Name: Kevin Suleiman – 1904795

History of Science: Group F

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Jose de Acosta in The 'New World'

In the first 30.000 years in the history of the human kind, the amount of notions and "pseudo-scientific" paradigms and practices about the celestial and terrestrial world ran parallel to the unique chain of numerous civilizations.[1] The major civilizations attempted to centralize and consolidate their significance and 'scientific' conduct, and preferably map themselves in the centre of the world.[2] Historically, an mosaic of extensive 'scientific' exchange and subsequent development and modification in various degrees and scopes, has crossed throughout the corners of the world, stretching from Ancient Greece to Mesopotamia and China, and from Europe to the Americas[3]. Within this mosaic, one of the most fruitful and significant eras was the 'Columbian Exchange' embodied in the 'Age of Discovery'; arguably initiated by Cristopher Columbus who discovered the Americas, the so-called New World, in 1492.[4] Consequently, around 1500 in renaissance Europe, a process of development defined by 'rough edges' and complications, empowered the scientific 'revolution' in 17th century Europe.[5] Initially, this gradual revolution focussed on the interpretation and rebuilding of the natural knowledge from the Ancients. Thereafter, the focus shifted towards scientific innovation and development, in order to strengthen Europe and its overseas 'imperial' ambitions.[6]

In consonance with these ambitions and as vital counter-reformation-instrument against the protestant reformation, the 'Jesuit Order' was established in 1534 as a means to revive, consolidate and expand the power of the Roman Catholic church.[7] One of the most prominent intellectual members of this Jesuit Order was Spanish missionary and Renaissance scholar, José de Acosta.[8] Acosta arrived in Peru – 'the New World' - in 1572 upon which he conducted an extensive chain of fertile observations of the locally diverse flora & fauna, cultures, politics and religions. Subsequently, Acosta inscribed these detailed observations in his powerful and lauded publication: "*Historia Natural Y Moral De Las Indias",* which is perceived as one of the most influential and 'enlightening' books. Acosta empowered European scientific development and progress, while simultaneously questioning – thus arguably enriching - the European Renaissance worldview.[9]

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[1] Toby, E. Huff, "*Intellectual Curiosity and the Scientific Revolution: A Global Perspective*" (New York: Cambridge University Press, 2011), 368.
[2] Patricia Fara, "*Science: A Four Thousand Year History*" (New York: Oxford University Press, 2009), 51.
[3] Ibid, 55.
[4] Stephen Greenblatt, *"Marvelous Possessions. "The Wonder of the New World"* in Review: An Academic Columbian Exchange: Literature and History, ed. Alden, T. Vaughan., Virginia Mason Vaughan. (Chicago: The University of Chicago Press, 1991), 362-363.
[5] Peter Dear, "*Discipline & Experience: The Mathematical Way in the Scientific Revolution*" (Chicago: University of Chicago Press, 1995), 3-7.
[6] Ibid, 11-12.
[7] José de Acosta, *Natural and Moral History of the Indies*, ed. Jane, E. Mangan. (London: Duke University press, 2002), 18-19.
[8] Ibid, 20.
[9] Thayne R. Ford. "*Stranger in a Foreign Land: José de Acosta's Scientific Realizations in Sixteenth-Century Peru," The Sixteenth Century Journal,* 29, no. 2 (1998): 19.

Essentially, the work of Acosta embodies the tension between the discovery of the New World and the Jesuit view of the universe, namely, that the 'Mother Earth' was at the centre of the universe.[10] Notably, great thinkers like Galileo and Descartes asserted that the Jesuit order contravened against scientific development because of their apostolic mission, yet the Jesuits empowered the paradigm of mathematics and reasserted the importance of experimental science and observation.[11]

The case of Acosta is a remarkable exception, as he conducted his observations from an intersection between theological and philosophical perspectives, by analysing the essence of Nature itself, as a means to understand and to come closer the 'Creator'.[12] Therefore, one may wonder to what extent Acosta's religiously-coloured education and objectives as part of the Jesuit Order affected his beliefs and perceptions, from which his observations derived. Here the focus of analysis will shed a light on how the rich and religious-intellectual background of Acosta affected views of the New World.

When Acosta arrived in the Americas in 1572, he was stunned by the very existence alone of this 'New World', let alone it's extraordinary richness and diversity. Consequently, it must be noted that the intellectual, scientific and religious notions of the 16th century clashed with this discovery that in various ways challenged the historical, theological and geographical notions that prevailed in Europe; this may have been perceived as a threat to the status-quo of the powerful and dominant Europe. These challenges may have persuaded Acosta in an attempt to harmonize the complications of the New World with the European worldview and cosmology.[13] Here, it must be emphasized that the intellectual foundation and scientific conduct of Acosta are rooted in his academic Jesuit-education, the Jesuit-mission of the counter-reformation and the context of prevailing notions in Renaissance Europe. In fact, these are three major factors that significantly guided Acosta in his objectives and subsequent scientific conduct that shaped his worldview.[14]

Furthermore, Acosta's observational approach was partly rooted in the notions of Aristotelianism, which fuelled his quest for observation and essentially constructed a cycle of exploration and critical questions regarding the 'realities' of the New World. This parallel relationship is also defined by the 'natural motion' of Aristotle, which may be a justifications of Acosta's observations. However seemingly contradictory, Acosta's work may be illustrated as a double edged sword, for the fact that his observations were rooted in religious notions of the Catholic theology, although furthering the 'secular' scientific development and classical thought in Europe.[15] It must also be noted that Acosta took actively part in dialogues and exchange with the indigenous people, which also provided him with essential insights into 'why's' and 'how's' of this seemingly mystical world.[16]

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[10] Moredechai Feingold, "Jesuit Science and The Republic of Letters" (Cambridge: MIT Press, 2003), 130-131.

[11] Ibid, 7-12.
[12] José de Acosta, Natural and Moral History of the Indies, ed. Jane, E. Mangan. (London: Duke University press, 2002), 23.
[13] Thayne R. Ford. "Stranger in a Foreign Land: José de Acosta's Scientific Realizations in Sixteenth-Century Peru," The Sixteenth Century Journal, 29, no. 2 (1998): 20.
[14] Ibid, 22.
[15] Ibid, 24.
[16] Ibid, 20.

One confirmation of the array of religiously coloured justifications was Acosta's answer upon a fundamental question regarding the richness of 'life' in the New World: "For I ask myself with what motive, with what means, with what strength, could the men of the Indies have crossed such an immense sea? Who could have been the inventor and the inspirer of such strange a crossing?" [17] The answer he provided embodied biblical literalism, for he utilized the narrative of the patriarch Noah as a justification for the roots of animal's life in the Americas and beyond. He philosophized whether if God could have recreated animal life in the New World, after the destructive 'big flood'.[18] The essence of his answer upon such complicated questions were significantly affected by this belief in biblical literal hermeneutics, as he rejected the notion of re-creation and consequently asserted that the diversity of 'life' in the New World were rooted in the Noachian animals. Thus, arguing that species must have migrated from Mesopotamia to South and Central America.[19] Acosta justified the view that the men from Europe and Asia travelled to the New World, by stating that it was compatible with the "Holy Writ, which clearly teaches that all men descend from Adam, and thus we cannot assign any other origin to the men of the Indies".[20]

The given argument also enhanced Acosta's belief that the New World was in fact not as 'divided and separated' from the Old World, and this belief guided him towards the notion that there should have been a 'land-bridge' over which the indigenous species could have migrated from Asia. Surprisingly, this idea was confirmed 100 years later when the Europeans discovered the Bering Strait.[21] This combination of religiously-driven beliefs illustrates that Acosta's views upon the New World partly derived from the Christian Jesuit doctrine. Moreover, one should take into consideration that Acosta's main objective was to convert the indigenous people of the New World to Christianity, and this may partly explain how his Christian beliefs constrained him in his conduct. An example hereof is that Acosta did not incorporate the existing views and knowledge of the Amerindians, within his conceptualizations of the New World.[22]

In fact, the fruitful scientific conduct of Acosta is rooted in theological and philosophical factors, which in some way reinforced the cultivation of Acosta's observations as a means to harmonize the fertile mosaic of people, religious practices, lands and social structures in the New World, which were alien for the Christian theologians and Greek Philosophers in the 'Old World'.

[17] José de Acosta, Natural and Moral History of the Indies, ed. Jane, E. Mangan. (London: Duke University press, 2002), 51-52.
[18] Thayne R. Ford. "Stranger in a Foreign Land: José de Acosta's Scientific Realizations in Sixteenth-Century Peru," The Sixteenth Century Journal, 29, no. 2 (1998): 27.
[19] Ibid, 29.
[20] José de Acosta, Natural and Moral History of the Indies, ed. Jane, E. Mangan. (London: Duke University press, 2002), 61.
[21] Ibid, 23.
[22] Ibid, 27.

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