Steven Gullberg, *Astronomy of the Inca Empire: Use and Significance of the Sun and the Night Sky*


Monica Estrázulas  
Universidade Federal do Rio Grande do Sul, Brazil  
monica.estrazulas@gmail.com

César Zen Vasconcellos  
ICRANet, Italy  
cesaraugustozenvasconcellos@gmail.com

Steven Gullberg is an influential, widely published and frequently cited author for his investigations into the emerging field of archaeoastronomy. Among his best-known works are the measurements of astronomical alignments of light and shadow effects upon Inca *huacas* at solstices, as well as on the dates of the equinoxes and the zenith and anti-zenith Sun. For Gullberg, archеoastronomy is an interdisciplinary research field that requires the integration of positional astronomy, the history of science, anthropology, archaeology, the history of religion and the study of astronomical knowledge in the past – particularly of prehistoric and ancient cultures – as well as of living indigenous cultures throughout the world.

These perspectives inform the author’s investigative interest in Inca civilisation and its huacas. As monuments that reveal the confluence of history, culture and religion in the Inca civilisation, the huacas impress visitors with their beauty and structural aesthetics, although their meaning and function remain to this day uncertain. In his Foreword, E. C. Krupp starts by quoting Father Bernabé Cobo, a seventeenth-century Jesuit Spanish missionary who, in the *Historia del Nuevo Mundo*, said of the huacas that “there are so many of them and so many different types of them, it is impossible to write about all of them” (p. ix). Krupp notes that Gullberg does not contradict Cobo, but that he does “write about a lot” of huacas. In doing so, Krupp notes, Gullberg provides not only an inventory of locations – including at diverse places at the limit of accessibility – but also seeks out patterns that may facilitate a better understanding of their meaning. His search
is systematic, and he balances analysis with passion. “To understand Inca astronomy”, he writes, “it must be placed into context in the greater society. Why was it important, why was it used, and how was it used?” This is the point of departure for an unforgettable journey through ancient times for a better understanding of the Inca Empire, its mysteries and its evolution.

Chapter 2 following the Introduction covers the historical evolution of the Andean peoples within the context of the rise of the Incas, the Inca Empire, the Spanish Conquest and then Inca resistance and the Catholic purge. Chapter 3 then surveys the cultural context, covering 20 aspects in turn: religion, cosmology, sacred landscape, camay (a force believed to bring life and animation), intihuatana (shrines), sacred animals, ancestors, social issues, organisation, succession, festivals, climate, agriculture, irrigation, imperial expansion, pilgrimage, building an empire, architecture, Inca roads and carved rocks. He justifies this approach at the end of the chapter:

To gain a true appreciation of Inca astronomy, we must first gain an understanding of Inca culture and the way its people viewed the world. We have to be careful not to make the same mistake as the sixteenth century Spaniards by interpreting what we see through our own frame of reference. (p. 78)

The author thus makes the reader aware of how deeply astronomy is a part of existence from the Inca perspective:

The Incas did not view astronomy as a separate entity, but instead as an integral part across many components of their culture. It is only through an understanding of such complex interrelationships that we can begin to fully understand what the Sun, Moon, planets, and stars meant to the people of the Andes. (p. 80)

Chapters 4, 5 and 6 reinforce how astronomy was a thread running through Inca culture. In Chapter 4, Gullberg explores aspects of the huacas and ceques that are still little known, such as their relationship with astronomy and controversies about their meaning. The two chapters that follow are concerned with principles of archaeoastronomy and with Inca astronomy and cosmology, the latter exploring the constantly present relationship in Inca civilisation between, on the one hand, religion, social organisation, festivities, harvest and the development of calendars, and, on the other, the movement of the Earth and of isolated stars and constellations. This relationship is all due to empirical Inca knowledge of mathematics and about the movements of the stars and other celestial objects.

Chapters 7 to 9 focus on sky orientations, particularly astronomical orientations distributed in three areas: at or near Cusco, at Tipon and at Saihuite; in the Sacred Valley; and in and surrounding Machu Picchu. This encompasses 32 archaeological sites involving temples, plazas, cities and other architectural features with celestial orientations, all of which are approached with methodological care and in technical detail. The hypotheses, data and references are significant for archaeoastronomers, archaeologists and students, while also contributing to public understanding more broadly.
The book is a contemplative journey through time, allowing readers to immerse themselves in the wide range of knowledge that was developed by the Incas. The illustrations also deserve special mention, with photos that convey the grandeur of the Inca legacy. Worthy of special mention are the beautiful watercolours produced by Jessica Gullberg.

The book achieves its objective masterfully, offering those interested in Inca archaeoastronomy a trove of information, images and data obtained by the author from his exhaustive field research. We strongly recommend this book for the rigour with which the author presents his findings without reducing them to purely astronomical interpretations or as something separate from their cultural context; Inca astronomy was an essential part of their cosmology, religion and agriculture.