

Autumnal Equinox Fieldwork

The Autumnal Equinox marks one of the two days in the year when the sun sets almost exactly at west, and day and night are nearly equal in length. Documenting the sunset during this time allows for a direct comparison between lived observation and digital prediction. To study this phenomenon and find out the direction of the true west, I carried out three separate observations in: September 7th, September 14th and September 22nd. During each observation, a photo of the sunset was photographed, and compared with expected data.

The observations were designed to capture both the visual and directional aspects of the sunset. On September 7th, I photographed the sunset from my apartment window at around 7:20 PM, while the official sunset time was approximately 7:05 PM (figure 1).



figure 1

On September 14th, I repeated the process from the same location, this time I deliberately oriented myself westward before taking the photo in order to reduce uncertainty. Finally, on September 22nd, I took the sunset photo on Brighton Avenue in Allston around 6:30 PM, about

ten minutes after sunset. This time, I took advantage of the street's direction (a little bit western north), and found that the sunset was on the left of the Avenue, confirming its west direction (figure 3). For the last two observations, I also created a map showing both my location and the sun's direction. (figure 2, 4).



figure 2

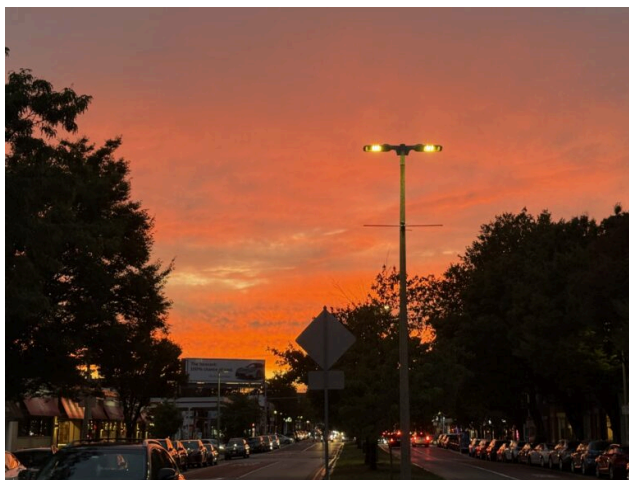


figure 3

the sun's descent. The data from the last observation (Sep 22nd), again, was the most successful one: by aligning the observed sunset with the CITGO sign and then verifying with the drawn direction on the map, the observation strongly matched the hypothesized west direction of the sunset on the day of the equinox. Through this process, it became clear that the reliability of the data depended less on simply repeating the procedure and more on addressing external factors such as the vantage point, weather conditions, and the presence of useful landmarks. From my perspective, each later observation has become stronger as earlier shortcomings were corrected.

If I repeat this experiment next year, I will make the following improvements: First, I would consistently use a high vantage point such as a rooftop to avoid obstruction by nearby buildings. Second, I would incorporate tools such as a compass or smartphone astronomy application to make my measures more precise. Third, I would plan multiple observation points, to confirm results from more than one perspective. Finally, I would conduct the observation more times to further confirm the validity and accuracy of the data.

Overall, I think the project was partially successful. It confirmed the basic astronomical expectation that the sun sets nearly due west on the equinox, so that through the last observation (Sep 22nd), I was able to define the direction of the true west. However, the early 2 observations, as mentioned above, were limited by weather (Sep 7th) and the obstructed horizons (Sep 14th), which reduced precision. While the combination of photographs, maps, and notes provided sufficient evidence for a conclusion, the dataset could be made more rigorous with additional trials and better planning.