Abstract: The disclosure of knowledge from Andalusia during Islamic reign indicates the masteries of many scope of knowledge such as history, philosophy, astronomy, mathematics, medicine and geography by Muslims. The past civilization glory that once had been nourished by Muslims is not just a myth, in fact it needs to be explore actively and practically been used as a guidance as had been used by most European scholars. This research will highlight several Andalusia Islamic scholars which had written their geographic knowledge and practice that had been used as guidance by most of sailors especially European sailors. The significance of their contribution had led to many findings especially new lands or continent. Furthermore it will uncover to us many of Islamic scholar’s effort which had been recognized and unrecognized not only to Muslims but also to non-Muslims. This work and ideas will be translated to other languages and will be used as a reference to other nations. The writers will list down navigation activities by the European in findings of America continent and the relationship with theory proposed by Islamic scholars with respect to geography of our world and been used as the main focus of this research.

Key words:

INTRODUCTION

Over 500 years, Islamic civilization in Andalusia had contributed many things for the world. One of the key contribution is knowledge that had been shared to all scholars whose their thirst can only be fill by valuable inputs and information whether in the form of collection, arrangement, copying, analysis, translations, restoration and researching.

All the scholars’ knowledge had not been limited to only religion aspect only such as ulum al-quran, al-hadith, fiqh, tasawwuf, tauhid and syarie. In other words it had not only covered spiritual matters only, In fact it also covers materials matters. Some of the knowledge fields that had been mastered by Andalusia scholars at that point of time were medicine, mathematics, astrology, geography, history, physics, chemicals, arts, geology, biography, zoology and botanical. Determination is not the only factors which make the knowledge flourish during that time. The environment also play major role flourishing the knowledge through Andalusia society. One of the example is the role of the government policy which encourage all knowledge activities been conducted freely and ultimately will benefit the societies.

Andalusia golden age was held during 350 H – 366 H/961 CE – 967 CE. In this time, Andalusia had been governed by a government which been lead by Abdul Hakam II which is well known as a person who loves knowledge. At that time, the development of intellectual was at the highest level and keep on growing exponentially. The ninth leaders from Umayyah descendant (Abdul Hakam II) had open his government policy by encouraging knowledge based activities. He also always invited many scholars which are mainly from the east to teach in Andalusia and even sponsor many of Andalusia scholars to seek and gather knowledge throughout the world. The creation of Dar al-Hikmah and several libraries that stored many kind of knowledge had proved to be significant in nourishing passions in gathering knowledge throughout Andalusia societies.
Many of Andalusia scholars had been made as a reference by other nations especially by Mozareb which held responsible in spreading Christianity outside Andalusia colonization. This is why many of Islamic scholars writing had been taken outside and been translated to other language so that it can be understand by other nations. It also known that many Christian researchers had taken benefits by all the writings which had been written in through being a residence in Andalusia.

This research will highlights contribution of Andalusia Islamic Scholars through detailing the environment at that time and several navigation factors which makes knowledge gathering became possible thus resulting series of exploration to America continent. It cannot be deny that the knowledge from Andalusia had been used in the discovery of America continent. The facts of the fall of Andalusia civilization piece by piece and totally at 1492CE which is the same time as Christopher Columbus claims to be the first person discovers America continent proves that navigation knowledge from Andalusia had been used.

**Andalusia Islamic Scholars (Geography):** Al-Biruni (326-433H/973-1051CE) hypothesis states that Arabian knowledge of geography basely from persons observation (musyahadah) and experience from explorations [1]. Al-Qanun al- Mas’udi and al-Jahiz (164-255H/780-868CE) explained about concept of navigation. Al-Biruni also had arranged methods of rationality as had been stated in al-masalik wa al-mamalik. It is similar to the concept proposed by Ibn Rustah. He said that earth shape is spherical [2]

“All Scholars had agreed that all parts of earth which consist land and sea is spherical or ball in shape. Sun, moon and stars will not ever rise and fall at the same time. This proved that earth is round. In fact we can see the rise from the east and set in the west...”

This shows that earth had it is own axis circling the sun. The sun will be seen rises from the east and sets in the west. This circle will keep on repeating until the end of time.

The first Andalusia scholars who writes about history and geography is Muhammad b. Musa al-Razi (273H/882CE) had wrote a book called al-Rayat [2]. Husin Mu’nis claims that there is not even one writings which covers everything about geography till this days except one written by al-Idrisi. Most of geography writing nowadays are in fact in the form of translation in Portugal and Spanish language and more towards summarization or quote. There are also several others writers but their works were lost most probably been destroyed or torn out in pieces. An example of books which had been torn apart is al-Jughrafiyyah written by Muhammad bin Abi Bakar al-Zahri. This books is only consist of quotes from its original books [2].

It had been a custom for Andalusia Islamic Geography scholars for not only write about their own land but also they tend to write in general about others lands. Additionally it will expand to history of the particulars land they wrote about. This is because history cannot be separated from geography. As in Andalusia, if someone is a geography scholar, he is also a history scholar. A good example will be al-Razi which is a geography scholar and at the same time he is a respectful Andalus Islamic scholars [2].

Below is the list of objective of early Muslim sailors according to Husin Mu’nis:

- Knowledge
- Self interest
- Andalusia Representative
- Writing Journal/Miracle of the sea
- Writing Journal of the desert
- Administration

Early Muslims entries/records about geography and navigation indicate the nature or situations during the middle age in Muslims country and others. The writings by muslims scholars shows high level of knowledge in a point that the writings can influence the person who read it to denied the knowledge from India, Persia, Greeks and others.

Mapping begun when region system been applied as what had Ibn Hazm (384-456H/994-1064CE) proposed in one of his writings called Fadl al-andalus. The region systems also lead to the creation of Muslim Atlas called [2]. A Miller had used the word atlas to replace Surah which had been used by Muslims geography scholars and had been known now as map. Even surah al-Ard words had been replace by ‘mappemundi’ which known as earth contour. According to A Miller, the first Muslim who draw maps is Abu Zaid Ahmad Ibn Sahl Al-Balkhi (m. 934 CE/322H). In al-Istikhri, al-Balakhi had drawn the borders of Muslims nations. He also include the contour of the location and what in it in the form of cities and whatever that synonym to the locations [2].
Ptolemy (90-168CE) writings called Geographike Hubhegesis which had been renamed to geography by Islamic scholars and had been rearranged by them. A book called Ighriqi wrote by Greek scholars (2CE) is one of unrecognized book but after been research or updated by Arazmuth [4] with climate, society, plant, animal and many others, it had become one of the main reference.

Gerard from Carmona (5H/11CE) had translated more than 70 Arabic books to Latin. He had translated Mathematics, Astronomy, Geography, Medicine and many others. It also can be said that many kind of knowledge had been transfer or been bought by Gerard. One of the famous examples is a book called Almagest, Arabic version written by Ptolemy which stores many of astronomy knowledge [3].


Below are bibliographies of several Muslim scholars:

- Qasim b. Ashbagh al-Bayani (244 – 340H / 859-951CE)

Born on 20 Zulhijjah 244CE in Bayanah and left this world on 15 Jamadil Awal 340H/20 october 951CE during al-Hakam al- Mustansir era. In Andalusia, he is a history and geography scholars. He also had played an important role in spreading knowledge regarding religion and linguistic. He is also an ulama’ which always spend his time in gathering knowledge even spent a lot of time exploring to the east to find others scholars especially in Egypt, Hijaz, Syam and Iraq. One of his main contribution is the translation Latin books or writing with a title “Historian Libri Septem Adversos Paganos” (Kutub al-Tarikh al-Sah`ah fi al-Rad `Ala Wathaniyin) written by Paulus Erozius (Herosheh). It contains history records of Andalusia and geography which had been updated by al-Bayani. This translation had open the eyes of people of the west about Paulus writing [2].

- Abu `Ubaid al-Bakri (432-487H / 1040-1094M)

His geography master piece has been known as Mu`jam ma Ista’jam and al-Masalik wa al-Mamalik. Al-Mamalik discusses about common geography issues while Mu`jam ma Ista’jam discuss about topography registration which mostly covers area in Jazirah Arab. He also had written about geography, politics and ethnography. This includes virtual visualization through writings of few African countries. He also recorded in details several information regarding historical of world geography during the middle age [2].

- al-Idrisi ( 1100 – 1166M)

His real name is Abu Abdallah Mohammed Ibnu As-Syarif Al-Idrisi. He is known as Al-Idrisi, scholars in geography. Born at Sabtah coast in north of Maghribi on 493H/1100Ce and leave this world in the year of 1166CE [4].

His main contribution is in creating one silver globe for King Roger II, full with information of 7 iklim, trade route, lake, bay, rivers, cities, hill and valleys even mountains. He also had recorded the distance and height of an area accurately. His research had leads to the creation of book called Nuzhah al Musytaq fi Ikhtiraqal-Afaq or known as Roger’s Book which is a geography encyclopedia which contains maps and information about European countries, Africans and Asians. This books had records about community description, culture, government and climates of te country in it [2]. He also is a scholar which had created world map using method which agreed by most scholars which is not much difference with the world map that had been produced nowadays. He also had starts his journey as early as 16 years old. He also had travel to all areas in Andalus, France, South Africa, Egypt, Hijaz, Asia minor/Anatolia and Greece.

- Ibn Jubayr (1145 – 1217M)

He is one of the famous Andalusia travelers that had made several series of expedition which had not been done by other people before and after him. Some of the lists of places which he had traveled are Alexandrian,
Cairo, Kufah, Baghdad, Aleppo, Damsyik and Sicily. According to Taylor, Spain and Portugal had taken the knowledge of navigation from Arab civilization and had use the knowledge and arrived to Cape of Good Hope. In facts, Arab peoples had known about other continent across Atlantic sea before European peoples [8].

- Stories of Arab Youngster

On 9 CE, there is a group of Arab youngsters who had made a journey starting at Lisbon west port. They had arrived at a place which had been called Island of Antile or one of islands in Mexico. This event had been recorded detail by al-Idrisi in his books with title Nuzhah al-Musyaq. European peoples had severely copy or replicate this event till a point Christopher Columbus had go to the locations after 5 century had passed. The replication theory had been proposed by a famous scholar called Abu al-Thina’ al-Asfahani.

- Theory of The World is Sphere and its Division

Astrolab which had been invented by Andalusia Islamic scholar had been used by the European until 12 century. This device had helped them to estimate accurately earth size more accurately than Greece. It referred sun axis and a device call sextant which had been made by bronze in doing the measurement [5].

According to Barnett, a lecturer in Barcelona University, the success of Columbus journey is based on the navigation and geography written by Arab. This theory also had been supported by Walter in his book Tarikh Ishbiliyyah (History of Seville). This books had recorded the contribution of Islamic scholars in proving that earth is sphere in shape and research by Ibn Rushd had encourage Columbus to start his journey.

In al-Mu’jam Ma Ist’jam written by Abu ʿUbaid al-Bakri, contain his ideas about earth shape and contour in detailed based on al-Bakri. It includes earth shape, contour, the division even theory proposed by previous scholars such as Ahmad al-Nahawandi, al-Khawarizmi, Abi Ma’syar, al-Battani, Abi Muhammad b. Zakaria al-Razi, ’Ali b. Yunus and many more. He also had recorded the explanation from math and astronomy scholars in explaining the earth shape [2].

Al-Bakri also had highlighted speech by Ptolemy in Almagest and Eratosthenes, a Greek mathematician, geographer and astronomer about earth and its diameters. He also had rephrased the geography and math scholars opinion about earth diameters:
“Earth is sphere covering land and sea, thus its diameter is approximately to 64251/5 mil” [9].

Scholars agree that earth is sphere and not yolk shape. This theory had driven the findings of America continent [7]. According to al-Biruni (Islamic scholars in 10/11 CE), in his book al-Athar al-Baqiyya, he claims that most of earth land had been occupied by humans [10].

- Atlantic and Hindi sea route

Arabs had plays a major role in the development of most civilizations. They had proved to the world that the existence of a route which connect Atlantic and Hindi Sea. Probably they had sails all around South Africa coast to reach Hindi. Thus theory had been used by Vasco da Gama. This route also had been used by many arab scholars including al-Biruni, al-Marakasyi dan Ibn Khalidun. The relationship of this route had been explained by al-Qalqasyandi in Subh al-Aa’sya. He claim that Atlantic Sea (from Maghribi coast) is connected to east of Jabal al-Qamar which known as the source of Nil river until south and lengthen to the east area which consist of dry lands in Zinj [7]. Then it connected to east and north till Hindi sea [11].

This had been agreed by European orientalist from Italy, Framoro. He said that Arab sailors had start their navigation between year 1420CE from Hindi sea to Africa continent and most probably to South Africa. This resulting the findings of Atlantic sea which is the same as the claim made by the Arab [11]. Al-Bakri also had included opinion of previous Islamic daie (preachers) about what lies beyond Atlantic sea from west to the ends of east China. This ideas is the one that encourage Christopher Columbus to sail to America Continent not accidentially. Abu `Ubaid had write about this in Seville, a country where Columbus lived [2].

- Navigation Equipment

According to Portugal historian, João de Barros that Vasco da Gama had meets with one Muslim sailor in 1498CE and bought several Maps and navigation equipment. The sailors also responsible in showing the direction to India till the arrival to Calcutta port. This had been recorded by Vasco da Gama. He also had sent most of the equipment, maps and journal of the Arab which he had acquired to one of the ship owns by Raja Manuel I, Portugal.

- Map: Land and Sea

El Escorial library in Spain had collected many manuscripts written by Arabs. It contain visual of Atlantic sea which known by the Arab before 1198CE. Probably the manuscript had been made by Ibn Ziyat. While, the map of the sea, Arab Gulf area own by Alfonso Albuquerque had been prepared by Arab sailors which known as `Umar which had been hired Jazirah Socotra. Alfonso admired with his knowledge and experienced.

Capabilities of al-Idrisci in drawing maps had been recognized by many Muslim and European scholars. Al-Idrisci mapping skills had proven to be in tally with modern geography. His maps had been said as the first map which shows north, centre and south of America. He also applies the latitude and longitude method in his maps. The maps had been used by European for centuries including Christopher Columbus.

Al- Idrisi also had been remembered for his achievement in inventing glob which shows central line of the earth and world maps. He also had identified and stated the borders of equator which is not known to other scholars in his era. The map also shows the measurement of longitude and latitude of the area. His books called Nuzhah al-Musytaq,contains information which had been found by previous scholar and experienced from his journeys. The books contain 70 maps and had been used as main reference to Muslim and European scholars. Another one of his books called Rawdah al-UNS wa al-Nuzhah al-Nafs or al-Masalik wa al-Mamalik had been translated and simplify and had been used as a guide and reference for most of European travelers [2]. This books contain information about countries, plants, animals, societies and economy.

- Recognition by Scholars Now days

Dr. Barry Fell, New Zealand archeology expert and linguistic from Harvard University had present several evidence in his books called “Saga America”. According to him, Muslims had been in America since before Columbus arrived. Even they had actively involved in economy and social. Arab word had been use widely by Pima race in southwest and in Algonquian language. German history scholars Alexander Von Wuthenau had proved that Muslims had been in America between 300ce to 900CE. This is 5 century before the existence of Columbus. The prove is in the form of picture and artifact of Moorish society. “They Came Before Colombus”
written by Ivan Van Sertima shows the existence relationship between early African peoples and America native. His other research called “African Presence in Early America” also proved that there were Muslim settlement in America before the arrival of Columbus. He belief that Arab merchant had actively trading in America and had impacted the native [10].

**European and Muslims Navigation Theory to America:**
Every Muslim navigator/sailors had their own objectives or purposes as had been described in this paper. The main objective is the Islamic missionary endeavour. They carried their sacred duty by explaining about Islam to every location they stay during their journey. European navigators/sailors also had the same ideas rather than trade activities, plundering earth resources and several others that can be listed. Some of their objectives are been listed below:

- **Missionary and Crusade Wars**

War between European and Arab are due to the difference religion and ideology. The Crusade had that happen almost 2 decade had shredded many blood and destruction of cities. The attack on Andalus is a prove of the brutality of Christian from Spain and its king. They had done several massacres to Muslims and burns many books during their invasion in Andalusia. History had recorded the Portugal attack on pilgrimage ship in Oman and declares to destroy sacred places of Muslim in Mecca and Medina [7]. Vasco da Gama had declares openly to the public that he wants to do 2 things before he dies which is, the domination on Nil river till the Red sea and the destruction of Medina [7]. The war between European and Islam happens in 2 locations which is in east in Ottoman region and west in Andalusia. This mission had leaded the Portugal in findings the Cape of Good Hope that act as a centre to lunch assault on Muslims.

- **Domination and Subordination**

In the war between Muslims and European peoples, Portugal had taken several main actions during their invasion [8]:

- Send Jewish spies that had characteristics like Arab to Egypt and befriend with the government to gather info about Muslim strength.
- Stealing maps and know their war strategy

Invasion on the Indian and native people in America continent happen all the time during that era. An excellent examples is, Hernando Cortes who had conquer Mexico and the invasion plays major significant in transferring political powers in South America from Indian to the European.

Through this objective many people keep on sailing to new world and others. Below are the list of several people who had arrives to America continent:

- **Americos Vespucci (1454 CE – 1512 CE)**

He is a merchant, travelers, and mapped from Italy. He plays an important role in the expedition to east coast of America between 1499CE and 1502CE. In his second journey, he found that South America elongates more than what had been calculated by European people at that time. He had conclude that the land he arrived is not India instead a new continent. In 1507CE, Martin Waldseemuller had publish world map and named the new continent as "America” according to Vespucci. He had known about Columbus journey to the west. He had responsible in invading and conquering at the new lands towards the native people of America [7].

- **Christopher Columbus (1451 – 1506 CE)**

He is from Genoa, Italy which had been elected by Queen Isabella, to find a route to the west. He starts his journey from Spain on 3 august 1492 and arrived to Canarias Island before proceeding to the west. He and his crew arrived at America central on 10 October in the same years. Columbus had repeated the same journey 4 times but still did not manage to fulfill his queen wish that is to around Muslim cities [7]. He had not travel alone instead he also had bring Moricos race which act as his indicator during his journey.

- **Ferdinand Magellan (1480-1521 CE)**

Portugal traveler, he is well known as the first person who had around the world. It is said that he had pass away before completing his journey. His influence is actually insignificant. Islamic scholars such as Ibn Rushd and al-Idrisi from andalus had come up with a theory which stated that our world is sphere in shape. He believed that he can arrives at spice island using route
to west and he also believed that the world is small [9]. Magellan route also did not become the main trade route and had not bring influences to Europe and East.

- Hernando Cortes (1485-1547 CE)

The Mexico conqueror was born on 1485 in Medellin, Spain. He left Spain in the age of 19 and seek glorious in the New Hemisphere. He arrived at Hispaniola in the year 1504CE. In 1518CE, Velasquez had picked Cortes as Captain and leads an expedition to Mexico. He conquers Mexico for Spain and destroy Aztec civilization [11].

- Moriscos (Moorish)

Moriscos’s race plays important role in the success of Columbus journey to America. They are responsible in showing Columbus directions to the continent. In fact the Moriscos was a race which had been forced to submit to Christian but in fact deep in their heart they are still Muslim. This development always happens during that area due to Spain policy that every people who live in Spain territory must embrace Christianity. Spain and Portugal had a policy to find new land other that Europe. They had been influenced by geography and Navigation skills of Muslims. It is also to prepare for any outcome that is resulting from the clash between Christian and Muslim (The Crusade). Many effort had been made to find a route across Atlantic sea or West Coast of Africa. This is because even though they had succeeded in expelling Muslims from Spain in 1492CE, which is the same years that Christopher Columbus began his journey, but at the same time Islam Civilization under Turki Uthmaniah had managed to conquer East of Europe. This will become a thread to Christian in the future. This is why Vasco da Gama named Cape of Good Hope (Dar al-Raja’) when he arrived at South Africa. It easily becomes a new settlement to counter Muslims since the land no have Muslims peoples.

- Piri Reis (1465-1554)

He was born in Gallipoli which once famous as Uthmaniyyah Government navy office. Piri Reis is a sailor and map maker. In fact Reis is a title for admiral. He had serve Turki Navy squad during Sultan Selim (1512-1520) and Sultan Sulaiman al-Qanuni (1520-1566). He is famous as an inventor of atlas of Algean sea and Meditternian sea which been called al-Bahriyyah. He is always seen with his uncle Kamal Reis. They had participated in navy war during wars between ‘Uthmaniyyan and Benadiqa’ in 1498CE until 1502CE. He received Reis title after he managed to immobilize Bendeqia [8]. This troops had guarded the sea from time totime. This troops also play a role in savings Andalus muslim people which been expell. It includes providing shelters, guard navy ship and Islam [7].

He had sail with Ibrahim Basha to Egypt and act as a navigator of an armada consist of 10 war ship. Then he had been trusted to decide the route after their group had been hit by massive storm. During this event, he had shown and prove his knowledge to Ibrahim Basha and had completed his witings called “al-Bahriyyah” in 1526CE / 1527CE [7]. He also had been elected to lead Egypt sea armada in the year 1547CE. Sultan Uthmani in Istanbul and Daud Basha in Egypt are impressed with him which had sail to Suez port in 1551CE. He also had conquer it and opened the Aden port after it been destroy by Tsunami [7]. He also had creat a relationship with portugal when he stayed in Yaman. His second expedition had conquer Muscat. His experienced during his journeys and wars including with Khairuddin Barbarosa had made him an expert in navigation.

He also had draws maps of Nil estuary.He had draw 2 sets America continent maps which had been stored in Tobqo Serai / Topkapi, muzium in Istanbul. The map contain portion of world math dated 1513CE and had been found on 1929CE. The maps had been studied by German orientalisis, Prof. Paul Kalhe in Istanbul and discuss it in Kongres Kajian Oriental di Leidin in 1931 [7]. He had draw the maps on camel skin and it contains 9 different colours. When the map been found, part of it had gone missing. Although part of it been missings, it still contain East and West Coast Atlantic sea. North and South coast of America, Antille and West coast of Africa. Undoubtedly the map is similar with the map that been drawn by Spain and Portugal. The map also contain longitude and latitude provided by the maps nowadays and compass. It also contain a good illustration with ship pictures and tuki birds. It also contain name of cities, expedition, myth and explanation on how the map been arranged. It also stated that it is a gift to Uthmaniah Sultan [7].

**CONCLUSION**

It can be concluded that Christopher Columbus is not the first person who had found and arrived to America continent. Probably finiqiyyun descendant who lives at coast near Syria and Lebanon are the one of the early
peoples that arrives to America continent. Most probably Arab people who lives in Arab peninsular are not one of the early people who had skills in navigation since there does not have resources for crafting tools and ships for navigation.

However, the expansion of Islam and conversion to Islam from many kind of race had become a factor for people in peninsular Arab to acquired skills of ship craftsmanship and geography. The expansion of Islamic belief to Yaman had open path India and China. Other than that, finiqiyun descendant whose always using the red sea and Mediterranean sea and Egypt people who had skills in navigation and geography had strengthen both knowledge in Muslim Country. Using this knowledge, many research been conducted resulting the expansion of both knowledge within Muslims people.

This opportunity also had given birth to mapping and writings of geography and the development of ship yard. When Andalus fall on 1492, Islamic geography Theory had fallen to Christian society in Europe. This include to Christopher Columbus who claims found America continent and Vasco da Gama who claim arrived to South Africa, India even Malay archipelago. Even their theory about new world had been guided by Moriscos ethics that accompany Christopher Columbus during his voyage and Islamic civilization in the east or West Africa in Vasco Da Gama Journey.

It also can be explained that the findings of new world such as America had been influenced by Islamic Society in theory and practical. Muslims Scholar had made a theory that the findings of new world in fact had a relation with the objective of crusade. Even though Andalus had fall to Christian in 1492, but at the same time Islamic civilization (Uthmaniah) had concurred East of Europe. This is why many Islam societies had tried to find new lands so that they can resist the resistance that had happen during the expansion of Islam in Europe. This is why Cape of Good Hope in South Africa had been called by Dar al-Raja’ when Muslims arrived at that place.

REFERENCES