

Obtaining Qibla Calculations

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Introduction

This is the third paper in a series of papers on “Early Islamic Qiblas.” Eventually this series will be compiled together under one cover.

After publishing the book *Qur’ānic Geography*¹ in 2011, fellow historians and academics encouraged me to publish my research data on early Qiblas more fully. *Qur’ānic Geography* focused on the geographical references in the Qur’ān, with only minor attention given to the mosques of early Islam that pointed to the city of Petra in Jordan.² These additional papers attempt to provide some of my research data more fully and address a few resulting issues in greater detail. So please consider this a work in progress.³

This paper concerns the techniques I used to measure the qiblas of mosques, both through visiting the mosque, and also through using online resources. The casual reader might imagine that one needs only to briefly visit an old mosque to determine its original qibla direction, or they might imagine that one simply has to zoom over it with Google Earth.

While these may be helpful activities it actually entails a lot more work. When undertaking this research, I first needed to locate appropriate mosques. The Middle East is filled with mosques, and many of them claim a long history. But few actually date back to the founding years of Islam. Additionally many of the old mosques are hard to date.

1. *Qur’ānic Geography*, by Dan Gibson, Independent Scholars Press, 2011, Vancouver, Canada
2. These are found in *Qur’ānic Geography*, starting in page 251, chapter eighteen, which is a mere 22 pages out of total of 480 pages.
3. Please email me at: research@canbooks.ca

My research spanned several decades of traveling and collecting data, and later was augmented by colleagues and interested friends who forwarded to me coordinates of mosques that they had “discovered” and wondered if they would fit into my research. Because there are so many mosques, each with varied histories, I began by researching papers written by historians and archeologists. Later, when I discovered the online database at archnet.org I added more mosques that I had previously missed.

Before I visit a mosque, I preferred to first learn as much as I can about the mosque, such as when was it built and when might it have been reconstructed. Most functioning older mosques have undergone extensive rebuilding over the centuries. One might imagine that when visiting an early mosque it will look like the beautiful structures that commonly amaze western tourists. Usually the opposite is true, as many of the earliest mosques are just piles of stones with a bit of foundation, usually with nothing standing more than a meter high. Whatever the case, I needed to work my way back through various levels of remodeling and rebuilding to understand the earliest structure and what its qibla might have looked like.

When I learn of a mosque, I usually begin with an online visit to Archnet⁴ where I search for the mosque in question. This website is a globally-accessible, intellectual resource focused on architecture, urbanism, environmental, landscape design, visual culture, and conservation issues related to the Muslim world. Archnet’s mission is to provide ready access to unique visual and textual material to facilitate teaching, scholarship, and professional work of high quality. Officially launched in 2002 it began as a partnership between the Aga Khan Trust for Culture and the Massachusetts Institute of Technology (MIT). Archnet has since evolved into the largest open, online architectural library with a focus on Muslim cultures. Its digital archives form a comprehensive resource on architecture, urban design, landscape, development, and related issues. Archnet provides a bridge for interested persons to learn how to enhance the quality of the built environment, to compensate for lack of resources for students and faculty in academic institutions, and to highlight the culture and traditions of Islam.

4. <http://archnet.org>

Archnet's ambition is to become the authority in the field of architecture in Muslim societies today by providing an unparalleled resources featuring vetted and refereed articles, data, and research. Through contributions from the Aga Khan Trust for Culture, the Aga Khan Program for Islamic Architecture at Harvard and MIT, and donated collections of historic archives and documentation on contemporary building trends shaping the built environment today, Archnet continues to grow and is an excellent resource to begin with.

The new version 2.0 of Archnet was launched in 2014 and is a partnership between the Aga Khan Trust for Culture and the Aga Khan Documentation Center at MIT Libraries. Together, these two institutions, established over three decades ago, share an integral education mission to generate and disseminate knowledge and resources; provide a venue for debate and discussion; showcase best practices and lessons learned; and, present Muslim visual and material culture with historic, cultural, and geographic specificity. Despite all of this, Archnet does not provide us with any data on the qibla direction of the buildings in their database.

As an example, let's assume that we want to examine the palace and mosque complex in Lebanon known as 'Anjar. A search on Archnet will bring us to site number 3711.⁵ If we choose "DATA" from the menu, we will discover that this Umayyad site was constructed in 714-715 AD or 96 AH. There are no dates given for remodeling or rebuilding because this site was never rebuilt although if you read the attached article there is evidence of some Byzantine influence in the architecture. When reading the attached article by Hafezk, K. Chehab titled *On the identification of 'Anjar ('Ayn al-Jarr) as an Umayyad Foundation* we are alerted to some of the earlier archeological work that has been done on the site starting in 1953.⁶

From this website we learn that 'Anjar was a large palace complex, with a palace mosque occupying a spot in the south east quadrant of the complex, but near the centre of the complex.

From an general internet search we can also discover that 'Anjar is a UNESCO Heritage site.⁷ By contacting UNESCO we can get the address of the National Council of Tourism in Lebanon and a list of the archeological excavations and perhaps even an email address of those who did the excavations. If we have done our research right, we will visit 'Anjar with a ground plan of buildings. The most popular is one done by Creswell that is available on the Internet.⁸

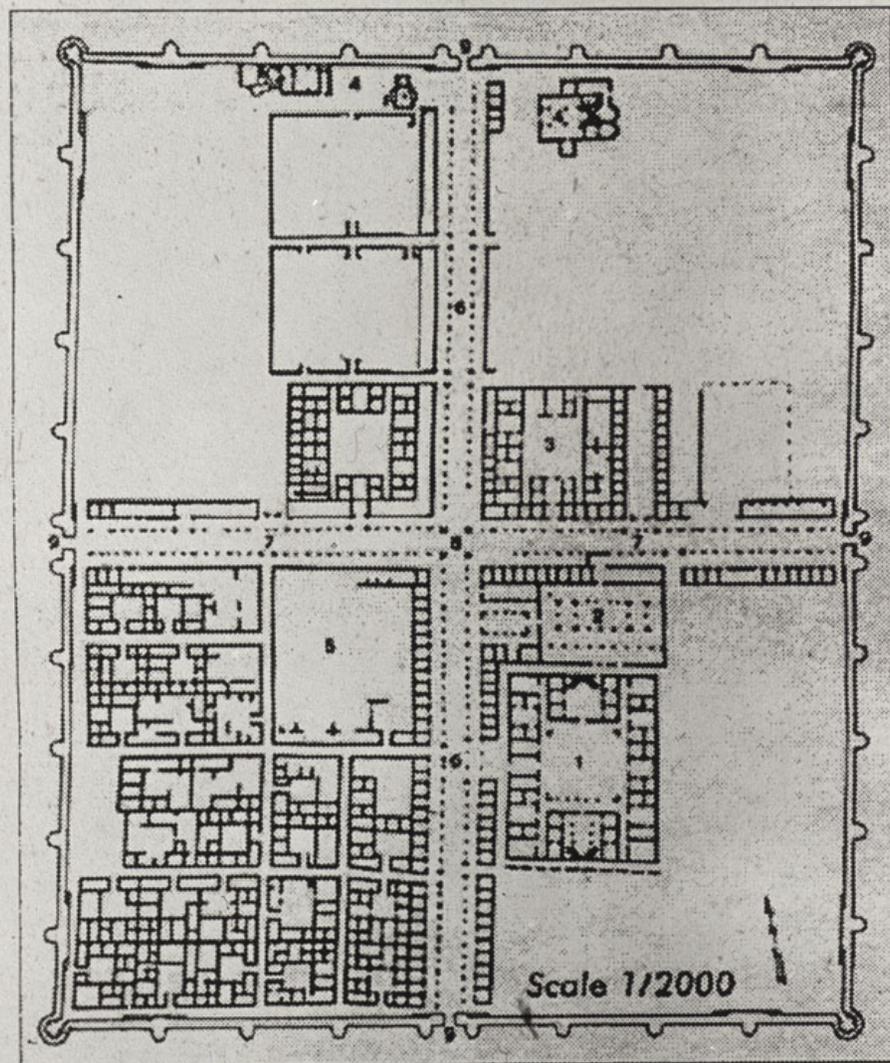
5. (<http://archnet.org/sites/3711>)

6. Hafezk, K. Chehab, *On the identification of 'Anjar ('Ayn al-Jarr) as an Umayyad Foundation*

7. <http://whc.unesco.org/en/list/293>

8. <http://www.mousaler.com/anjar/ruins/data/excava.html>

SITE PLAN OF ANJAR



1. Palace
2. Mosque
3. Second Palace
4. Public baths and mosques
6. Cardo Maximus flanked by shops
7. Decumanus Maximus flanked by shops
8. Tetrastyle
9. Fortifications

When I first arrive at a site, I usually have to take a moment to orient myself. Most ancient sites are a maze of fallen stones and rubble and it takes a few minutes to locate where you are in relation to the plans you have downloaded. What we want to do is locate the palace mosque before we get sidetracked in exploring more of this amazing site.



Once we have identified the courtyard of the mosque which is surrounded by a portico with two bays to the east and west, and one to the north we can start to look for clues for the qibla direction. There are various pieces of evidence. For instance, on the south side, the prayer hall has two naves parallel to the qibla wall, like the Great Mosque of Damascus. Walls mark the location of a maqṣūra (مقصورة) in front of the mihrab. A small door next to the mihrab led to the great palace adjoining the mosque, of which a high fragment of the façade still stands.

Once the mosque is clearly identified, it is important to examine the foundation around the mosque to see if there is any evidence of an earlier mosque beneath it. One indication of this might be the use of different stones, masonry, or building material that is obviously different in style or weathering.

It is important to remember that one should never “move stones” or “unearth” anything. It is highly illegal in most countries to carry out an “excavation” without permission from the government.

Once we are satisfied that this is the original mosque, we can then go about determining the qibla direction.

I purchased my first dedicated GPS unit back in 1999, and thankfully they have improved over the years both in accuracy as well as in ease of use.

Despite this, not all GPS's are same. Some will give you a compass so you can determine direction and degrees on an angle while others will require that you set way points. If you want to set way points, then in 'Anjar it is probably best to try several things. First, set waypoints around the mosque. Fortunately the mosque roof has collapsed so we have access to satellites from within the mosque itself.

Second, I suggest standing in the middle of the central passageway that divides Anjar in half, probably somewhere in the north. (Use of a long tape measure will guarantee that the waypoint is in the middle of the road. This road runs directly parallel to the mosque, and will provide us with an easy reference, which we can check later in the mosque itself.

Set the first way-point in the middle of the pathway and then walk down that pathway a good distance and set a second way-point in the middle of the passageway. This could be repeated for the length of the pathway. This will provide us with a line that moves in the same direction as the entire 'Anjar structure. If you note the GPS coordinates of these way-points you can enter them in Google Earth to get a rough estimate. It is better to use Earthdata's ASTER data. The ASTER data has been validated by the U.S. Geological Survey and the U.S. National Geo-spatial-Intelligence Agency. However, if you want to use ASTER, you need to ask for permission first, and explain your purpose for wanting access to their data.

Here are some guidelines I have made for myself over the years. First, if the mihrab is not evident, or if the mosque or building was constructed before the mihrab was first used, then I need to find the qibla wall. Sometimes there is a mark on this wall to indicate that it is a qibla wall. Sometimes it is just evident from the architecture that people lined up for prayer towards that wall. Remember that many early mosques were wider than they were deep. This is to allow people to stand in a wide line facing the qibla wall, rather than in short lines going towards the back, like you might find in an older church.

It is important not to measure the qibla direction using a side or back wall. There was no need for early mosques to be square or rectangular. Some have very odd shapes. However, it is usually obvious where people stood in a wide line facing a wall. Again, let me repeat, I

strongly recommend NOT using side walls or back walls, as most of the early mosques were far from square. In my calculations I projected 90 degrees from the Qibla wall ignoring all the other walls unless they were at a right angle to the qibla wall. The mosque I demonstrate in the film⁹ was anything but square, so that is why the Qibla wall alone must be used.

Second, as I have examined many mosques, I now recognize that there are only a few qibla choices. Most mosques face Mecca in Saudi Arabia. They may be off a few degrees, but it is obvious that Mecca is their qibla. However, after examining a number of early mosques it became obvious that they were not facing Mecca but were facing southern Jordan. Only after correlating data from eight or nine such mosques was it obvious that they faced the city of Petra. However, some mosques faced directly between Petra and Mecca. The third choice were the mosques of North Africa and Spain that were more or less parallel to a line drawn between Mecca and Petra. There are very few mosques that do not follow one of these four patterns.

Another helpful action, is to speak to the custodians of the mosque or to the older men of the town or village, if there is one close-by. While they may only know the local explanation and history of the mosque, they may have some interesting insights. It is also advisable to spend some time in the neighborhood talking to people and getting the various names used for the mosque and asking about its history. Another good lead is to visit local historians and old men who like history. Sometimes I have asked for those who can recite poetry and genealogies. These men often have retained information that is not known to everyone. After returning home from the mosque, I would put all the information together, and then check what I had found with online satellite photos.

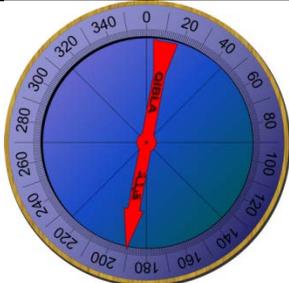
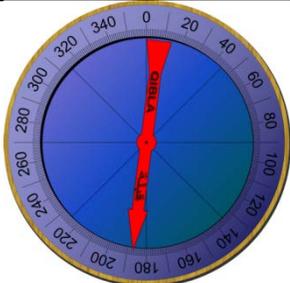
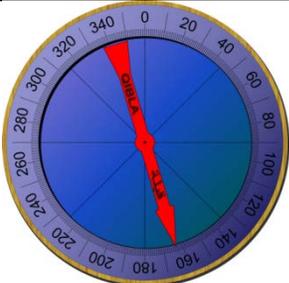
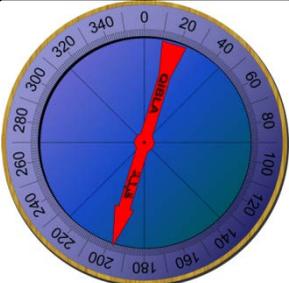
One of the dangers I found in calculating the qibla direction, is to simply look down from space at a satellite photo and try and imagine where this particular building points. One or two degrees variable in the satellite photo can have the qibla pointing off several degrees, which will shift it considerably if the place it is pointing at is several thousand kilometers away.

9. <http://The Sacred City.ca>

So, after researching over fifty mosques, I also found it helpful to also draw lines on a satellite photo from Mecca to the mosque. If Mecca was obviously not the qibla, then I would choose Petra, or one of the other common directions. It was usually very obvious which direction the mosque pointed.

The biggest challenge is to find mosques that have not been rebuilt over the centuries to face towards Mecca. Once a mosque has been rebuilt, it is very hard to tell its original qibla direction.

Below in the data that I collected for the 'Anjar Mosque and placed in *Early Islamic Qiblas*.

Actual Mosque	Petra	Mecca	Jerusalem
190.76°	187.15°	163.40°	196.93°
Missed by:	3.61°	27.36°	6.17°
			

Summary: This mosque points closer to Petra than any other Qibla direction, and is out by only 3.61°.

In the next paper I will examine how we all came to believe that the early Muslims were very poor at calculating their qiblas, and the paper following that will will examine how the early Muslims set their qiblas. Papers following those will look at other evidences that support Petra as the first Holy City of Islam.

Dan Gibson, November 2016