# The Great Pyramids of Kentucky 

Constellation alignments in the Broaddus (Ft. Ancient) Site

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September, 2018


#### Abstract

The pyramids of Kentucky are only partially researched, and certainly unknown to the public. Previous efforts to research and publicize them ended with very little about them being retained, meanwhile the unknown ones remain primarily on private land. The parabolic pyramid-mounds of the Broaddus site remain on federal land, however, at the Bluegrass Army Depot, and have miraculously survived basically intact. Their angular, distance, and dimensional alignments to Giza, Caracol (Belize), Orion, and Cygnus are studied utilizing precise ratios taken from multiple sources. Variances between the ratios are compared to analyze similarities and differences in design that can be understood from LiDAR (due to inaccessibility to the site) courtesy of the Kentucky From Above program. After some discussion of the results as relates the Orion and Cygnus Configuration Theories, the data is constrained to the 1000-2000 CE period and compared with Orion and Cygnus to obtain the actual delta of the angles. The ratios are used to form a triangular relationship and look for best-fit-curve for all the sites, but primarily Broaddus. The results demonstrate remarkable alignment to Cygnus often within $3 \%$ but up to $8 \%$ and exclude Orion for Broaddus, while leaving it and Cygnus open for interpretation at Giza. Caracol shows remarkable alignment to Orion, but no further remarks are made. In addition the dimensions (via LiDAR) of the main "belt" pyramids at Zone1, and an additional "awen" earthwork shape, roughly half the size of the Eagle Mound "foot" are shown. Distance data helps to constrain, but no value was found in dimensional data as all three sites vary wildly in design schemata, one being mega-sized, another being rectangles and trapezoids, and the final being ovular bases with cone-like ridged apexes, one of which is aligned North-by-Northwest, rather than due North. Additionally, the southeast adjacent mounds are shown to constrain to Lyra, putting a definite relationship between the pyramids of Broaddus and Cygnus. Further work remains to show all the precise relationships and demonstrate every possible astro-archaeological data, as well as more analysis of the earthwork, Zone2, and other possible serpentine earthworks throughout the property. Scans, satellite, and topographicals are provided to backup the identification of this Ft. Ancient mound site as actual pyramid mounds as opposed to construction "fill" piles. Roadways clearly conform to the designs of the site, which are remarkably geometric and cannot constrain to Draco or Pleiades easily, and distance ratios eliminate Orion, as well. Options for all interested parties are considered with no definite theories of origin, use, purpose, or significance yet known, leaving also room for further research using cultural data as well as geo-archaeological evidence. Lastly a call for providing future protection for all pyramids, but especially these hitherto unknown pyramids (as pyramid mounds rather than mere burial mounds) is put out, in anticipation of the time when the base may be shut down, leaving the site finally at the whims of the public's hands. A call for more computer (or at least caliper level precision) ratio analysis and even more sophisticated techniques is also put forth in a message of open interpretation, as this site has something to offer the entire archaeological community, Commonwealth, and the public at large.


Keywords: Ft. Ancient - pyramids - mounds - Broaddus - earthworks - Orion - Cygnus - Lyra - Caracol - Giza

## Pyramids in Kentucky

Kentucky has long been a place of mystery, with a history obscured by bloody fighting, change of hands of territorial control, and migratory populations from various haplogroups and cultures. In the 1930s, an effort was undertaken to make a study of the Mississippian culture in the Jackson Purchase section of the state by Webb and Funkhauser, et al... which was then revisited and addended by RB Lewis et al... However, while the study was extensive, it stopped short of proclaiming with the same fervor to the world as has been at Cahokia and Poverty Point and other unique places that there were [platform] pyramids in Kentucky, demurring instead to call them mounds. Indeed, they are mounds of earth, but in pyramidal platform style typical of the Mississippian culture (900-1700 AD) ${ }^{1}$. However, while the Wickliffe Mounds State Historic Site (initially a tourist developed site later turned into an educational and research facility in the 1970s-1980s revival of Miss. Culture studies) remains open, the remainder of these cultures were shut away.

Quite separately, an entirely different cultural movement somewhat contemporary to the Mississippian culture, dubbed the Ft. Ancient culture, was building mounds and rock earthworks in the Bluegrass region of the state. The more famous Ft. Ancient sites are in Ohio. However, at Broaddus Site, located on the federal property of the Bluegrass Army Depot, there remains one of the largest by number, and certainly by collective size, collections of pyramidal and conical mounds in the state.

Conical pyramids are not unheard of in Kentucky. At the Butterfield site in Livermore there are a large number of conical mounds which have been recovered in an ongoing study. However, nearby there is a large obviously man-made conical pyramid (See Figure 1) which remains unstudied due to the presence of a historical cemetery upon it (as has happened at other Adena-Hopewell mounds in the eastern Bluegrass ${ }^{2}$ ).

The main defining difference, for our purposes, between a pyramid and a mound is that a mound has usually a utilitarian purpose, such as burial, or refuse pile (such as a shell midden), and can be long, but the larger they get, tend to be elongated (such as Bean Mound). Whereas pyramids have a different, sometimes abstruse, sometimes spirituo-political use and purpose, as well as being larger, and obviously attempts at symmetry or other aesthetics are at work.

This work centers on the Broaddus Site ${ }^{3}$ pyramids (the "Great Pyramids of Kentucky") which have been the focal point of study of Dr. Kelli Carmean ${ }^{4}$.

These pyramids are located in the middle of a federal property and receive, therefore, excellent protection from the public. However, they are part of a larger cultural community which included a village, and

[^0]rows of farming gardens (Figure 2). It is not the author's speculation that the villagers built all of the mounds or necessarily any of them, but that they were built by a culture possessing atypical specialization in astronomical charting.

The reason these are the Great Pyramids of Kentucky is that the site is unique, as far as the author is aware, for being the only one that has the same footprint as that of Giza and Caracol (Figures 3 \& 4). That is to say an Orion's Belt configuration. There may likely be others (perhaps even the Adams Site-15FU4, in Kentucky). But they do not follow the easily understood recognizable pattern:

1) largest upper right (NE) pyramid
2) second largest middle, apparently in line with the largest
3) small and/or off-center lower third pyramid, distinctive to the Orion's Belt arrangement.
4) greater distance between the middle and first than the middle and third (at least upon glancing, measurements have been procured to determine the accuracy of this presumption of the eye ${ }^{5}$ )


Figure 1: Butterfield mounds and pyramid, Livermore, KY; credit: KY From Above Partners ${ }^{6}$

The author would like to make clear from the onset that while the data presented supports a definitely angular and moderately definite distance/spatial correlation between the three, and appears to support, in this

[^1]way the Orion Configuration Theory (see: Bauval \& Gilbert, 1994 ,Orofino \& Bernardini, 2015), in other ways it may be used to discount it, or prop up support for other constellation systems, particularly the Cygnus Configuration Theory (See:Collins). The manner in which it provides support is primarily angular, and in an absence of diffusion between the three cultures a similar template from which all three are clearly operating, as Orion is easily the most ubiquitously recognized constellation worldwide, and has been associated with gods, God, Wakan-Tanka, the Great Man, etc...

The way it discounts the theory is, assuming roughly equivalent mathematical skills of the three cultures in star-mapping, they have somewhat different spatial representations of the three stars of Orion's belt. Presumably if they were to be capable of angular measurement, they could also mark distances in the same way. However, this problem is possibly addressed in terms of time and the change of star position due to the their proper motion, which has been accounted for in
 the data at intervals 2000CE, 2550 BCE, 5000 BCe and $11000 B C E^{7}$. See later sections for results.

Figure 2: Broaddus Site village, wall, mounds, and fields ${ }^{8}$


Figure 3-Giza and Orion overlay ${ }^{9}$; credit: Orofino \& Bernardini ${ }^{10}$
However, the idea that their relative sizes may be related to the star size, or to each other, is thoroughly disproven in the data.

[^2]While it may be that relative brightness changes in a star, it is untestable, and even old Chinese manuscripts are not reliable enough as measures of apparent diameter or brightness to be able to support this theory. The author also compared the arrangement of the main three pyramids at Broaddus to the Pleiades and Draco prior to concluding it was due to Orion configuration. The Pleiades, likewise had a few overlaps and is somewhat enough like Broaddus' mound configuration to justify further study ${ }^{11}$. However, a further counter to this argument is that Broaddus is laid out much more geometrically and in a somewhat snake-like pattern (as shown in the next section). It may be actually several different recordings of the Orion configuration at the same site at different epochs, as proper motion and precession of the equinoxes took its course. However, more study is required.


Figure 4: Caracol, Belize, LiDAR study ${ }^{12}$; credit: BBC/A\&D Chase
In future work (and the author encourages others to join in as well), the entirety of the Broaddus site may be compared to several constellations, golden ratios, sacred geometry, etc... to see if other interesting patterns emerge. This work will focus in only on the alignments of these three sites and the aforementioned Orion arrangements.

Returning to the discussion of the pyramids in Kentucky, the following table lists the pyramids of Kentucky as known to the author/public ${ }^{13}$ with a listing as to extant, damaged, desecrated, or destroyed (advancing from left to right in severity of destruction).

The pyramids of Kentucky deserve a full study and revelation in their own right. Most of them have been reduced in importance to mere burial mounds or treasure hoards, which, shockingly having been raided of their valuables are regarded as no more than mere dirt, as opposed to being places of wonder such as the Valley of the Kings or the sacred (to the Chinese) White Pyramid or tomb of Qinshi Huangdi. Some, worse than cemeteries, have been pushed aside for parking lots or buildings, or simple activities such as farming. If lucky, they are simply left to erode away without fanfare, state or local protection, and tribes to this day remain unaware of them.

[^3]| Site | Type | Status | Era | Dimensions ${ }^{15}$ |
| :---: | :---: | :---: | :---: | :---: |
| Adams 15FU4 | Platform \& Conical | Extant | Mississippian | $50^{\prime} \times 150 ' \times 20^{\prime}$ |
| Annis 15BT2 | Platforms | Damaged | Mississippian | $110^{\prime} \times 98{ }^{\prime} \times 1{ }^{\prime}$ |
| Backusburg 15CW64 | Platform | Extant | Mississippian | 170' $\times 70{ }^{\prime} 40$ 'x5-'x3' |
| Biggs Site ${ }^{16} 15 \mathrm{GP} 8$ | Conical | Destroyed | Hopewell | 80' diameter |
| Bowman 15WH14 | Conical | Damaged | Mississippian | 63.6' diameter x 20 , |
| Broaddus 15MA179 | Conicals | Extant | Ft. Ancient | See Table 2 |
| Butterfield 15McL7 | Conical | Extant | Woodland/Ft. Ancient | 490' diam x 60-70' |
| Canton 15TR1 | Platform | Extant | Mississippian | $150^{\prime 2} \times 30^{\prime}$ |
| Croley-Evans 15KX24 | Platform | Damaged | Mississippian | $150^{\prime} \times 360^{\prime} \times 12^{\prime}$ |
| Dunklau 15WA374 | Platform | Extant | Mississippian | $33^{\prime} \times 23^{\prime} \times 2.5{ }^{\prime}$ |
| Gaitskill ${ }^{17}$ HM1EIU | Ovular-Conical | Desecrated | Adena | $100^{\prime} \times 40^{\prime} \times 30^{\prime}$ |
| Gravecreek Ridge 15MI109 | Platforms | Extant | Mississippian | $115^{\prime 2}$ \& 129 ${ }^{\prime} \times 95^{\prime \prime}$ |
| Nelson-Gay/Mound Hill | Conical | Damaged | Adena | 76' diameter x $20^{\prime}$ |
| O'Bynam's Fort | Circular-Platform | Damaged | Hopewell | 25' diameter $\mathrm{x} \sim 18$ ' |
| Page Site "Lost City" 15LO1 | Platforms | Desecrated | Mississippian | $85 \times 78^{\prime}$ \& $98{ }^{\prime} \times 71^{\prime}$ |
| Rowlandton 15MCN3 | Platform | Desecrated | Mississippian | $75^{\prime} \times 63{ }^{\prime}$ |
| Sassafras Ridge ${ }^{18} 15 \mathrm{FU} 3$ | Raised Oval-Platform | Extant | Mississippian | 238' diameter x 50' |
| Tolu 15CN1 | Platform | Damaged | Mississippian | 103' $\times 75$ ' oblong |
| Turk Site 15CE6 | Platforms | Damaged | Mississippian | $182^{\prime} \times 134^{\prime} \times 10^{\prime}$ |
| Twin Mounds/Nolin 15BA2 | Platforms | Extant | Mississippian | $173^{\prime 2} \times 25^{\prime}$ \& $15^{\prime}$ |
| Wickliffe 15BA4 | Platforms | Desecrated | Mississippian | 145 ' x 118' |

Note: list excludes platform shell middens ${ }^{19}$, elongated burial mounds ${ }^{20}$, and simple conical mounds ${ }^{21}$ under 25 ,

[^4]
## The Broaddus Site



Figure 5: Zone 1 - The large conical Broaddus mounds ${ }^{22}$
The main focus of the paper will be the three largest mounds just north and west of center in figure 5.
However, please note the following features:
$>$ Secondary row of three large mounds, almost parallel to the first row
> Tertiary row to the north and east of that, with almost reversed design of expected pattern (making it similar to Adams).
> Several smaller mounds which may or may not be related to the warehouse and road construction and which will need excavation as they may be nothing more than dirt piles associated with warehouse construction. However mounds are not found outside of zones 1 or 2 . See figure 6
$>$ Notice how the mound construction could easily be missed due to geometry of roads, but in this case appears rather to have caused to the geometry of the road construction to be fixed upon their course in an interweaving and angular pattern.

[^5]$>$ It is important to note that it is against army regulations to use mounds of dirt for storage as well as requiring underground storage to be surrounded by a moat of protection and primarily underground. ${ }^{23}$
> The mounds almost appear related to warehouses until compared with the remainder of space of warehouse area, which is devoid of conical mounds. ${ }^{24}$


Figure 6: Wide Angle LiDAR of the Depot, showing zones 1 and 2


Figure 7: Zone 2 close in; indeed excavations need to be done to include/exclude construction piles

If this seems impossible, bear in mind that there are literally hundreds of examples of white settlers and government projects built conforming to existing earthworks, or even replacing and destroying them, or hiding them (sometimes without even knowing they were native earthworks). That the government would lay out a road around alluring conical mounds does not surprise the author at all. Many churches (including several in Kentucky) are built this way, including at Shannon, Livermore, and Round Hill (Kirksville).

Note also there is no "bridge" connecting the road to our three main pyramids (Figure 8), as there are at the warehouses.

[^6]

Figure 8: Closer inspection of Zone 1a (The Great Pyramids) ${ }^{25}$ and "awen" earthwork imprint (see Figure 12) ${ }^{26}$

## Dimensions

The main issue of importance, is the sheer size of these mounds. Figures $9-11$ are LiDAR shots with measurements (in meters). The height is not so easily ascertained without on site inspection, but is certainly greater than 20'. The following data was obtained using the KY From Above measurement tool, as that is the best that can be obtained at this time. The site is restricted access.

## Table 2 :: Pyramid Dimensions at Broaddus Zone 1a

$\begin{array}{lllll}\text { Dimensions } & \text { Estimate Lengths ( } \mathrm{m}) & \text { Avg D/L } \quad \text { Dim_Ratio } \quad \text { Area ( } \mathrm{m}^{2} \text { ) Area_ratio }\end{array}$

| GP_V | 62.2 | 56.4 | 1.229249012 | 2498.24646 | $102.12 \%$ |
| :--- | :---: | :---: | :---: | :---: | :---: |
| GP_H | 50.6 | GP/MP | $\mathbf{1 . 2 7 1 7 0 2 3 6 8}$ | $\mathbf{2 4 4 6 . 5}$ | $\mathbf{1 . 6 2}$ |
| MP_V | 48.5 | 44.35 | 1.206467662 | 1544.771758 | $95.64 \%$ |
| MP_H | 40.2 | MP/LP | $\mathbf{0 . 9 3 2 7 0 2 4 1 8 5}$ | $\mathbf{1 6 1 5 . 2}$ | $\mathbf{0 . 8 7}$ |
| LP_V | 51.6 | 47.55 | 1.186206897 | 1775.734838 | $94.35 \%$ |
| LP_H | 43.5 | GP/LP | $\mathbf{1 . 1 8 6 1 1 9 8 7 4}$ | $\mathbf{1 8 8 2}$ | $\mathbf{1 . 4 1}$ |

[^7]H means horizontal, and $V$ means vertical. The area was calculated both ways (measure and using an averaged radius, and a ratio was obtained. The ratio between the three pyramids was obtained using the second value that came from Figures 9-11. The precision is not necessary, and dimensions will vary. As explained in the next section ratios are key to this paper. However here, no caliper was used.


Figures 9-11: Great Pyramid, Middle Pyramid, Lower Pyramid, going from top-left to bottom-left to bottom-right.

Areas read: $2446.5 \mathrm{~m}^{2}, 1615.2 \mathrm{~m}^{2}$ and $1882 \mathrm{~m}^{2}$, respectively.

Credit: KY From Above Partners



Figure 12: Awen dimensions; credit: KY From Above

Please note the dimension of the centerpiece of Eagle mound are $\sim 60.3 \mathrm{~m}$ across the same span as the green line, so roughly twice as large as here. ${ }^{27}$


Figure 13: Topo of region showing change of road plans to conform to Indian mounds; credit: Google, AnyplaceAmerica.com

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https://ohioarchaeology.org/39-resources/research/articles-and-abstracts-2008/261-lidar-assessment-of-the-newark-earth works using 1054' as diameter and caliper to generate ratios

## Method and Argument

The inability to be on site obviously hinders the author's ability to present site surveys and more real data. Fortunately, the method used herein it is not necessary to do so. It is based upon ratios and relationships between the three pyramid mounds. Though this will not serve as definitive proof, it will serve as highly compelling evidence, which should encourage mainstream academia and even more impressive statistical analysts to repeat the work, augment, and clarify.

There are three ratios to be discussed below: distance (between), angular, and dimensional. These are not, once again definitive proofs as much as indicators. The variance percentages show both discrepancies and interesting correlations. The results will be posted in tables and graphs below, with a couple of scans given for comparison. But first a few words about the method.

Because Giza has so many topographical surveys, of varying quality, several (5) were used for this. One - Giza2 - was found to be much more out of alignment with the other surveys. The highest quality surveys are Giza 1 (Aeroshot), 3 (topo), and 5 (Orofino). Despite this, Giza2 was included because 5 surveys should theoretically provide a better mean than 4 , although two sets of data suggest that Giza2 is not an accurate survey map.

As mentioned before, only one Caracol survey was included because of lack of quality surveys and the high quality of the LiDAR scans. Meanwhile two measurements with the caliper were taken (in inches ${ }^{28}$ ) for Broaddus. The first (Broaddus1) is the center of white in LiDAR scans, while the second (Broaddus2) is the apparent center of area. These two are then averaged.

The next set of data are Orion star-maps of the dates previously mentioned. Two of the maps (2000CE and 2550 BCE ) come from Orofino, et al... ${ }^{29}$ and two more (5000BCE and 11000 BCE) come from the starmap website. The last two are not used in the angular measurements because this study is not about Giza, and the Broaddus site is already carbon dated to the Ft. Ancient period. On the off chance it could go back to the same age as the pyramids, the first two dates are included. No dimensional data is acquired for Orion.

The final set of data are Cygnus star-maps, with data for 2000CE. Though this configuration theory is less well known, it is a reasonable theory, as is shown here.

A preliminary set of arguments to defend the method will now be made.

1. The primary reason to use ratios is to get an accurate, and fairly precise "bird's eye view" of the planner's intentions.
2. The next reason is that ratios should show basic correlation, possibly between the sites and Orion, but in this case, mostly to test for correlation with each other.
3. Following that, the author is interested in possible starmap dating (astro-archaeology) that could possibly relate to the formation of the site or sites.
4. Also, the benefit of using ratios is to reduce the need for exact precision, while adding to the claim of general accuracy by the us of specific, precise tools (caliper and compass).
5. Finally, although the work presented cannot prove beyond any doubt that the Broaddus, Giza, or Caracol, Belize sites are correlated to Orion's belt, the work can show clear evidence of some type of connection. Again, it can be left to lead archaeologists, astronomers, geologists, and engineers to find remaining survey results and extrapolate more precise and comprehensive results.
In the following sections after the initial figures, tables will display the results of comparisons found in the data ${ }^{30}$.

[^8]https://docs.google.com/spreadsheets/d/e/2PACX-1vQ854U74hIEHYVxJtDadoHMZQk0wlsTZaOn4JHkuB50GrOB3rgUZ QUR5HH8JGVnybdmbO_GKrNPXqRV/pubhtml

## Comparisons \& Results

## Broaddus Site, Zone 1



Figure 14: trees covering mounds, hiding their conical contours but not their clear angular arrangement

Table 3 :: Broaddus Distances, Ratios, and Variances
Distances ${ }^{31}$ Broaddus1 ratios Broaddus2 ratios Var_Dist Var_Ratio Avg Avg Ratio

| GP/MP | 0.7275 | 1.135122484 | 0.74 | 1.181919821 | $1.69 \%$ | $3.96 \%$ | 0.73 | 1.16 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MP/LP | 0.6409 | 0.4620764239 | 0.6261 | 0.4454642476 | $2.36 \%$ | $3.73 \%$ | 0.63 | 0.45 |
| GP/LP | 1.387 | 1.90652921 | 1.4055 | 1.899324324 | $1.32 \%$ | $0.38 \%$ | 1.40 | 1.90 |

[^9]Angles Ratios

| LP>MP | 63.00 | 1.15 |
| :--- | :--- | :--- |
| MP>GP | 55.00 | 0.95 |
| LP>GP | 58.00 | 0.92 |

Suffice it to say, distance measurements between Broaddus1 and Broaddus2 are within 3\% error margins, meaning that variations are acceptable, and the mean values are also acceptable. The average ratios are therefore taken to be reliable though variations are slightly above 3\% error margin. Regardings the angles, the compass provides decent precision, and each of the angles provided (which are standard for all comparisons herein), were 'on the nose'. The ratios, therefore, are also taken as more than adequate. The relation of angles can, of course, be used to create a triangulation, if that were necessary.

## Giza

clockwise rotation of $195.3^{\circ}$ ) and has been overlapped to the topographic map of the/Giza necropolis, as shown in Fig. 1.


Figure 15: Giza5, with lines present for analysis, 2500BCE; credit: Orofino et al... ${ }^{32} /$ Author

[^10]The following tables show the Giza measurements, and the comparisons with Broaddus.
Table 5 :: Giza Pyramids Distances, Ratios, and Comparisons

| Giza1 | ratios | Giza2 | ratios | Giza3 | 3 ratios | Giza4 | 4 Ratios | s Giza5 | Ratios | Avg | Avg Ratio | Var_Broaddus Ratio |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2.0778 | 1.0391 | 1.5507 | 1.0471 | 1.7349 | 1.0789 | 9 1.8251 | 11.0598 | 81.941 | 1.0606 | 1 1.80 | 1.06 | 9.58\% |
| 1.9995 | 0.5055 | 1.48 | 0.468 | 1.608 | 80.4845 | 51.7221 | 10.488 | 41.83 | 0.4865 | 1.70 | 0.49 | 6.76\% |
| 3.9551 | 1.9035 | 3.16 | 2.0373 | 3.3188 | 881.9129 | - 3.5256 | $6 \quad 1.9317$ | $17 \quad 3.7612$ | 21.9377 | 73.49 | 1.94 | 2.15\% |
| Table 6 :: Giza Angles, Ratios, and Comparisons |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Angles | Giza |  | Giza2 | Giza3 | Giza4 | Giza5 | Avg | Ratio | Var_Br | oaddus |
|  |  | LP>MP | 58.90 |  | 61.60 | 58.50 | 56.50 | 58.50 | 58.80 | 1.20 | 4.16\% |  |
|  |  | $M P>G P$ | 47.00 |  | 55.00 | 48.00 | 48.00 | 48.00 | 49.20 | 0.95 | 0.12\% |  |
|  |  | LP>GP | 53.00 | $0 \quad 4$ | 49.10 | 53.00 | 52.00 | 52.00 | 51.82 | 0.88 | 4.46\% |  |

Table 7 :: Giza Dimensions, Ratios, and Comparisons

| Dimensions | (m) | Avg D/L | Dim_ratio | Area ( $\mathrm{m}^{2}$ ) | Area_ratio | DimVar_ Broaddus | Ratio_Di mVar | $\begin{gathered} \text { AreaVar_Bro } \\ \text { addus } \end{gathered}$ | Ratio_Area Var |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| GP_V | 230.35 | 230.35 | 1 | 53061.12 | 100.00\% | 75.52\% | 22.92\% | 0.952917572 | 2.12\% |
| GP_H | 230.35 | GP/MP | 1.569890275 | 53061.12 | 2.46 |  | 18.99\% | 0.953892796 | 34.38\% |
| MP_V | 146.73 | 146.73 | 1 | 21529.69 | 100.00\% | 69.77\% | 20.65\% | 0.928249243 | 4.36\% |
| MP_H | 146.73 | MP/LP | 1.350358918 | 21529.69 | 1.82 |  | 30.93\% | 0.924978028 | 52.29\% |
| LP_V | 108.66 | 108.66 | 1 | 11806.99 | 100.00\% | 56.24\% | 18.62\% | 0.849603159 | 5.65\% |
| LP_H | 108.66 | GP/LP | 2.119915332 | 11806.99 | 4.49 |  | 44.05\% | 0.840602972 | 68.69\% |

Preliminary results in Table 5 show fairly clearly that the distance ratio between the pyramids for Giza are only very close for the longest distance GP/LP taken as a ratio with GP/MP. The variance between Giza and Broaddus in this case is only $2.15 \%$. While the second ratio, which compares GP/LP to MP/LP is close, it is not within a $5 \%$ error margin (if such a standard is applicable in this methodology).

The ratio of most anticipation, GP/MP to MP/LP, with the position of the Middle Pyramid being the focal point, was $9.58 \%$ at variance between Giza and Broaddus. The author suggests that if the Orion correlation is viable, then this would be the result of different timetables, and only a starmap comparison can resolve the discrepancy. Otherwise it must be concluded that either there is no Giza/Broaddus connection, directly, or that the connection is an issue of engineering difference of opinion. Considering the entire arrangement is not as well aligned to True North as the Giza design, which shows clearly superior survey plans, it may be deduced that the Ft. Ancient engineers were not expert surveyors. A general review of Ft. Ancient earthwork architecture will bear out this hypothesis. The fact is that while they probably considered the angular alignment paramount, it is doubtful that the precise distance and a north-south alignment to within hundredths of an inch would be important for their small community's needs. This type of monumental architecture is more comparable to Stonehenge's precision than to the Great Serpent Mound. It would be advisable for follow-up
solstice and equinox analysis to be conducted to determine if, in fact, this was what altered the north-south alignment, rather than carelessness.

In regards to the angular alignments found in Table 6, they are nothing short of spectacular: all are within $5 \%$ of error, with one being $0.12 \%$,the ratio centered around the comparison of GP>MP and MP>LP. That is to say, the centerpiece of the angular arrangement. Actually, the angular alignments were what preliminary attempts brought this analysis to the forefront. The author did the following in trying to determine constellation alignments:

1. The author formed a rough "snake-like" pattern on the mounds in overlay, based on just visual intuition. See Figure 16.
2. The author compared this with actual Draco arrangements, to check for consensus, none were found. But for Cygnus they were highly suggestive. See Figures 17 and 18.
3. Based on Aztalan and Shiloh, etc... the author pulled down Pleiades images from Google (see Figure 19) and overlaid them using Photoshop CS2's 'opacity' function. Although the alignment remains remotely possible, it did not seem likely. The geometries were just too random and unmatched.
4. The same was done with Draco and Cygnus, with worse results because of the angle of the tail.
5. Based on the center arrangement (the Belt), the author tried Orion (Figure 20). The angle of the constellation had to be adjusted, but otherwise no horizontal/vertical skew was done to Figure 21 to "make it fit".
6. On a hunch, the author consulted images of Giza and the "Orion alignment", and found Figure 22, which was then rotated and scaled to the right sized, without stretch/skew. The alignment was uncanny, and justified a deeper analysis ${ }^{33}$ presented herein. See Figure 23.
7. The same was repeated with Cygnus (2000CE). See Figure 24

[^11]

Figure 16: Snake effigy? Credit: Author/KY From Above
Figure 17: Draco, not the serpent here ${ }^{34}$


Figure 18: Cygnus, a realistic contender


Figure 19: Pleiades, too random for such rigidity


Figure 20: Orion


Figure 21: Overlay by author ${ }^{35}$ Figure 22: Giza-Orion Alignment (Google)

[^12]

Figure 23: Orion-Giza alignment overlaid, rotated $8^{\circ}$ and opacity turned down to half; credit: Author/KFA

The triangular relationship, shown as ratios, is well within engineering margins (indeed, better than Caracol>Orion or Caracol>Giza)! The author considers the survey and construction efforts of the Ft. Ancient project managers to be impressive, indeed.

As to implications as regarding diffusion connections between the very Old World design and Broaddus, the author makes no claims thereby. In fact, given the starmap results and implications, it seems incredibly doubtful that the formation is derived from Phoenicians or the like.

It seems rather, an independent work which independently verifies the genius of all three cultures, while displaying their difference in methodology, subjective observations (of meaning, brightness, etc...) and design decisions. For example notice that the Lower Pyramid is not only the same basic size as the MP in both Caracol and Broaddus (but not at Giza), but at Broaddus, the LP also does not have a central ridge pointing north ${ }^{36}$, but slightly northwest. See Figure 11.

[^13]

Figure 24: Cygnus 2000CE overlay by author (filter applied instead of opacity); credit: Author/KFA

As can be seen, this configuration is highly suggestive as the limbs of the cross point directly to an unanalyzed mound to the northwest and to the southeast, although the distances (without skewing the Cygnus alignment) remain far out of alignment. In the section Cygnus Configuration Theory (CCT), other constellations are added to aid in the reduction. Naturally, if these configurations are altogether better than Orion, and also match Giza, this can be taken to speak also for the Giza (or Caracol) alignments and designs. But such conclusions are left to the reader and further studies.

As regards Dimensions analysis, some remarks must be said about the data in Table 7. Firstly, more precise area results for Giza would be obtainable with exact dimensions of the pyramids. However, it is well known that they are, basically, nearly square (ignoring the slight mid-indentations). Close enough that they can be regarded as a $1: 1$ ratio. The more interesting area ratios, are the GP/MP, MP/LP, and GP/LP ratios, which can then be compared with Broaddus. Error variances are therefore given as \% for Area, but decimals for these. The Area variances with each-other are already known to be significant, and the author is unaware of specific comparisons to brightness or apparent sizes of stars. For example, to the author's eyes the middle star, Alnilam ${ }^{37}$, is the biggest and brightest (figure 23). This has led many to compare the three with Cygnus (figure 17), instead, and the author concedes the possibility here, and for the others - or both - at Broaddus ${ }^{38}$.

[^14]Figure 25 - Orion's Belt; credit: Wikipedia ${ }^{39}$
As a side note, the author has some curiosity about the site, that if it is possible that it was less of a starmap, than a setting up of multiple configurations (favorites? sacred?), and if it is possible for both Orion and Cygnus to be on site. This subject will be returned to in the Criticisms section.


Caracol (Maya)


The inclusion of Caracol may seem superfluous, but just as three pyramids' ratios perform a triplet of erifications through their mutual triangulation, so can a third site helped to confirm the sanity of these analyses, or render them pointless.

Figure 26: Caracol with Cygnus overlay by author ${ }^{40}$

The correlations for Caracol, as rendered from the LiDAR+survey (Figure 4), are less spectacular than those for Broaddus to Giza. However, correlations between Caracol and Giza are fairly convincing. In Table 8, we see distance two ratios with $\sim 5 \%$ variance to Giza. None of the ratio variance with Broaddus are within that sort of range.

What's surprising, though, is that the first ratio GP/MP is at such variance with Broaddus. It will be interesting if this trend continues.

[^15]Table 8 :: Caracol Mayan Pyramids Distances, Ratios, and Comparisons

| Distances | Caracol | Ratio | Var_Broaddus_Ratio | Var_Giza_Ratio |
| :---: | :---: | :---: | :---: | :---: |
| GP/MP | 1.3718 | 0.95 | $22.03 \%$ | $11.37 \%$ |
| MP/LP | 1.445 | 0.51 | $11.26 \%$ | $4.82 \%$ |
| GP/LP | 2.826 | 2.06 | $7.63 \%$ | $5.60 \%$ |

In Table 9, however, we see the opposite scenario. Once again while distance variance may be poor between sites, angular variance is [practically] statistically impossible via coincidence.

## Table 9 :: Caracol Mayan Pyramids Angles, Ratios, and Comparisons

## Angles Ratio Var_Broaddus Var_Giza

|  | LP>MP | 65.50 | 1.19 | $3.82 \%$ |
| :--- | :--- | :--- | :--- | :--- |
| $0.35 \%$ |  |  |  |  |
| MP>GP | 55.00 | 0.92 | $3.45 \%$ | $3.58 \%$ |
| LP>GP | 60.00 | 0.92 | $0.50 \%$ | $3.79 \%$ |

In this case, however, the variances (as shown) are opposites. This may suggest that two of the sites are aligned to one constellation and one to another, or simply that two sites are closer to one another in age (Broaddus and Caracol or less likely Caracol and Giza).

Table 10 :: Caracol Mayan Pyramids Dimensions, Ratios, and Comparisons
Caracol vs Broaddus vs Giza
Ratio_DimVar Ratio_AreaVar Ratio_DimVar Ratio_Area Dimensions Avg D/L Dim_ratio Area Area_rat _Broaddus _Broaddus _Giza Var_Giza

| GP_V | 0.56 | 0.51995 | 1.1579 | 0.2689 | $99.46 \%$ | $6.16 \%$ | $2.66 \%$ | $13.64 \%$ | $0.54 \%$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| GP_H | 0.48 | GP/MP | $\mathbf{1 . 3 3 1 4}$ | $\mathbf{0 . 2 7 0 3}$ | $\mathbf{1 . 7 6}$ | $\mathbf{4 . 4 9 \%}$ | $\mathbf{8 . 2 9 \%}$ | $\mathbf{1 7 . 9 0 \%}$ | $\mathbf{3 9 . 7 6 \%}$ |
| MP_V | 0.39 | 0.3905 | 1.0128 | 0.1524 | $100.00 \%$ | $19.11 \%$ | $4.36 \%$ | $1.27 \%$ | $0.00 \%$ |
| MP_H | 0.39 | MP/LP | $\mathbf{1 . 0 2 8 5}$ | $\mathbf{0 . 1 5 2 4}$ | $\mathbf{1 . 0 7}$ | $\mathbf{9 . 3 2 \%}$ | $\mathbf{1 8 . 6 4 \%}$ | $\mathbf{3 1 . 2 8 \%}$ | $\mathbf{7 0 . 5 3 \%}$ |
| LP_V | 0.34 | 0.37965 | 0.8130 | 0.1426 | $98.94 \%$ | $45.90 \%$ | $4.63 \%$ | $\mathbf{2 3 . 0 0 \%}$ | $1.07 \%$ |
| LP_H | 0.42 | GP/LP | $\mathbf{1 . 3 6 9 5}$ | $\mathbf{0 . 1 4 4 1}$ | $\mathbf{1 . 8 9}$ | $\mathbf{1 3 . 3 9 \%}$ | $\mathbf{2 5 . 3 9 \%}$ | $\mathbf{5 4 . 7 9 \%}$ | $\mathbf{1 3 8 . 3 3 \%}$ |

In Table 10 we see one more proof that the mutual dimension (size) of the pyramids, area-wise, shows absolutely zero planning correlation. Meanwhile the area dimensions were within good ratios between the average length squared and the relative lengths. So the area dimensions are considered reliable by the author.

However, the result of these dimension ratios are startling. By careful analysis, the issue is revealed: the Giza pyramids and Caracol pyramids both have descending sizes in their pyramids, which is completely different than the Broaddus design, where the MP is the smallest by area. Even still, the ratio variation between Giza and Caracol is sure surprising, but considering how much larger the Great Pyramid of Egypt is versus the smallest, the ratio being 4.49 (Table 7) makes more sense, as does the variance between ratios.

The Caracol pyramids are much more similar in size to each other. In this way, the design of the Broaddus and Caracol pyramids are basically the same area-wise, although their shapes are vastly different interpretations. In all three, the MP/LP Area ratios are smallest, however the Broaddus and Caracol ones are more similar to the other ratios, while with Giza they are quite far apart. This shows that the three cultures have drastically different interpretations as to the meaning, significance, and perhaps brightness or apparent size, of the stars in the constellation they interpret.

So while they agree on angular and occasional survey of distance details, the areas can be considered to be radically different. No area is taken for Orion or Cygnus because photography of the stars only happened in the recent past, and drawings are not considered reliable. ${ }^{41}$

[^16]
## Orion Configuration Theory

The following tables represent the aforementioned data, considered as variances between the calculations in Tables 3,5, and 8 and the distance ratios measured for Orion at the four dates, and the average.

Table 11 :: OCT Distance Comparisons

| 2000CE | Ratios | Var_Broaddus_Rat | Var_Giza_Rat | Var_Caracol_Rat |
| :---: | :---: | :---: | :---: | :---: |
| 1.8497 | 0.9780045471 | 18.46\% | 8.10\% | 2.93\% |
| 1.8913 | 0.5054789395 | 10.23\% | 3.72\% | 1.16\% |
| 3.7416 | 2.02281451 | 5.93\% | 3.86\% | 1.84\% |
| 2550BCE |  |  |  |  |
| 0.927 | 1.003355341 | 15.46\% | 5.37\% | 5.38\% |
| 0.9239 | 0.4965335626 | 8.61\% | 1.98\% | 2.98\% |
| 1.8607 | 2.007227616 | 5.20\% | 3.11\% | 2.63\% |
| 11000BCE |  |  |  |  |
| 1.019 | 1.028254289 | 12.67\% | 2.82\% | 7.67\% |
| 0.991 | 0.4981401428 | 8.91\% | 2.30\% | 2.65\% |
| 1.9894 | 1.952306183 | 2.53\% | 0.39\% | 5.52\% |
| 5000BCE |  |  |  |  |
| 0.9971 | 1.000100301 | 15.84\% | 5.72\% | 5.08\% |
| 0.997 | 0.5233595801 | 13.30\% | 7.01\% | 2.30\% |
| 1.905 | 1.910540568 | 0.40\% | 1.79\% | 7.83\% |
|  | Avg_Ratios |  |  |  |
| GP/MP | 1.00242862 | 15.57\% | 5.47\% | 5.30\% |
| MP/LP | 0.5058780562 | 10.30\% | 3.79\% | 1.08\% |
| GP/LP | 1.973222219 | 3.56\% | 1.44\% | 4.40\% |

Table 12 :: OCT Angle Comparisons

| 2000CE | Ratio $^{42}$ | Var_Broaddus | Var_Giza | Var_Caracol |
| :---: | :---: | :---: | :---: | :---: |
| 58.50 | 1.19 | $4.06 \%$ | $0.10 \%$ | $0.25 \%$ |
| 49.00 | 0.93 | $1.60 \%$ | $1.73 \%$ | $1.79 \%$ |
| 52.50 | 0.90 | $2.59 \%$ | $1.80 \%$ | $2.07 \%$ |
| 2550BCE |  |  |  |  |
| 69.00 | 0.90 | $27.83 \%$ | $33.37 \%$ | $32.90 \%$ |
| 77.00 | 1.05 | $10.10 \%$ | $9.99 \%$ | $13.10 \%$ |
| 73.00 | 1.06 | $12.98 \%$ | $16.70 \%$ | $13.42 \%$ |

[^17]
## Conflicts and Agreements; Orion Dating

The findings for Orion are both interesting, and somewhat ambiguous. First, in the distance comparisons (Table 11), we see very good (or decent) representation for Giza in 2550BC (as expected ${ }^{43}$ ) Interestingly enough they are about as good for Caracol. Could the site be Olmec, rather than Mayan?

But at 5000BCE it is worse, while for Caracol it is just okay. However, the 2000CE margins for Caracol probably constrain it to the modern Mayan era, and more like Broaddus' dating, than Giza. More study would be required. Meanwhile Broaddus shows its best correlation at 2000CE, suggesting a more modern date, but even then its variances are not great. It does not seem that, if the OCT were to bear out (see CCT below), the engineers were very fastidious about design parameters.

Regarding the averages it does appear that Giza and Caracol constrain (distance wise) pretty well to Orion with an average variance of $3.57 \%$ and $3.59 \%$, respectively. Meanwhile, Broaddus' variance, which also happens to be the most reliable sets of data in the study, is $9.81 \%$. This would be generally considered very poor and outside of acceptable margins.

In a previous section it was suggested that two of the three sites are utilizing one constellation and the third a different constellation. This is beginning to play out.

Orion Variances by Site | Sf. R. Careaga
Blue: GP/MP ; Red: MP/LP; Gold: GP/LP


Figure 27 - Orion Variances broken up by location and ratio trends (lower=better); credit: Author
In the angular comparisons, the precision cannot be as great, nor need it be. But, the author also decided to leave out the very remote antique ratios. This paper is not about Caracol, but Broaddus, and the previous constrains show that Broaddus dates modern (agreeing with Carmean's carbon dating studies), and Giza to the 2000BCE range or the 11000BCE, which has a better variance, all three being under 3\%. However, please note that none of the Broaddus distances had acceptable OCT variance. But since Broaddus cannot at all be antique to 11000 BCE or 5000 BCE , no angular comparison was necessary. Those who wish to do so for Giza and Caracol, can obtain them using the same method and the images from Figures 28 and 29.

[^18]While Giza constrains excellent to a modern Orion ${ }^{44}$, that's impossible. Same for Caracol. But between the two dates, Broaddus definitely fits better to a modern date.


Figure 28: 5000BCE;


Figure 29: 11000BCE; credits:orbitsimulator.com

## Criticisms

The first problem with the OCT is that it seems at first to lack variance constraint (hence ambiguous). Although the author admits his own lack of excellent access and reliability on studies and images provided, and the use of an online simulator, it is hard to see the results changing so very much. It is definitely not likely that the Giza designers would be off, and it is doubtful that the Mayan designers (or Olmec), with their advanced mathematics and calendrical obsessions, would be as well.

Though the author refrains from anti-OCT conclusions, it must go hard for OCT adherents and proponents to bring this theory forward for Broaddus, and without padding the data, to find a date where the alignment is just that much better than those used in this study, which are (admittedly) far apart dates. But for Giza the results are ambiguous, and could be interpreted to mean that the 2550BCE date is good enough ${ }^{45}$.

Although the author has very many things to say about the benefits of the method, there are some revealed weaknesses of using ratios. When, for example, one number is off by a significant margin, it can not only wash out (white out) the averages, but may in fact cast doubt on the entirety of the date or set of ratios. If, on the other hand, the issue is a misreading of the caliper or compass, the same thing may occur, and it would be difficult to isolate this error since one is expecting variations.

Also, the inclusion of what are suspected to be less well constrained surveys, into the Giza average, is expected to have a potential negative impact on the OCT's ability to be precise with dating. Future studies should limit to 3 excellent sourced surveys, perhaps Giza1,3, and 5, or to a precise Sat image alone (Giza1), or have at least 10 surveys and eliminate the worst upper and lower values from the data set. The more precise the better. The author is very satisfied with the constraints on the Broaddus and Caracol LiDAR, but would suggest that a whole series of caliper measurements, taken together and averaged, may provide better constraint at the thousandths and tens-of-thousandths of an inch mark.

This would need to be done on the Orion ratios, as well. Doing this in paper two will be a priority.

[^19]
## Proper Motion Revealed in Statistical Analysis

The most exciting aspect of this form of analysis, however, is that if one observes the changes in variances within a certain perspective, such as increasing or decreasing variances, it may reveal correlations with the known Proper Motion of the stars involved.

In particular, it is noted that the entire Orion's belt configuration changes very little, even after many dozens of thousands of years. But, taking the center star as the natural center of the configuration, there is a definite difference in motion of the outer two stars ${ }^{46}$ (Aniltak ${ }^{47}$ and Mintaka ${ }^{48}$ ). Ironically, the GP star Mintaka ${ }^{49}$ appears to the eye to be most on the move.


Figures 30-32: Ratios trends by dates, divided by site location; credit: Author


Note the best correlation ratio for Giza and Caracol is MP/LP, while for Broaddus is GP/LP at 5000BCE, which is highly improbable.

[^20]
## Cygnus Configuration Theory

The CCT is the alternative to the alternative. It is majorly supported by Andrew Collins ${ }^{50}$. It has, in general, called into question the assumptions of the OCT regarding the Giza Pyramids.

Here, however, CCT will refer also to the possibility of use for Broaddus and Caracol, and similar to OCT will be compared via variances in ratios for alignments. The figure at right demonstrates the major constellation, which the main stars are aligned with, as well as the other two mounds indicated in Figure 24, which appear to be "pointed to" by the constellation.


Figure 33: Cygnus Configuration Theory; credit: Author

For our purposes, the ratio of these two "top" and "bottom" branches of the Northern Cross, will be regarded for the discussion of overall alignment. They are A/B and C/D respectively. Meanwhile, the vectors in red, orange and green have also been added for the reader to check the angles themselves. Finally the difference in angles $A>B$ and $\mathrm{C}>\mathrm{D}$ will also be discussed (the figure is not accurate for this, nor the ratios, only the angles on the cross, red, green, and orange.)

Regarding Figure 24, there is also a further consideration to be made, as shown in Figure 34 with the inclusion in the upper right of the constellation Lyra, in roughly the same position as is found in the night sky in relation to Cygnus.

Though this constellation's angles will not be analyzed at this time, it is suggestive. Further papers will, therefore, include Lyra in the analysis. For our purposes here, the main point is that there are correlations, which are strongly suggestive and combined with the following data and the above data so far, is highly compelling to suggest the CCT+Lyra is the best fit curve to the problem.


Figure 34: Cygnus+Lyra; Author/KFA

CCT Data

Table 13 :: CCT Distance Comparisons

| Cygnus <br> 2000CE | Ratios | Var_Broaddus_Rat |  | Var_Giza_Rat | Var_Caracol_Rat | Var_Orion2000CE |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | Var_OrionAvg

[^21]Table 14 :: CCT Angle Comparisons

| Angle | Ratio | Var_Broaddus | Var_Giza | Var_Caracol | Var_Orion2000CE |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 84.00 | 1.24 | $7.27 \%$ | $3.25 \%$ | $3.59 \%$ | $3.35 \%$ |
| 68.00 | 0.90 | $5.70 \%$ | $5.83 \%$ | $2.18 \%$ | $4.04 \%$ |
| 75.80 | 0.90 | $2.02 \%$ | $2.34 \%$ | $1.51 \%$ | $0.55 \%$ |

Right away the author wishes to alleviate the frustrations of the audience: in the future paper more Cygnus dates will be procured for a "full spectrum" comparison (along with surface graphs to really show the percentage deltas in a visual manner). However there are a few reasons this was not done. First, it is more difficult to procure. Second the village site is dated to $1100-1300 \mathrm{CE}$ and it is not anticipated by the author at this time to be much older than this (for reasons made obvious soon). Thirdly this paper is not about Giza or Caracol, but Broaddus' similar design, marking the existence of these Great Pyramids of Kentucky as both special and well designed (purposeful). Finally, it is unnecessary to demonstrate both the superiority of the CCT over OCT (at least in this case, but possibly in others), and the fact remaining that the site is well constrained.

Once again we in Table 13 how well Giza constrains to CCT, perhaps better, except that we know the great pyramids of Egypt are at least 4,000 years old, making this impossible. But considering the low variance between Cygnus now and Orion now, adherents to both theories may forgive the other side for taking a hardline stance, as both seem reasonably plausible. Caracol, however, lies outside of the desired constraint.

But, this presents an interesting question. What if instead of a starmap, an actual photo's location of the stars as they currently are, was used for the distances?


Figure 35: Giza with Cygnus photo overlay (in red); Credit: R Hale ${ }^{51}$

[^22]Table 15 :: CCT Distance Comparison with 2 Cygnus measurements and averaged

| Cygnus1 | Ratios | Cygnus2 | Ratios | Avg Ratio | Var_Broad |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| dus_Rat_Giza | Var_Car |  |  |  |  |  |  |  |  |
| _Rat |  | acol_Rat Var_Orion2000CE Var_OrionAvg |  |  |  |  |  |  |  |
| 0.3788 | 1.0646 | 1.986 | 0.9391 | 1.0019138 | $15.63 \%$ | $5.52 \%$ | $5.25 \%$ | $2.39 \%$ | $0.05 \%$ |
| 0.3558 | 0.4960 | 2.1146 | 0.5168 | 0.5064461 | $10.40 \%$ | $3.90 \%$ | $0.96 \%$ | $0.19 \%$ | $0.11 \%$ |
| 0.7173 | 1.8936 | 4.0912 | 2.0600 | 1.9768157 | $3.74 \%$ | $1.62 \%$ | $4.21 \%$ | $2.33 \%$ | $0.18 \%$ |

The results are breathtaking ... for Caracol, Giza, and Orion. But less so for Broaddus. This is very intriguing, because it is exactly the opposite of our hypothesis.

Referring to Figure 33, one may be interested now to know the ratios $A / B$ and $C / D$ are $68.75 \%$ and $62.98 \%$, respectively. But while this skewing seems a bit odd, the angles $A>B$ and $C>D$ are both $3^{\circ}$, suggesting one of two things: either the stars are moved, or in fact the overlay used in Figure 34 is off $3^{\circ}{ }^{\circ}$ Correcting this won't correct the distance variation in Table 15, but it will support distances more like Table 13. To check these things for yourself, please refer to Plate 7.

Where does that leave the CCT for Broaddus? We now refer to the angles in Table 14, which, considering the medium and the Ft. Ancient culture's known engineering skill level, is actually quite good. The worst of it is around $8 \%$ variance in ratios. The actual variance is shown in Table 16 (as a \% vs. Broaddus)

## Table 16 :: Broaddus/Cygnus Delta Actual and \% error

|  | Broaddus | Difference | Cygnus | Difference | Delta | Delta\% |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| LP>MP | 63.00 | 8.00 | 57.5 | 12.5 | 4.50 | $7.14 \%$ |
| MP>GP | 55.00 | -3.00 | 45 | -6 | -3.00 | $-5.45 \%$ |
| LP>GP | 58.00 | 5.00 | 51 | 6.5 | 1.50 | $2.59 \%$ |

So while the \% seems high, from an engineering perspective, it would seem to be almost expected in a society that [possibly] had not formal system of writing, nor survey equipment of the caliber expected in Egypt or Mexico. As a matter of fact $1.5^{\circ}$ variation is simply mind-blowing.

As regards the length extension of $A$ to $B$ and $C$ to $D$, this brings into question the significance of the Northern Cross to this culture. Why would the cross be significant? The author has already stated unequivocably that this cross is not the typical "Celtic Cross" [Mother Earth] symbol, as this goes back far beyond the Ft. Ancient culture even in the Americas. However, that does not mean that there was no continued belief in this symbol.

Naturally, diffusionists may hasten to point out that this era is exactly when physical evidence ${ }^{53}$ for the "White Indians" occurs, and the Northern Cross bears some similarity to the Christian cross.


Figure 36: Native Sacred Medicine Wheel; credit: Mantaka American Indian Council

[^23]If there were Welsh speaking natives in the land as Welsh stones purport (Wilson/Blackett ${ }^{54} /$ Michael $^{55}$ /Gilbert ${ }^{56}$ ), then the use of a cross would also make sense. ${ }^{57}$

If however this evidence is dismissed, by academia, the site remains very evidently related to Cygnus because of the adjacent alignment of Lyra:


Figure 37: Cygnus corrected, Lyra Aligned; credit: Author/KFA
Although one may note the LP misalignment, bear in mind Figure 11, which clearly shows an extended ridge. Perhaps the issue is erosion? Perhaps the issue isn't an issue at all, but a design choice to make a northeast bound ridge as a measure of something. The author offers no conclusions here.

There is something else interesting about the Lyra overlay, and that is the mound outside the design parameter for Lyra. Unless this star is moving very, very fast, the author offers that the same 'error' or design choice which produced 'misalignments' (distance variations) for Deneb and Albiero (respectively B and D), produced the same. Is this having to do with the notorious difficulties of calculating longitude? If these were former sailors (travelers) from the Old World, could they be using the same obsolete techniques? The author offers no conclusions.

There are obviously several more mounds to be aligned. The remainder of the night sky around Cygnus looks like Figure 38 below, and perhaps it, indeed, will hold many keys to answering the overlay issues, including the 'longitudinal' misalignment. But while the author generally reserves opinion throughout the paper, the conclusions will reflect the obvious alignments of Broaddus to Cygnus, and not to Orion, as a final constraint. In a future paper, Zone 2 will also be included as part of a general reconstruction effort.

[^24]

Figure 38: Cygnus and surrounding stars/galaxies; credit: Wikicommons/IAUSKY ${ }^{58}$

[^25]
## Cygnus' Importance Worldwide

Cygnus, in Greek mythology is associated with Zeus, Orpheus, king Cygnus, and Phatheon. This last one, particularly the story about the tragic end via thunderbolts and the falling down from the sky when passing too close to Helios, is of perhaps the greatest import going forward to unravelling the Ft. Ancient people's interest and conception of Cygnus.

Furthermore, the author offers that other Ft. Ancient sites (and perhaps Mississippian, as they also inherited from the Adena-Hopewell movement), should be analyzed for general alignments. Very few mound complexes remain in Kentucky, intact, and it is also important to note that the Ft. Ancient culture may have a different approach to constellation markers than the Mississippian culture or Mayans, Aztecs, etc...

While Broaddus is and will remain Kentucky's greatest pyramid collection, it is, by no means, the only one, and possibly may be rivaled in Cygnus alignments by other sites, such as the "Lost City" of Russellville, Canton, Sassafras Ridge, Adams' Site, or some other site yet to be discovered. The author, being aware that the federal government clearly has an interest in such sites and keeping them protected ${ }^{59}$ proposes that more time is spent scouring the forts of Kentucky, and throughout the Ohio and Mississippi river valleys.

Indeed Cygnus does have a role to play in mythic history, from the Greeks to Hindu to Polynesians, it is recognized. But why would the Ft. Ancient culture hone in on it for specific ritual marker? Is it equinox related, cataclysm related, religio-spiritual, etc...? Is there perhaps a Ft. Ancient legend that has been passed down to the Cherokee, Creek, Shawnee, Delaware, Miami, Wyandot, or other native nations that frequented Kentucky which may explain this connection? The author admits his ignorance in native mythology and all such researches will have to remain for the second, more robust paper.

## Conclusions

The author has only three conclusions to offer which are amply demonstrated:

1. There are pyramids in Kentucky, and Broaddus is the greatest and most significant collection of Kentucky pyramids and perhaps any pyramids in the Continental USA outside of Cahokia.
2. Broaddus Site (which needs a better name), shows excellent angular alignment with OCT but due to other alignment factors, must be concluded to be Cygnus configured. The OCT constraints shown in Figure 27 greatly strain the OCT in distance parameters. Meanwhile the site offers no dimensional data that the author can make conclusions from about brightness or apparent size in the night sky. ${ }^{60}$
3. The alignments with Giza and Caracol, as demonstrated in variances of ratios, are unmissable, and demonstrates not a time-related or diffusionist (in terms of Egyptian or Phoenician involvement) relationship but rather a phenomenal relationship, probably in mythic terms, but possibly relating to migrational information of 'travelers'. Even if the Ft. Ancient culture is purely an extension of the Hopewell, without any European influence at all (not even intermingling, as is suggested in Native legends and haplogroup studies of the Cherokee ${ }^{61}$ ) the importance of the constellation Cygnus to the Ft. Ancient culture is obvious. Even without the large attached 'awen' earthwork, the site remains massive, with pyramids that were perhaps 80+ feet in height, aligned with at least two, but probably more constellations of the night sky. The author concludes that this bears further (open-minded) study.
[^26]Regardless of how the information presented is taken, by any of the three camps (mainstream-uniformitarian archaeology, main-diffusionist-OCT or diffusionist-catastrophist-Welsh/CCT) the presence of the pyramid-mounds is undoubtedly an awe-inspiring mystery. Both their ability to survive the ravages of the mounds' destruction period in the 1800's and early 1900's, and the carelessness of federal government construction efforts and modern machinery. That the soil was not simply used for on site work is to be considered a miracle of astro-archaeology.

The paper has not provided any definite conclusions regarding Giza or Caracol, however the method presented is free for others to use in repetition, and to create even greater constraints, in an attempt to narrow down the data to very well defined and precise ratios as well as low variances. The author accepts that there are inherent flaws in the triangulation method: chiefly that of human error or weak measurement instrumentation, and he insists that dissenting opinion be firstly constrained to use at minimum a caliper, and not a mere ruler. Computer program analysis may prove the better. As for compasses, it seems unnecessary to be more precise than a half degree, but it may interest some estudious engineer.

The author hopes, indeed, that the spirit of open inquiry will guide both or all sides in further evaluation though the site remains, ironically (and perhaps safely) in a location not open to public scrutiny. Some may desire to travel to Kentucky to see these pyramids, but in fact if they do not have top secret clearance, they will be unable to. Perhaps the base will close, and then it can become available. The author hopes to utilize this work to make every effort to urge immediate protection status as it is undoubtedly an astro-archaeological treasure trove, and whatever cultural artifacts, arrowheads, and pottery ${ }^{62}$ may be recovered, this will remain its chief gift to the world. ${ }^{63}$

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## Plates

Plate 1 - Giza1





Plate 4 - Giza4


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Plate 5 - Caracol





Plate 8 - Measured Angles and Ratios in Cygnus Overlay


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[^0]:    1 "MISSISSIPPIAN TOWNS OF THE WESTERN KENTUCKY BORDER: The Adams, Wickliffe, and Sassafras Ridge Sites," R. Barry Lewis, et al..., 1984, p7.
    ${ }^{2}$ Shannon, Round Hill, etc...
    ${ }^{3}$ "Eastern Kentucky University conducted an archaeological field school at the Broaddus Site (I 5MA179). The Broaddus Site is a Late Prehistoric Fort Ancient village site that was first recorded by GeoMarine, Inc. in 1994 during a Phase I survey at the Blue Grass Army Depot in Madison County. (Waite and Ensor 1994). A mound, approximately 70 cm in height and 25 m diameter, is located at the site. After our two field schools we now know that the site is a circular village, with a cleared plaza area in the center of a dense midden ring. Five diagnostic projectile points found during Waite and Ensor's (1994) survey indicate a long utilization of the site. These points span from the Late Archaic, include the entire Woodland, and end with the Late Prehistoric Period. The majority of projectile points, however, are Late Prehistoric triangular points that place the site firmly in the Late Prehistoric period. Ceramics recovered both by Waite and Ensor and EKU's field schools are predominately shell tempered, indicating primarily a middle to late Fort Ancient occupation. Two out of three radiocarbon dates from EKU's field school date to the very early 1200s. The presence of the circular midden ring also places the site firmly in the middle Fort Ancient. In summary, the Broaddus Site is best understood as a medium size, early middle Fort Ancient (1200 to 1400 AD Elkhorn Phase) circular village in the southern Outer Bluegrass region," Two Seasons at the Broaddus Site ( 15MA179 ): A Middle Fort Ancient Village in Madison County, Kentucky, Carmean, $2003 \mathrm{http://www.kyopa.org/wp-content/uploads/2015/10/Volume-10-Number-2-Winter-2003.pdf}$
    4 "POINTS IN TIME: ASSESSING A FORT ANCIENT TRIANGULAR PROJECTILE POINT TYPOLOGY," Southeastern Archaeology, Vol. 28, No. 2 (Winter 2009), pp. 220-232, https://www.jstor.org/stable/40713520

[^1]:    ${ }_{6}^{5}$ Possibly related to the off-line appearance of the third.
    6
    http://www.arcgis.com/home/webmap/viewer.html?url=http\%3A\%2F\%2Fkyraster.ky.gov\%2Farcgis\%2Frest\%2Fservices\% 2FElevationServices\%2FKy_DEM_KYAPED_5FT_MultiDirectionalHillshade\%2FImageServer\&source=sd

[^2]:    ${ }^{7}$ The difference between 1000CE and 1300CE, or in 10800BCE and 11000BCE are not measurable, even with the caliper. The source of star map information is: $\frac{\mathrm{http}: / / o r b i t s i m u l a t o r . c o m / g r a v i t y S i m u l a t o r C l o u d / p r o p e r M o t i o n H o m e . h t m l ~}{3}$
    ${ }^{8}$ KY From Above
    9 "Giza5" and "Orion 2550BCE" in author's data
    ${ }^{10} \mathrm{https}: / /$ file.scirp.org/pdf/AD_2015112413423397.pdf p. 3

[^3]:    ${ }^{11}$ Perhaps via comparison to Aztalan and Shiloh Mounds
    ${ }^{12}$ Due to lack of other credible surveys, this is the only one used for this study (whereas 5 were used for Giza and averaged). However, considering the source it is considered more than adequate. The center of the white spaces of the left image are what has been utilized for caliper and compass measurements.
    ${ }^{13}$ Some sourced from "The Illustrated Encyclopedia of Native American Mounds \& Earthworks," Greg Little, 2009

[^4]:    ${ }^{14}$ The author does not think this list is complete; between some being hidden or even forgotten, destroyed after being ransacked, etc... the author expects the list to grow under scrutiny and study of the KY From Above mapping. This list also excludes stone fortifications.
    ${ }^{15}$ Most dimensions are after damages; where original dimensions are known they are provided here.
    ${ }^{16}$ A conical+henge (double concentric) pyramid-mound, probably a religious worship site for those of the "Old Fort" community and nearby Portsmouth Hopewell culture
    ${ }^{17}$ Contained some of the most important "king's tablets" found in Adena-Hopewell cultural history.
    ${ }^{18}$ Proof that some pyramids are additions to raised elevations, and that like Caracol, Belize, and Monks' Mound they do not necessarily have to be symmetric.
    ${ }^{19}$ Mostly archaic period, central KY. The notable exclusion being Indian Knoll. It's unclear why this shell midden contained so many bodies. An exception is made for Carlston-Annis because its shape is clearly platform style.
    ${ }^{20}$ Mostly Woodland era, but some Adena-Hopewell
    ${ }^{21}$ Mostly Adena, with a few Hopewell, and all of the conical Miss. except Adams; also henge-mounds.

[^5]:    ${ }^{22}$ Zone 1; surrounded by regularly repeating recto-ovular "horseshoe" warehouse footprints

[^6]:    ${ }^{23}$ https://www.wbdg.org/FFC/ARMYCOE/ARMYCRIT/pam38564.pdf
    ${ }^{24}$ The volume of "fill" removed from the collective Depot precludes need to create mounds so far south of the remainder of area. Also, it would be a highly remarkable coincidence that the mounds would have angular alignments to Giza. But the author concedes remote possibility.

[^7]:    ${ }^{25}$ Green arrow: a clear indication of older warehouse footprint. LiDAR has been proven to show very well any disturbance of natural soil layers; Red: awen glyph revealed (88m in length); Orange: smoothly, undisturbed soil shown with no pathways for construction equipment.
    ${ }^{26}$ Often called the "Turkey" print, however this is analogous to the Eagle Mound center effigy and the Alligator Mound. The topic of this miscategorization is the main subject of the author's EPEMC paper "Plasma Petroglyphs and Earthworks" and a longer treatise is contained therein. It is not the subject of this paper. Awen here designates a shape, although the main rock art in KY which exactly reflects this earthwork shape is the Crow Hollow Shelter (Coy, et al..., 1997)

[^8]:    ${ }^{28}$ Inches are more precise on a caliper, and as the author is using ratios, the results will not be in units.
    ${ }^{29}$ https://arxiv.org/pdf/1109.6266.pdf , pp.4, 7
    30

[^9]:    ${ }^{31}$ All the subsequent tables use this ratio/comparison order. Distances are measured here in caliper inches. See note 25 .

[^10]:    ${ }^{32}$ Ibid. pp. 4

[^11]:    ${ }^{33}$ This is presented here, rather than in the Method section, because the results of analysis justify the initial steps being retold, but this anecdote does nothing to forward the Method and Argument results directly. Only after the angular alignment is found, are they of importance or justified.

[^12]:    ${ }^{34}$ All constellations found via Google Image search
    ${ }^{35}$ Other literature has pointed this out as well that the Orion constellation in figure 19 must be rotated to yield the OCT results asserted by Bauval. Note that other stars do not seem to match mound locations! This may be key to debunking the Orion arrangement for Broaddus altogether, or at least constraining it to the Belt alone, and a series of repeated

[^13]:    attempts at the same arrangement. More analysis for each triple set of mounds would have to be done and compared with solstice and equinoxial data for 1200-1300 CE..
    ${ }^{36}$ All three display not-so-conical designs. The implications may be erosion related or design related. On site study would be able to determine this, although as shown above in Figure 14, all three are covered in trees, and have been for many years.

[^14]:    ${ }^{37} \varepsilon$ Orionis is a hypergiant
    ${ }^{38}$ Worldwide connections to Orion are well known. Take for example the following legend: "To the Lakota Native Americans, Tayamnicankhu (Orion's Belt) is the spine of a bison. The great rectangle of Orion are the bison's ribs; the Pleiades star cluster in nearby Taurus is the bison's head; and Sirius in Canis Major, known as Tayamnisinte, is its tail.

[^15]:    Another Lakota myth mentions that the bottom half of Orion, the Constellation of the Hand, represented the arm of a chief that was ripped off by the Thunder People as a punishment from the gods for his selfishness. His daughter offered to marry the person who can retrieve his arm from the sky, so the young warrior Fallen Star (whose father was a star and whose mother was human) returned his arm and married his daughter, symbolizing harmony between the gods and humanity with the help of the younger generation." $\sim$ Wikipedia, see note 34

    This legend ties very well the reasons for Aztalan \& Shiloh's Pleiades alleged relationships, and the importance of this 'god'. The author is less familiar with legends about Cygnus, and unless some cataclysmic destruction came thereby, is unaware of any decent reasons for its importance. The author denies this constellation is responsible for the worldwide 'Celtic' [Earth/Paradise] Cross formation. The two are only tangentially related.

    However, diffusionists may hasten to point out that this is within the very era when Natives' stories of white (or even Welsh) settlers were purported to have been in Kentucky, and prior to their destruction. The stone forts at Devil's Backbone, Indiana, Indianfort Mountain, KY, and O'Bynum's fort in Western KY all belie the possible dates. Worship of the "Northern Cross" may have been part of some Welsh tradition inherited from the 362CE voyagers. The author makes no specific claims. For more information, see the works of Rick Osman, and Dr. Troxel.
    ${ }^{39} \mathrm{https}: / /$ en.wikipedia.org/wiki/Orion (constellation)
    ${ }^{40}$ Clearly, not a match for 2000CE, if ever.

[^16]:    ${ }^{41}$ It is interesting to note, however, that the "awen" size and area might be comparable to the rock art record, to see if other interpretations were kept. In the section on CCT, the length or distance discrepancy will be touched on, again.

[^17]:    ${ }^{42}$ Because the angles are less precise, and have rounded numbers, the ratios are kept to two digit decimals (3 sigfigs)

[^18]:    ${ }^{43}$ Star map measurements are only precise to the 1000 year spread on the tool we have, so comparisons to 3500 or 4500 BCE are impossible at this time, while differences between 2500BCE and 3000BCE, and possibly 4000BCE are basically negligible in measurement. Perhaps a computer program could do it.

[^19]:    ${ }^{44}$ Hence the origin of the idea... it looks like Orion's Belt now.
    ${ }^{45}$ Although, speaking as an engineer, 11000BCE is definitely better.

[^20]:    ${ }^{46} \mathrm{https}: / / \mathrm{www}$. esa.int/spaceinvideos/Videos/2017/06/The future of the Orion constellation
    ${ }^{47}$ 弓 Orionis: Triple Star system https://en.wikipedia.org/wiki/Alnitak
    ${ }^{48}$ https://en.wikipedia.org/wiki/Orion\%27s Belt
    ${ }^{49} \delta$ Orionis: Double star system https://en.wikipedia.org/wiki/Mintaka

[^21]:    ${ }^{50}$ http://www.andrewcollins.com/page/articles/Cygnus_Orion_Giza.htm

[^22]:    ${ }^{51}$ lbid.

[^23]:    ${ }^{52}$ The reader may wonder why 34 isn't corrected: it's actually easier to measure this variance if alignment is not forced. That it can be constrained by $3^{\circ}$ is noteworthy, but not necessary to demonstrate beyond that. One would have to add to the lengths and that's not the purpose of this exercise.
    ${ }^{53}$ Forts, stone graves, henge and conical mounds, long-burrow mounds, Roman coins found in riverways, etc...

[^24]:    54 "Arturius Rex Discovered," Wilson \& Blackett, 1986
    55 "Ancient Kentucke Inscriptions; Prince Madoc: Fact or Fiction," J Michael, 2004
    56 "The Holy Kingdom," A Gilbert, et al... 1998
    ${ }^{57}$ Diffusionists may also refer to the "Awen"/Eagle mound earthwork 'stamp' here as well as evidence, but the author must remain ambivalent in this regard as one of his other papers demonstrates the worldwide use of this glyph to symbolize greater cataclysmic events which would have been visible, worldwide. There are numerous examples of rockart with the glyph (often mislabeled as a "turkey track") with no adjacent Ogham, Coelbren, Latin, or Hebrew. See: Coy, et al...

[^25]:    ${ }^{58}$ https://en.wikipedia.org/wiki/Cygnus_(constellation)

[^26]:    ${ }^{59}$ Does the government have anything to hide as regards the Ft. Ancient culture's origins? Many have speculated so. See. "Graves of the Golden Bear," R Osman, 2011 ; this author has no conclusions to reach at this time.
    ${ }^{60}$ Perhaps a topic for the next or a follow-up paper; perhaps by another author.
    61 "Cherokee DNA Studies: Real People Who Proved the Geneticists Wrong," Yates, 2014

[^27]:    ${ }^{62}$ Carmean
    ${ }^{63}$ Is it the last discovery of its kind in American history? Considering the wanton destruction of the mound cultures' earthworks, it may very well be.

