

The orientation of the Kings Knot of Stirling Castle

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Abstract

In the satellite images of Google Earth we can easily see the King's Knot of the Stirling Castle, a knot garden made of earthworks with a geometric layout. Using SunCalc software, which is giving direction of sunrise and sunset on satellite maps, we can study the orientation of this Knot in relation to the apparent motion of the sun.

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Abstract: In the satellite images of Google Earth we can easily see the King's Knot of the Stirling Castle, a knot garden made of earthworks with a geometric layout. Using SunCalc software, which is giving direction of sunrise and sunset on satellite maps, we can study the orientation of this Knot in relation to the apparent motion of the sun.

Keywords: Satellite images, Google Earth, Orientation, SunCalc.

Stirling Castle is one of the most important locations in Scotland, relevant for its position, architecture and history. The castle is atop a hill, in a strong defensive position, so that it was an important fortification to control River Forth until the 1890s. Most of the principal buildings of the castle date from the fifteenth and sixteenth centuries [1]. Stirling Castle had a King's Park enclosed, of which today that part known as King's Knot still exists. In the Figure 1, we can see an image from Google Earth of the castle and of the garden.

The King's Knot is an octagonal stepped mound, standing in a double-ditched enclosure. It survives as a remnant of a wider garden, a description of which is given in the Rotuli Scaccarii Regum Scotorum, that is, the Exchequer Rolls of Scotland [2], Volume VIII, A.D. 1508-1513. At the beginning of XVI Century, the Castle had a "Great Garden" and a "Garden under the Wall". A "new park had been formed for the beasts, probably deer, boars, and the wild cattle which may still be seen in the parks of Cadzow and Chillingham, favourite pets of

James IV, as of other kings. It was in the Great Garden that the Round Table, or elevated plot of ground, sometimes called the King's Knot, had been laid out, of which the outlines may still be seen. Barbour refers to it, but the revival of the Arthurian romance by James IV (1473-1513), gave it a new significance in the chivalric and poetic traditions of Scotland" [2]. Let us remark that this reference gives that the King's Knot was also considered as a Round Table.



Figure 1 – Stirling Castle and its King's Knot as it is shown by Google Earth.

In [3], it is told that the earthworks we see of the King's Knot represent the final form created for Charles I, in 1627-9. In 1625, William Watts was despatched from London to be 'maister gairdiner to his Majestie at the Castell of Stirling' [4]. Probably, it was built for the king's Scottish coronation in 1633 [4-6]. "Viewed from the castle above, James IV had earlier created in the 1490s a landscape of leisure with his park, loch, fish ponds and great garden of fruit trees, flowers and hedges which came close to the garden ideal of the Italian Renaissance" [3]. Let us note that the King's Knot is defined a "knot garden", a garden of very formal geometrical design in a square frame (most Renaissance knot gardens were composed in such a manner [7]). However, as we will see in the following discussion, its layout could have an astronomic meaning too.

The archaeological investigation of the site proposed in [3] is very interesting. In this reference, it is told that aerial photographs taken in 1980, by the Royal Commission for Ancient and Historical Monuments of Scotland, made an important discovery: ditches in a trapezoidal form beneath and around the King's Knot mound suggested that an earthwork monument had preceded it. From the images of the archaeological surveying proposed in [3], it seems that earthworks changed their orientation. Here, we discuss what we can see today in the satellite images. In recent papers (see for instance [8-10]), we have compared the orientation of gardens with the direction of sunrise and sunset on solstices. This is quite easy to do by means of software, such as Sollumis.com or SunCalc.net (the use of this software was proposed in [11]). Software gives sunrise and sunset on satellite maps for any day of the year. In this manner, we observed that the gardens of Taj Mahal have specific orientations to solstices. These Mughal gardens, which had been planned to represent the Earth Paradise, seem being also representing a local horizon coherent with the apparent motion of the sun. Is this also possible for a knot garden? The answer can be positive, having these gardens a geometric layout too.

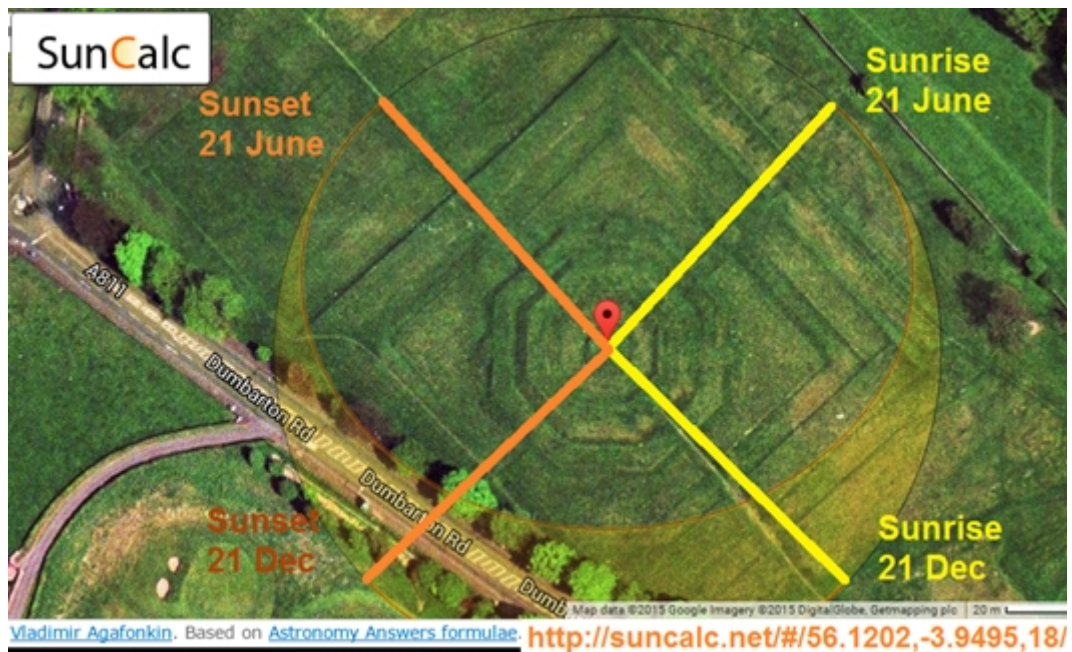


Figure 2 – Result of an analysis with SunCalc.net of the King’s Knot.

In the Figure 2, it is shown the result of an analysis with SunCalc.net of the King’s Knot. It is interesting that the orientation with the direction of the sunset on solstices is quite good. From the center of the knot, which is the most elevated part of these earthworks, the king could observe the azimuth spanned by sunrise and sunset throughout the year. Then, probably, the orientation of the garden is not accidental, but having an astronomical meaning. Let us conclude, remembering that the layout of this knot has an orientation which looks like that of the Roman Fort of Hardknott, of which we discussed in Ref.12.

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At the north-west side of the part of the Knot shown in the Figure 2, the garden has a layout resembling a giant board of "Nine Men's Morris" game. In Wikipedia (https://en.wikipedia.org/wiki/Nine_Men%27s_Morris), it is told that "giant outdoor boards were sometimes cut into village greens. In Shakespeare's 16th century work *A Midsummer Night's Dream*, Titania refers to such a board: "The nine men's morris is filled up with mud" (*A Midsummer Night's Dream*, Act II, Scene I)."