. We also concern the description and analysis of social and technological systems, and also the study of the human mind, creativity, beliefs and means of communication" [2].

The American concept of anthropology, which means, in their view, the study of biological and cultural aspects alike, and the Americans use the term "biological anthropology" to refer to the study of the organic or biological aspect of man, while using the term "cultural anthropology" to express the study of social aspects Cultural, and all that relates to ancient civilizations is the field of archeology, so archaeology in its content is part of cultural anthropology, and the science of the study of ancient languages (Philology) falls within the same scope [3].

Under the American concept of anthropology, two important fields of study are ethnography, a descriptive study of the patterns of life, customs, traditions, religious values and arts of a particular group or people during a given time period, and ethnology, Analytical and developmental study of all ethnographic studies. While the European concept of anthropology and its fields differs from the American concept, the European concept is limited to the fact that anthropology refers to the fields of natural history of humans and human breeds of genera, species, anatomical characteristics, biological processes and this relationship by identifying the functions and social roles of each species.

In the face of these complexities of the concept of anthropology, the concept of anthropology was gradually limited to the concept of natural anthropology, which was in keeping with the European concept. Nevertheless, anthropology in archaeology could be exploited through great human structures and the identification of human breeds or races possessing archaeological finds, and the sex, age and condition of the skeleton owner can be determined through the anthropological study [4].

Ancient archaeology means, in particular, the collection and analysis of human remains

and human remains, which can be inferred from the historical sequence of human races at that time when there was no writing and no written documents.

This section of cultural anthropology examines the early origins of human cultures, especially extinct cultures. Ancient archaeology is perhaps more common among branches of anthropology, and its findings may have been more familiar to the average person than those of other branches. For example, the name (Tut Ankh Amun), one of the ancient kings of Egypt, is almost known to the general populace [5].

Although the first objective of this research is to obtain information on ancient peoples, the ultimate goal is to help readers and learners understand the processes related to the growth, prosperity or collapse of cultures and civilizations, and thus recognize the factors responsible for those changes. Anthropologists know that writing appeared about four thousand years BC, and what has been written from that date is known to scholars and researchers, and it is through these written effects that much is known about man [6].

The world of archaeology depends in its study on the remains left by the ancient man, which represents the nature of its cultures and elements. Archaeologists have come up with precise methods to excavate the layers of the earth, which are expected to have cultural remains. They also developed accurate methods to examine, locate, categorize and identify them, and then compare them to each other. Archaeologists, using these approaches, can extract much information about ancient cultures, their changes, and their relationship to each other.

Anthropologists use the remains of materials as key data for the use of scientific and theoretical knowledge. Archaeologists analyze urban patterns and developments, exposing waste to conditions of consumption and activities.

Wild cereals and home grains, for example, have different characteristics that allow archaeologists to distinguish between the plant that has been brought, and which has been taken care of locally. The examination of the bones of the animals reveals how old these animals were slaughtered and provides other useful information to determine whether these species are wild or domesticated. Archaeologists, through their research on this information, reconstruct the models of production, trade and consumption.

While the obvious objective of archaeological research is to supplement our knowledge and information about the past of man, the ultimate goal is to help us understand the processes related to the growth, prosperity and collapse of civilizations and to recognize

the factors responsible for these historical phenomena. The results of archaeological studies related to evolution have become familiar to all anthropologists, who study the phenomena of cultural change [5].

Therefore, archaeologists resort - Anthropologists - to benefit from the research of geologists and climate, to verify the (identity) of the remnants they discover, and the history of its existence. Archaeologists also collaborate with specialists in natural anthropology, due to the large presence of human fossils in excavations, with cultural remains. Modern archaeologists have succeeded in using (radioactive carbon) as a means of accurately determining the age of residues [7].

In general, ancient archaeologists attempt to discover that part of past history that has no written records, and the ancient archaeologist accepts his field enthusiastically because his work is accompanied by a series of tempting motives and stimuli, such as the desire to conduct interesting scientific research, and the possibility of finding valuable treasures [5].

Archaeology studies the history of man and the accompanying cultural changes, in an attempt to build a full picture of the social life of ancient societies, prehistoric societies, and if archaeology depends to a certain extent on history, it differs from the history of It does not study the civilized stages of history, but rather examines those periods in which human society lived before the invention of writing and the codification of history.

2. Sociology

In their study of a site or area, the archaeologists attempt to identify the nature of the society in which they lived by developing information from the study of the discovered archaeological material. For example, the nature of the buildings on the site and its area indicate that there was evidence of a ruling class and a structured society. If a building that can be described as a temple is found, it indicates that people worshiped a god and practiced religious rituals. We study it through archaeological excavations in ancient tombs.

As for the importance of archaeology for sociology: Before starting to explain the importance of archaeology in sociology, we must point out the existence of an integrative relationship between three sciences: archeology, history, sociology. The science of history and sociology depends mainly on archaeology in providing them with the required information.

The connection between sociology and history is evident in the archaeology of the facts about the groups in historical times, whose effects were left in the form of texts of manuscripts or works of art or ancient manuscripts and manuscripts, the historian can not face the past alone directly, but is confronted by the effects and texts left behind and archaeology is the science that depends on the collection and analysis of these wastes to explore the fact of the past, if it is clear that the work of the archaeologist is not limited to the discovery of the effects of the former nations, but an analysis of what is revealed, for example; if there is on the floor of one of the buildings discovered remains burning, it may indicate the presence of a stove in this place, or if found many skeletons of this signal to the presence of a cemetery in the place, and the large number of pottery shards and pottery at the site with the presence of the remains of grain fossil, may indicate that the place was a warehouse for grain, and so on.

It can be said that all that has been mentioned about the role of history in the science of science, this role is directly linked to archeology, and to become a relationship of archaeology with sociology is clear must be mentioned the following points:

-IbnKhaldun (the founder of sociology) took history not only to study a novel, but also to write history in the light of a new method of explanation and analysis. The study ended with a kind of social philosophy and gave history a social definition. Our understanding of the social status of man (civilization), the phenomena associated with this civilization, the knowledge of primitive life and the refinement of morality and the spirit of family and tribe.

- Sociology aims to study the social realities and phenomena of the society to stand its elements to learn the general principles of social life.

- The objectives of sociology to study the origin of social phenomena and developments that passed through the ages and factors that led to this development and helped him.

-A sociological goal is also to identify the extent of interaction between individuals and groups.

- The interdependence between history and sociology is the interdependence that characterizes human action. It is both a social act and a historical act. In this history, sociology draws on theoretical principles, concepts and perceptions, which it uses as tools for historical research, Sociology in turn derives from history the material it has in understanding current social conditions.

From the above, it is clear to us that what is revealed during the archaeological excavations, and analyzes provided by archaeologists serve as the main stone from which the historian starts writing about an era of the ages, and the starting point of the world of society when he looks for the nature of society in a civilization or an age, And how the relationship between the members of society, and then provide the reasons and motives behind the spread of a certain social phenomenon in previous times, and also the careful study of the old society has an effective role in avoiding many of the mistakes committed previously, thus contribute to the development of solutions to societal problems.

For example, when studying one of the ancient epics or myths that are revealed by the prospectors' digs, we can analyze society at the time, by extracting the most important social values and phenomena and human attitudes, and dealing with each other and identifying the political, economic and social life of that community. These texts, and what was then preoccupied the community of concerns and ideas.

3. Historical Geography

Since the end of the last century, historical geography has imposed itself as a self-sustaining specialization that can open new horizons to research in the history of the ancient and medieval eras and deepen knowledge about a number of historical phenomena associated with these two epochs. In the professional community, attention has increasingly been drawn to the importance of human interaction in the field and to the treatment of the interplay between geography and history in the development of historical knowledge, to the extent that some have not hesitated to acknowledge that ancient and medieval history begins with historical geography.

The relationship between geography and history has influenced and influenced the two sciences, the emergence of historical geography and the appearance of geographical history or coinciding with it. With the development of science and its openness, it became necessary to adapt disciplines, and this is what happened between history and geography. And helps to acquire a research methodology we feel it is right to delve into its study.

Historical geography can be defined as the geography of the past through time. Historical geography tries to give us a picture of the components of the field and its evolution over time and its dynamics. The geographical area is subject to changes over time. This makes man interact with this change. Therefore, the human factor can not be isolated from the field. The historical geography tries to study all the changes in the field and relate them to the temporal factor, which is one of the pillars of historical research, and thanks to this openness over time, historical geography has achieved remarkable development. It is correct to say that any geographical phenomenon Human or natural phenomenon that has emerged in history and evolved, its present appearance is only a continuum of a continuum derived from its existence and its meaning from the past.

Some researchers have argued that historical geography has added new things to historical and geographic research, as it attempts to identify types of architecture, how they were distributed, and the type of activity and population distribution. This is reflected in the change that occurs in the field, ie the Earth when earthquakes, volcanoes, hurricanes and water immersion cases of several areas and geographical areas were populated, and this does not seem to the average person can not register, because the age of the human is shorter than the emergence of this change.

The change takes place in a slow way that makes it visible only after generations, while the change in cultural appearance or human civilization does not require proof of its existence. The establishment of reservoirs and dams on the riverbeds, which control the water of the river streams, can not be exploited in agriculture and the rest of his life activities, and the manifestations of civilization and the establishment of villages and cities, all things recorded history and witness with our eyes across the globe [8].

Thus, geography is the science that studies the earth as a homeland for man. From this, the study of the field in its relation to time gives a qualitative addition to the study. This is what historical geography used. Carl Ritter [9], [10], [11] during his lifetime, he strongly believed in the relationship between geography and history.

Halford Mackinder (12) is one of the founders of historical geography not only in Britain but also in the world, and he has taken most of his interest to know it as a study of the historical present. He adds: The geographer must return himself to what has existed for a thousand years or two thousand or more and must try to imagine the conditions Graver that existed at the time, as if experienced at that particular stage.

Many researchers focus on some of the fundamentals of historical geography, and Gilbert Fowler White [13] draws five points to the study:

- Studying the history of geology.
- Studying the history of geographical statements.
- Study of changing political borders between countries.
- Study the impact of the environment on the course of historical incidents.
- Study of regional geography of the past.

Thus, geography according to many of the previous definitions is the evolution of the relationship between man and the environment over time, a study of what was the geography of the location, area or location of a particular period of history heritage, and what distinguishes geographical geography from other aspects of geography is the addition of the element of time.

The task of reconstructing the geography of the geographical region, which is the subject of the study, is based on historical geography studies. It is concerned with the study of historical development and the various population movements [14]. This requires that the geographical, geological and historical heritage of the region be questioned. Will change with time if the governing mechanism changes.

The logic of historical history is part of the tools and tools of historical analysis, because the field is the first witness to the existence of man and the presence of the latter in the field and began to make history, and this hypothesis was based on archaeological, geographic and anthropological data.

Everyone agrees that historical geography is part of human geography, examines the relationship of man to the field and opens up to the subject of past time and changes in temporal space.

As for the relationship between history and geography, it is known that geography is a science that studies the earth and the natural and human phenomena that occur in the field and is divided into three sections: geographical geography, geography, geography and geography. History is the study of man's relation with the field in the past, and his study of the human past is what distinguishes it from the rest Science.

Thus, geography and history meet in the study of the field and the human, In the sense of man's relationship with the field, and tend to geography of the field by description, and tend history to the human by tracking the minutes details of his life,and the geography of

the field is tended by description, and history tends to man by tracking the minutes details of his life. But history transcends geography when it attaches great importance to time, but the crux of the historical study lies in the knowledge of the past. Geography, however, does not attach importance to time, but the development with Paul Vidal de La Blach [15], Geography has been created and a new branch called Historical Geography has been created. Thus, historical geography is a valuable material for historical studies, because it analyzes the past of a geographical location, making it easier for the historian to understand the cultural and civilizational developments taking place in the field of writing history.

The strong interrelationship between geography, which takes place in science and history, which represents the science of time, is a very old topic. It has occupied human thought ever since it has been interested in studying the nature of human society on the earth's surface. In fact, the workers of space and time can not be separated from one another. And geography. Many recognize this relationship between geography and history. [16] Without a geographical basis, it seems to us that people who make history as if they were walking in the air are unfounded. The place has an effect manifested in many forms, such as food and climate, it affects human groups as it affects individuals.

Historical geography is characterized by the addition of the element of time that is a characteristic of history, which gave it a dynamic dimension. The element of time gives historical geography the ease of sequential and analytical linking in the spatial framework, so that the historical geography is closely related to history. The past is the key to the present on the one hand and the current cultural appearance or the natural appearance of the construction of the historical geography from which the origin of things can be reached on the other. Historical geography has become a science in which historical facts are formulated in a geographical way.

As for the dualism of time and space in historical geography, as mentioned above, the fact that historical geography is a branch of the science of geography, the latter pays great attention to the field (soil - place), so that it constitutes a pillar in geographical research, By giving them the dynamics of the field of what is combined in the study of the past time, for example, the fact that the earth has changed at the present time compared to the beginning and composition of this change took a changed shape over time, the time when respected study takes us from the surface study of the field to study deep T monitor the development

of this area through time, which requires the geographers stand up and correct the path and thinking about writing a geography dimension time for the benefit of geographical research, and as the historical geographical solve geographic problems as duplication and planning the future, this can be said that the future of geography is the historical geography.

The historical geography recognizes that the site is not only an absolute idea, but relative because it is a variable and constant geographic factor at the same time. And as it is variable, it is necessary to make a correct assessment during the different ages of history, and whenever there is a change in the place negatively or positively, that place takes another dimension depending on the nature of the change, and thus the site Semites are determining the spatial relationship with other sites.

Historical geography has greatly benefited from the addition of this temporal factor, which leads many researchers to recognize that the only difference that distinguishes geographical geography from any other geographical area is the addition of the element of time, which is largely absent from the general geographical study. Al-Houliyat School benefited from the importance of geographical location at the expense of political events. FernandBraudel, who revolutionized historical writing [17], [18], [19].

Where geography frees its trajectory from the current realities that are its sole concern, and forces it to use its curricula and spirit to rethink past facts. It makes traditional geographical geography a real, human and nostalgic geography that forces geographers to pay more attention to time It is not relatively easy), and historians should be more concerned with the place (which may be more embarrassing to them), thinking of the dialectic of time and space to the perception of multiple times, so we reached the dismantling of history to levels in the form of shelves or if we want to distinguish between time Geographically and geographically Maui and individual time.

History has benefited from this field and the pioneers of the school of the yearbooks have produced the so-called geographical history. The school of Geophysical school (attributed to Fidel de la Balash), has contributed greatly to the emergence of historical geography, which by adding to the temporal factor has achieved a qualitative leap in geographical research. History and geography and opens up different horizons for research in historical studies or even geographically.

The adoption of the field in the historical study and interpretation is a qualitative addition

to the science of history, which can not be separated from geography. It is true that history surpasses geography by the factor of time, which adds to the dynamics of geography in the case of utilization, which we observe in historical geography.

Therefore, historical geography is not one of the branches of natural geography or human geography; it is the geography of the past in its natural and human aspects, meaning that it is not limited to studying the natural conditions of the past, but also concerned with the study of human activity. In general, historical geography includes both the natural and human aspects of geography to make them a single science, the subject of which is the geography of earlier times. Hence, it acquired a historical name.

Historical geography is derived from several sciences. It is closely related to other geographies, geomorphology, climatic geography, biogeography, human geography and its various branches. Historical geography uses ancient climate science (Paleoclimatology) to identify climatic conditions that prevailed in the regions of the world. Ancient times, particularly Pleistocene and historical geography, are closely related to archeology. Historians study the history of human history.

The ancient archaeology enables archaeologists to gather evidence that Studying the historical geography, and other sciences Anthropology, both natural and cultural. It is useful for historical geography in the identification of different civilizations, and how to adapt, sustain or change them.

Historical geography is concerned with Linguistics. Through linguistic analysis, the student of historical geography can identify people in different historical periods. Language is a means of preserving and transmitting civilization from one generation to the next. The relationship between historical geography and history is undoubtedly close.

4. Ecology

Ecology studies the relationship between living organisms and the natural environment in which they lived. Archaeology is useful in the development of the ancient man in the environment in which he lived, and the knowledge of the extent of his influence on this environment and its impact on it, its relation to it. This is of great importance in the study of prehistoric times, This is leading to the paleontological science of fossils of humans and animals, where the remains of an animal or plant are found in the rocks or buried under the decomposition during the time periods, and has developed in the techniques and expansion

of the study of man Experimental and He reached an estimate of his life on Earth millions of years ago.

5. Topography

Is the science of the exact representation of the surface of the Earth with its natural and human elements, a Greek term composed of two words Topo, meaning land or place, and Graphie, which means the drawing and representation of the natural and artificial bodies, a scale, drawing and conventionally agreed symbols on a piece Of paper or so-called map, the latter is a miniature geometric sketch of a part of the earth that shows all the features and manifestations of strategic importance.

This science is concerned with studying the status, distribution and names of the population in terms of language and history, and laboratory studies of buildings of all types and types of civil, religious or military, and study all the plans and development of cities as this science is interested in studying all the problems of population in the ancient world.

Topographic study aims to exploit the potential of the appearance of the surface in all analyzes and conclusions related to it, or one of the embodied elements and the list of human or vital and to develop them as a possibility or obstacle. The following are some of the topographic fields. Topography is a map basis for the study of most planning, reclamation and all related to the use of maps of surface manifestations, including civil engineering, public works, construction and land use in various disciplines.

6. Geophysics

Archaeological geophysics give an image of the invisible earth using physics of sound, light, electricity and magnetism. This may indicate that there is a dwelling, a basement, a tunnel, etc. These complex new sciences and techniques help to date the monuments by various means such as archaeological magnetism, Which help to determine relatively close ages, such as the determination of the age of wood (Dendrochronology) for times less than 7420 years, radioactive carbon (carbon 14) between 35-50 thousand years, or the amount of potassium - Argon for about a million years, Thermolominescence for times ranging from thousands to millions of years and so on.

7. Geology and geomorphology

Geology and geomorphology are an auxiliary science in archeology. Geology, as a result of its study of sedimentation, decay, rocks, their trimming, radiation, and coal, minerals or fossils, provides an idea of the age of these rocks and the atmosphere in which they originated. From the knowledge of man these things can be known as approximate or approximate age. Geomorphology, a geological science and basic geography, has a direct impact on the effects. It presents a picture of a specific time of formation at the surface of the earth, seas and rivers in the area under archaeological research.

8. Chronology

And the science of historical science is very useful for archeology, and its theme is focused on the various calendars of countries and peoples, and since the third millennium BC. M needed to register what is important in his economic, religious and political, appeared in Egypt and Mesopotamia and Syria calendars for years of kings rule linked to the events they experienced Or in their days, and the task of the specialist in the evaluation of the study of these calendars and compare them and the conclusion of the absolute history of the king or event, and this science is very difficult, and scientists did not agree on the correct evaluation of the events of the third and second BC.,and the average, and a dispute between them in the era of Hammurabi, for example, more than a hundred years.

It is important for the archaeologists to rely on the knowledge of the calendar in the history of the archaeological levels they discover. It is useless to study archaeological stratigraphy and lithostratigraphy, which is one of the branches of the study of geological strata in geology without a calendar background. And know the difficulty of the flag of the calendar of the correspondence between the calendar Hijri and the Gregorian calendar, how it is if the calendar of one of the family back to three thousand years before and was a paradox of contradictory. This science is followed by genealogy and the Arabs have excelled in this science so they attributed their horses with useful documents documented.

9. Onomastics (onomatology)

The archaeology of the Archaeologists opens up good prospects for research, by reference to the origin of the designation of places. This name is a sure sign of the people who created these places. Cities have been said to speak the language of their founders. The place can then indicate an established facility (well, bath, monastery, fort). The names of

cities and sites do not change easily. In the Levant, the names of cities, some of which live for thousands of years (Damascus, Aleppo, Palmyra, Amrit, Arwad, etc.).

10. Photography Science

Which is concerned with the transfer of the archaeological nature located as it is without distortion or alteration, whether this transfer to architectural or artistic works. This solar photography has facilitated not only the task of archaeological description of architecture and the arts, because the lack of this description constitutes a serious scientific defect, It has helped to preserve the various archeological features, especially inscriptions, writings and decorations, to be consulted when needed. This was undoubtedly a monumental function of solar photography of archeology, not only in the field of architectural monuments, artifacts and artistic monuments preserved in museums and special collections, Drilling father Aceh is also archaeological.

1. 10. Aerial Photography

Air photography helps to identify the places of the ruins, especially the mud buildings, by identifying the designs of these buildings according to certain signs that appear in the soil, plants and shadows, and with all these signs seem meaningless or understandable when ordinary man sees him standing on the back The earth, they are interconnected in the picture taken from the atmosphere in a way that shows the experienced prospector many of the archaeological phenomena of the site he wants to dig in. For example, the presence of structures or mud walls under some plants in an archaeological site increases the humidity in the land below Plants It helps to grow more than plants that do not exist under it, such as brick buildings or mud walls, and helps to acquire color that is contrary to the colors of other plants.

Archaeologists have become aware of this phenomenon and have been looking for these signs. Some archaeological buildings under the plants, so it can be said that aerial photography was and continues to help not only to identify the architectural drawings of the buried archaeological buildings, but to identify the general outlines of archaeological sites, and even the roads that link them as well.

Color and non-colored films are used for this type of imaging, and special filters are used for blue or infrared photography provided that the appropriate time is taken to shoot at different angles, vertical, tilted and so on.

2. 10. Ultraviolet imaging

The external impact is often affected by fine cracks in the surface of the skin, especially for the effects covered by the liquid varnish layer to protect them, such as paintings, Christian icons, etc. These cracks can not be seen by the naked eye because they are very thin and transparent cracks. However, if reflected ultraviolet (ultra violet) so it can be seen clearly, and here comes the importance of the use of these rays for impact photography and treatment.

It should be noted in radiography whether infrared or ultraviolet radiation of the impact requires protection of skin and eye from exposure to these waves of radiation by clothing coverage or use of dark barriers.

3. 10. X-ray imaging

If photography only shows its visual form (external) because it can not show the properties and features inside, the X-ray detection (Xray Radiography) (1895) solved this problem, because of these rays of the ability to access within the objects, and was then used in the field of archaeological detection to find out what hide the ground in the effects, as used in the portrayal of some of the mummies Pharaoh of the family 21 (circa 1100 BC), the mummy of the Queen. This photograph shows the presence of a heart scar and four small statues of the children of Horus inside the thoracic cavity of this mummy, indicating how much these rays can provide for archeology. X-ray reported not only in the field of recognition of what in the ground effects, but in M. Toured archaeological restoration around the world, helping to discover many phenomena that were not easy to discover or accessible.

4. 10. Cosmic radiography

It is scientifically known that the universe in which we live contains thousands of millions of small particles called mesons, and the energy of these mesons amounts to millions of electronic volts, falling on the surface of the Earth from outer space regularly, and remained unknown until discovered by Victor Hess (1912) and even named by some scientists in the year (1923) cosmic rays.

These rays have remained far from the field of scientific application in the effects until the thought of the project of cosmic imaging of the Egyptian pyramids in Giza, used for the first time in the portrayal of the second pyramid, the pyramid of King Khafra'e, and the purpose is to try to identify what it might be in within this pyramid of corridors or rooms

not disclosed by the Archaeology after, and this is done by measuring the amount of cosmic rays that permeate the stones of this pyramid, especially as the thickness of stone in which these rays pass in the case of the presence of corridors or rooms less than in the parts of the deaf, And then the amount of cosmic rays penetrating to these rooms or not Corridors greater than their quantities in other trends of deafness, a method that some agree on the positive without harming the impact used.

The existence of hidden rooms in the pyramids of Giza and Mexico will remain an obsession with archaeologists around the world for many years to come, as it carries treasures of valuable information about the construction of these ancient civilizations and the way of life and faith reflected on the effects. After archaeologists sent a robot through a narrow tunnel in the Great Pyramid in Giza, hoping to shed some light on how these royal tombs were built about 4500 years ago, they are now turning to cosmic rays to detect hidden rooms under the pyramids of Mexico.

Although the excavation of the Great Pyramid in Giza did not result in a huge discovery like the treasure of the young King Tut AnkhAmun of the modern Egyptian state, discovered by the archaeologist Howard Carter (1922), Egyptian scientists were hoping that the contents of the cellar would help uncover the secret of the building The two mysterious tunnels discovered in 1872, which are unique to the two pyramids of Giza. But in Mexico there is a strong belief that there are hidden rooms under the sun's pyramids. For this reason, a team of scientists from the Institute of Anthropology of the National Autonomous University of Mexico began searching for hidden rooms and basements under the pyramids of the sun in the ancient area of Neotihocan [20].

Archaeologists explained that the site of the pyramids of the sun is the first monument built in the region as a holy mountain and the headquarters of Talalok, the god of Teotihocan [21], and that this Teluk was not only the rain god but also the god of fertility of the earth. The researchers have developed a revealing device using advanced technology in the field of cosmic rays called the Mion to probe the interior of the hidden rooms under the solar pyramids in Mexico.

The location of the pyramids of the sun was chosen because it contains a tunnel whose floor allows the device to measure for a whole year the process of entering the space radiation and the twisted roads it takes inside the building, which will determine the possibility of a room or a cavity inside it. The researchers took their position at Aksya

Palace to the north from the pyramids of the sun, which may have been the great palace of the Teotihuacan rulers[1].

The study can lead to two completely different situations. Either there is no inner chamber in the pyramid or there is a high probability that there are some rooms where four leaders from the Teotihuacan quarters were buried and so far only one room was built by the inhabitants of Teotihuacan in an age Before the Spanish invasion, although there are other rooms carried out by the archaeologists for the study of pyramids, and the technique applied in this project in the installation of the detector of the moons[2][21] which decides the angle of the rays of the coming Moons from space without damage to the tunnel or archaeological heritage, Once this is done, the device will be used detector in any other pyramid in Mexico.It was the first time that the space radiation device was used by physicist Luis Alvarez, who used it on the floor of the pyramid of Khafra'e in Giza.

Conclusion

- Archaeology is a science that relies on the collection and analysis of waste to explore the reality of the past, and archaeological work is not limited to the discovery of the effects of the former nations, but an analysis of what is revealed.
- The auxiliary sciences have emerged to detect the buried treasures or treasures buried in the ground without resorting to manual drilling. They have an active role in the study of man and his civilization, including human and applied laboratory sciences. The researcher should be familiar with the effects of the auxiliary sciences that help the researcher in the interpretation and rooting of phenomena. These sciences can be

[1]An ancient city built in the center of Mexico in 200 BC, about 40 kilometers north-east of Mexico City, the capital of Mexico, also called Teotewakan, flourished between about 200-750 meters. With pyramids of the sun and the moon and tombs and palaces and many dwellings and the area (12 square kilometers) at the height of its prosperity.

[2]The moons: Cosmic Radiation, when the atomic nucleus from outer space collides with the upper atmosphere, they originate from the interactions of cosmic rays coming from around the universe with the nuclei of air atoms in the upper atmosphere. The aim of the geological explorations was to follow the moons as they traveled through the rocks beneath the earth's surface.

Moons are the main particles of the secondary particles that arise from cosmic rays. It arises from the interactions of cosmic rays coming from around the universe with the nuclei of air atoms in the upper atmosphere.

classified into several categories in the field of historical and human sciences, environmental geo-science, sports sciences and technical and technical knowledge.

- Anthropology and ethnology, such as history, are among the most important disciplines in the field of archeology. The former deals with the natural historical development of man, the second examines its cultures, customs and traditions.
- Archaeological archaeology is part of cultural anthropology, and the science of philology is in the same scope to express the study of the social and cultural aspects of man, and includes all aspects of ancient human civilizations, the field of archeology.
- There are two concepts of cultural anthropology: the first is that Ethnography and Ethnology are equally important, while the second is that Anthropology refers to the genetics, species, anatomical characteristics, biological processes, and the relation between human and natural history. Type.
- Archaeologists have come up with precise methods to excavate the layers of the earth where there is a cultural remnant. They also developed accurate methods to examine, locate, categorize and identify them, and then compare them to each other. Archaeologists, using these approaches, can extract much information about ancient cultures, their changes, and their relationship to each other.
- Archaeologists use anthropologists' research to verify the identity of their remains and the history of their existence. Archaeologists also collaborate with specialists in natural anthropology, due to the large presence of human fossils in excavations, with cultural remains.
- Archaeology therefore examines the history of man and the accompanying cultural changes in an attempt to build a full picture of the social life of the ancient societies.
- If archaeology depends to a certain extent on history, it differs from the knowledge of history in that it does not study the civilized stages of history, but rather examines those periods in which human society lived before the invention of writing and the codification of history.
- There is an integrative relationship between three sciences: archeology, history, sociology. The science of history and sociology depends mainly on archaeology in providing them with the required information.
- The link between archaeology and history is evident in the archaeology presented by the facts about the groups in historical times, whose effects were left in the form of texts of

manuscripts, or works of art or ancient manuscripts,

- The interdependence between history and sociology is the interdependence that characterizes the human act. It is both a social act and a historical act. History thus derives from sociology the theoretical principles and perceptions, to use them as tools for historical research, and sociology in turn derives from history the material it has in understanding Current social conditions.
- What is revealed during the archaeological excavations, and analyzes provided by archaeologists serve as the main stone from which the historian starts writing about an age of the ages, and the starting point of the sociologist when he searches for the nature of society in a civilization or an age.
- Historical geography tries to give a picture of the components of the field and its development over time and its dynamics, and tries to study all the changes occurring in the field and link them to the temporal factor, which is one of the pillars of historical research. It is concerned with the study of historical development and the different movements of the population. This requires that the geographic be aware of the past, geographical, geological and historical heritage.
- History transcends geography when it attaches great importance to time, but the crux of the historical study lies in the knowledge of the past time. Geography, however, does not attach importance to time, and historical geography is a heavy material for historical studies because it analyzes the past of a geographical location. The field of writing history, using the historical geography has become self-insistent on the historian.
- Historical geography derives its material from several sciences. It is closely related to other geographies, geomorphology, climatic geography, biogeography, human geography and its various branches. Historical geography uses ancient climate science (Paleoclimatology) to identify the climatic conditions that prevailed in the regions of the world. Different ages,
- Historical geography is closely related to archeology. Through the legacy of ancient societies, archaeologists can gather evidence of historical geography.
- Topography is concerned with the study of the status, distribution and names of the population in terms of language and history, and laboratory studies of buildings of all types and types of civil, religious or military, and study all the plans and development of

cities as this science is interested in studying all the problems of population in the ancient world.

- Archaeological geophysics gives an image of the invisible earth using physics of various kinds, such as sound, light, electricity and magnetism. These complex new sciences and techniques help date the effects.
- Geology and geomorphology are an auxiliary science in archeology, providing an idea of the age of the rocks and the atmosphere in which they originated. So that its approximate or relative age can be identified. This preliminary knowledge provides the archeologist with a basis for further study. Geomorphology is a basic geological science and geography that has a direct impact on archeology. It provides a picture of a specific time of formation at the surface of the earth, seas and rivers in the area under archaeological research.
- It is important for the archaeologist to rely on the science of the calendar in the history of the archaeological levels he discovers. Where the subject of (Chronology) on the various calendars of countries and peoples, and since the third millennium BC. M needed to register what is important in his economic, religious and political life.
- The archaeology of the Archaeological places opens up good prospects in the search, by reference to the origin of the place designation. And the peoples it created.
- The science of solar photography is a very important science in the recording of monuments, not only in the field of architectural monuments and the effects of art and artistic effects preserved museums and special collections, but in the field of excavation and archaeological study also. Includes: Air photography, ultraviolet imaging, x-ray imaging and cosmic radiography.

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