55,550 BCE and the 23 Stars of Giza

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Abstract

This is a companion paper to and reliant on "Diskerfery and the Alignment of the Four Main Giza Pyramids" (Douglas, 2019 [1]). Following the geometric alignments shown in that paper, we now present the astronomical design plan with 23 stars. There is a perfect alignment with three stars, very close alignment with others, and close alignment with other prominent stars in the area. We propose that this was done to provide a date for the construction of Giza. The alignment occurs at circa 55,550BCE.

Keywords: *Giza, pyramids, alignment, archaeoastronomy.*

Contents

1. Introduction

"Man fears time, but time fears the pyramids."

Arab proverb

"When you have eliminated all which is impossible, then whatever remains, however improbable, must be the truth."

Sherlock Holmes

"There are no contradictions. If you find one, check your premises."

Ayn Rand, Atlas Shrugged

"There are more things in heaven and earth, Horatio,
Than are dreamt of in your philosophy."

Hamlet

Dedicated to the memory of Galileo Galilei.

In 1737–1738, Danish explorer Frederic Louis Norden explored Egypt, taking careful notes and making many drawings. His journals were published posthumously in English [2] and French [3], where he had this to say about the pyramids:

> "*It appears probable to me, that the origin of the pyramids preceded that of the hieroglyphics. And as they no longer had the knowledge of those characters, at the time the Persians made the conquest of Egypt, we must absolutely throw back the first epocha of the pyramids into times so remote in antiquity, that vulgar chronology would have a difficulty to fix the æra of them.*
>
> *If I conjecture that the pyramids, even the latest, have been raised before they had the use of hieroglyphics, I do not assert it without foundation. Who can persuade himself, that the Egyptians would have left such superb monuments, without the least hieroglyphical inscription? They, who, as one may observe every where, were profuse of hieroglyphics, upon all the edifices of any consideration? Now we perceive none, neither in the inside, nor on the outside of*

the pyramids, not even upon the ruins of the temples of the second and third pyramid: Is not this a proof, that the origin of the pyramids is antecedent to that of the hieroglyphics, which are however considered as the first characters they made use of in Egypt?"

To date, no one has provided a suitable explanation for this observation. Instead, we are left with the conclusion that, as Robert Bauval says, the language of the pyramids is mathematics.

2. Notation, accuracy and methodology

Please see the companion paper (Diskerfery and the Alignment of the Four Main Giza Pyramids) for discussion on notation, accuracy and methodology. [1]

3. Overview of existing stellar explanations

There are two well-known theories regarding stellar alignments of the Giza plateau.

The most famous is The Orion Correlation Theory [4] (OCR) from Robert Bauval, while the Cygnus theory [5], from Andrew Collins and Rodney Hale, is the best-known alternative.

Each uses three stars from the constellations of Orion and Cygnus respectively as an explanation for the alignment of the three centres of the main pyramids.
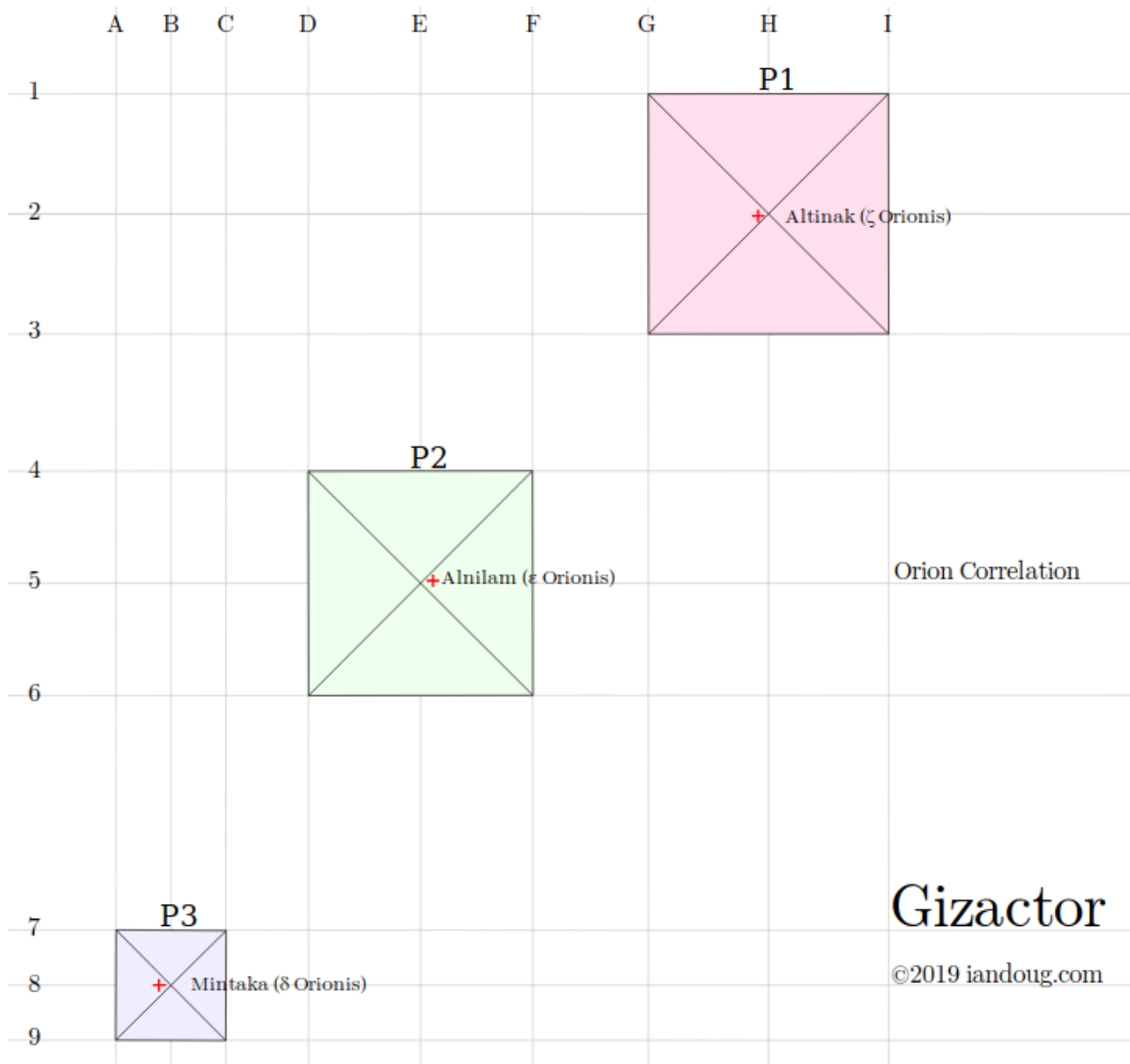
Figure 1 shows the Orion correlation.

Figure 1: Orion Correlation Theory (redrawn from Orofino and Bernardini 2016 [8])

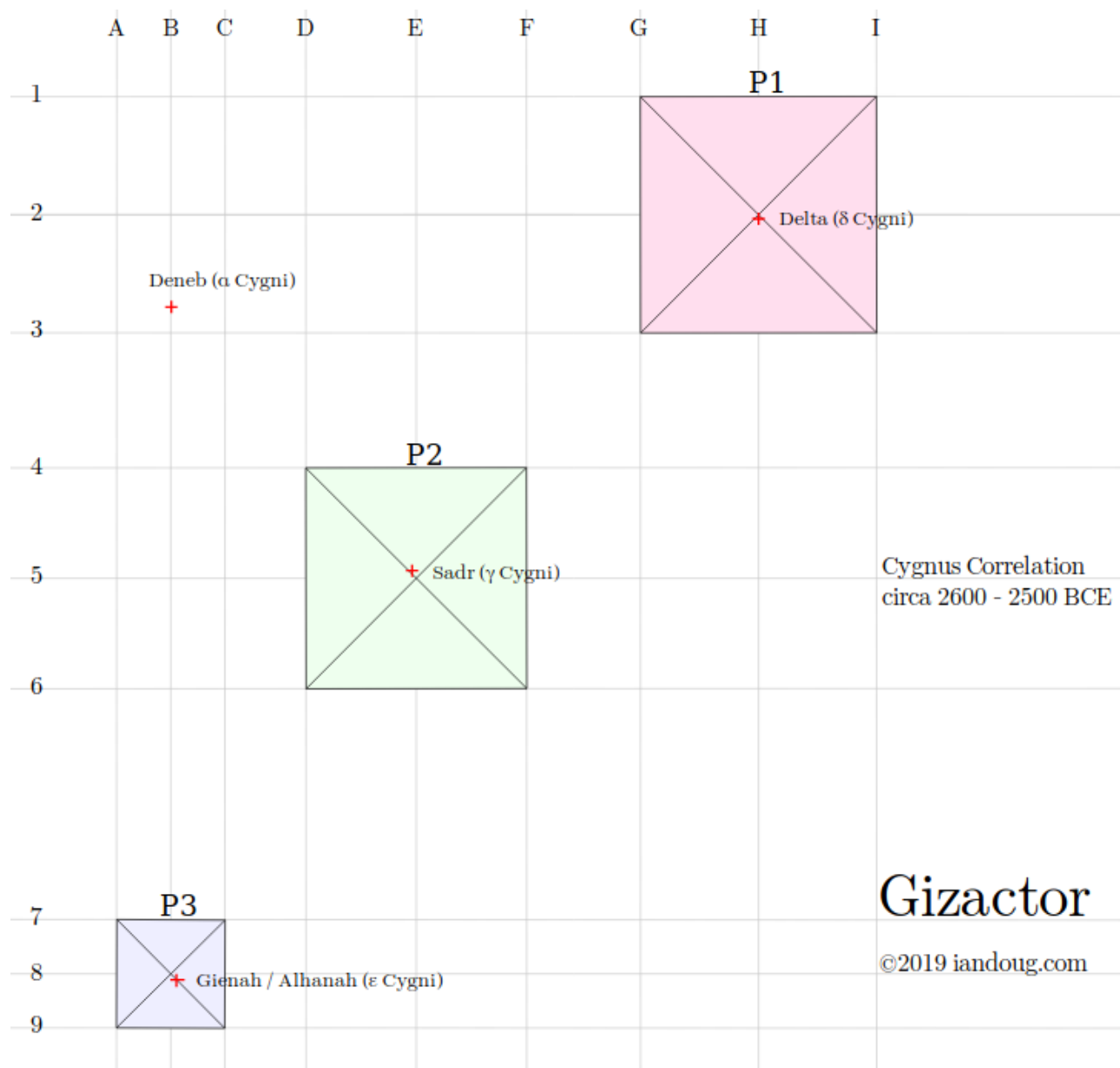Figure 2 shows the Cygnus correlation.

Figure 2: Cygnus correlation (redrawn from Orofino and Bernardini 2016 [8])

There has been a mixed reaction to these two theories. Initially the scientific community rejected the Orion theory, with Fairall's [6] and Krup's critiques [7] being the most well known.

Alternative researchers found the Orion theory compelling.

The Cygnus theory also struggled to find main-stream scientific approval.

In 2015/6, Vincenzo Orofino and Paolo Bernardini [8] showed that indeed there was a likely correlation for Orion but not for Cygnus.

This led the authors of the Cygnus theory to publish a further paper [9] showing more alignments between Cygnus and the three pyramids, including what happens as the stars set, when viewed from a suitable vantage point.

Another author (which other references [10] name as Alice Smith rather than Wayne Herschel) published an opinion [11] in support of Orion and against Cygnus.

Herschel also has his own re-interpretation [12] of the Orion correlation, which does the alignment differently and includes other stars like Sirius and Aldebaran, which map to other pyramids along the Nile.

Conversely, Careaga [13] found the Cygnus correlation better suited to the Broaddus site in Kentucky, than Orion.

Both the Orion and Cygnus theories rely on linkages to what we understand of ancient religions, involving various deities or possible/probable religious practices. They both also operate around the currently accepted 4th to 5th dynasty period, with Orion possibly also referencing a post-Younger-Dryas time, especially with the linking to the Sphinx.

A new theory from Matt Sibson [14] suggests an alignment with three stars from Taurus. This also has connections to Egyptian religion/mythology (Orion : Taurus = Hunter : Bull), and uses a date around 2580 BCE. If I understood the suggestion in the video correctly, Sibson identifies Aldebaran (α Tauri) for Khufu, θ1 Tauri for Khafre, and Prima Hyadum (ɣ Tauri) for Menkaure, as shown in Fig. 3.
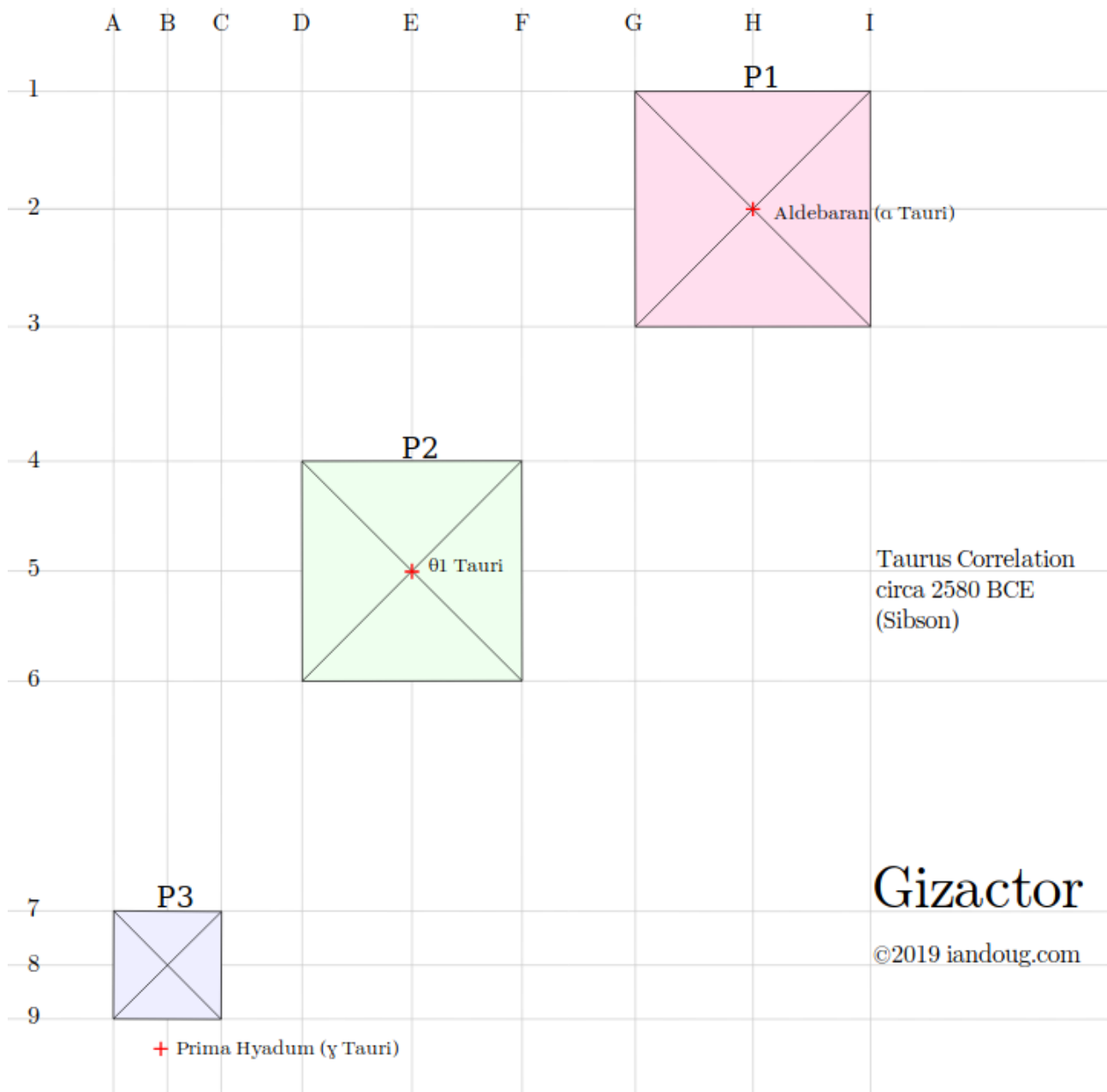
Figure 3: Taurus correlation c. 2580 BCE drawn by author from description and video by Sibson

However, you can get a better match using λ Tauri for Khafre, and ȝ Tauri for Menkaure, as shown in Fig 3a.
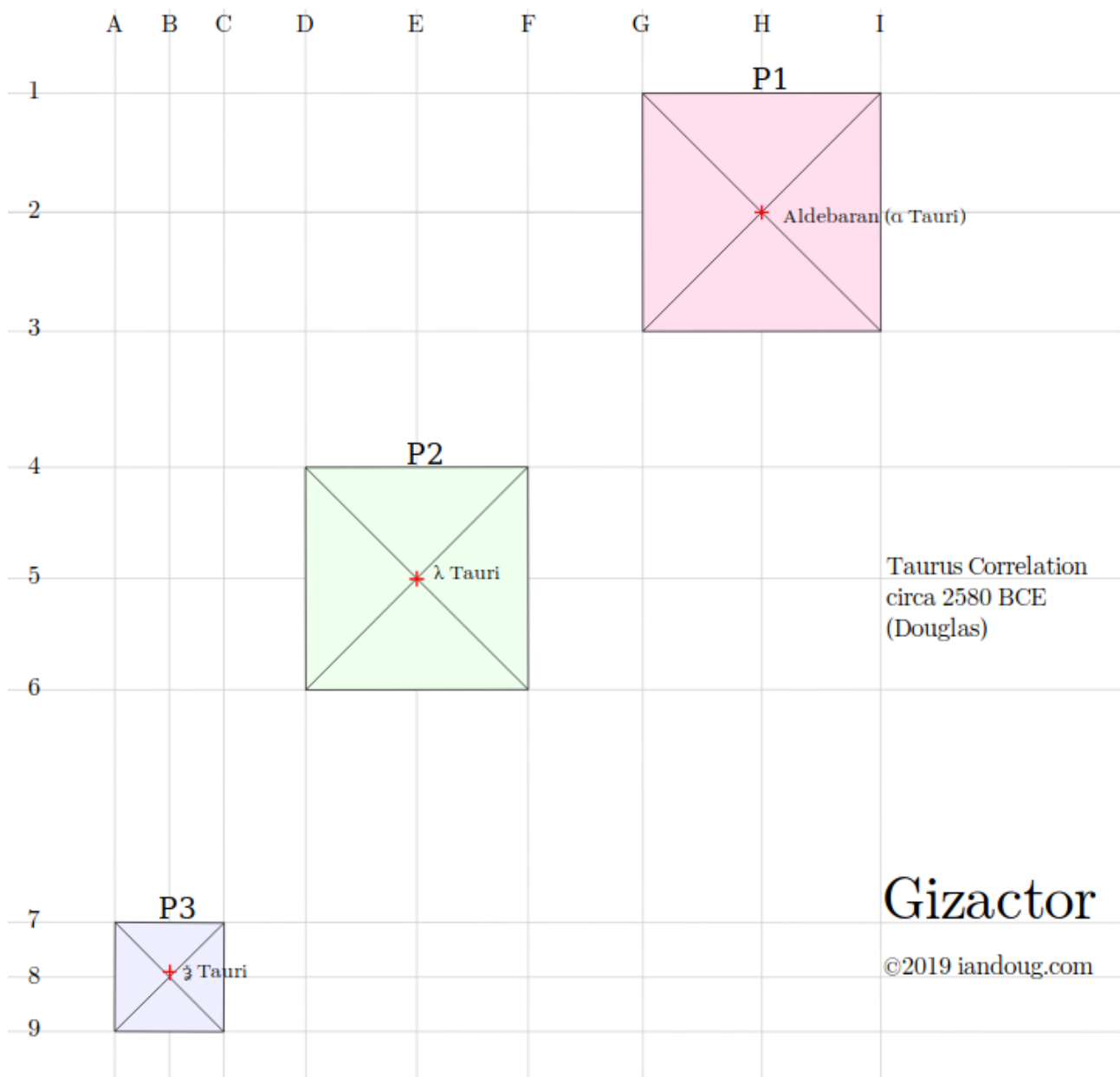
Figure 3a: Alternate correlation for Taurus circa 2580 BCE, by author

Even though this is rather good, matching two stars perfectly and the third very closely, it ignores the fourth pyramid and must thus be discounted. It's also at the time of the dynastic Egyptians, which does not help us solve the unsolvable puzzles.

Sibson does point out that it is relatively easy to find 3 stars that closely align to the three pyramid centres, given that there are so many stars to choose from.

Pankovic et al. also find a connection between Taurus and the three pyramids. [15]

Spedicato [10] proposes instead a correlation between the three pyramids of Giza, and three volcanoes on Mars.

Yasseen [16] sees Giza as just one spot in a much larger star alignment similar to Herschel above.

There are two main criticisms regarding stellar alignments:

1. The sizes of the pyramids do not match the brightness of the stars.

2. In the case of Orion, Bauval was accused of "turning the sky upside down."

Regarding (1), this is an artificial linkage. For all we know, the sizes may be related to what the designers thought was the distance of the star from Earth. Or for example, say each star was associated with a deity, and the pyramids somehow reflected the importance of said deity. There are no grounds for insisting that the size of the pyramid should correspond to the brightness of the star.

Regarding (2), who are we to say how others may map the heavens to earth? So this is not a valid objection either.

4. The Quadruple Points and Big Dipper hint

The alignment we propose features fifteen stars initially, some of which are not on a pyramid, but elsewhere on the Giza plateau. There may have been something there a long time ago. Instead of having a physical object to refer to, we instead show how these points, which map to various prominent stars, have analogues in the grid system. The grid system is based on the edges and centres of the four pyramids.

We show how these specific locations, shown in Fig. 3b, namely C1, F2, G4, G11, H6 and Z2 connect mathematically to the centres of the four pyramids. This is to provide a reason for including them in the alignment, and to deal with objections that certain stars are not included. There are a few other stars (e.g. Edasich) that I ignored because they were too far from an intersection point to justify including.
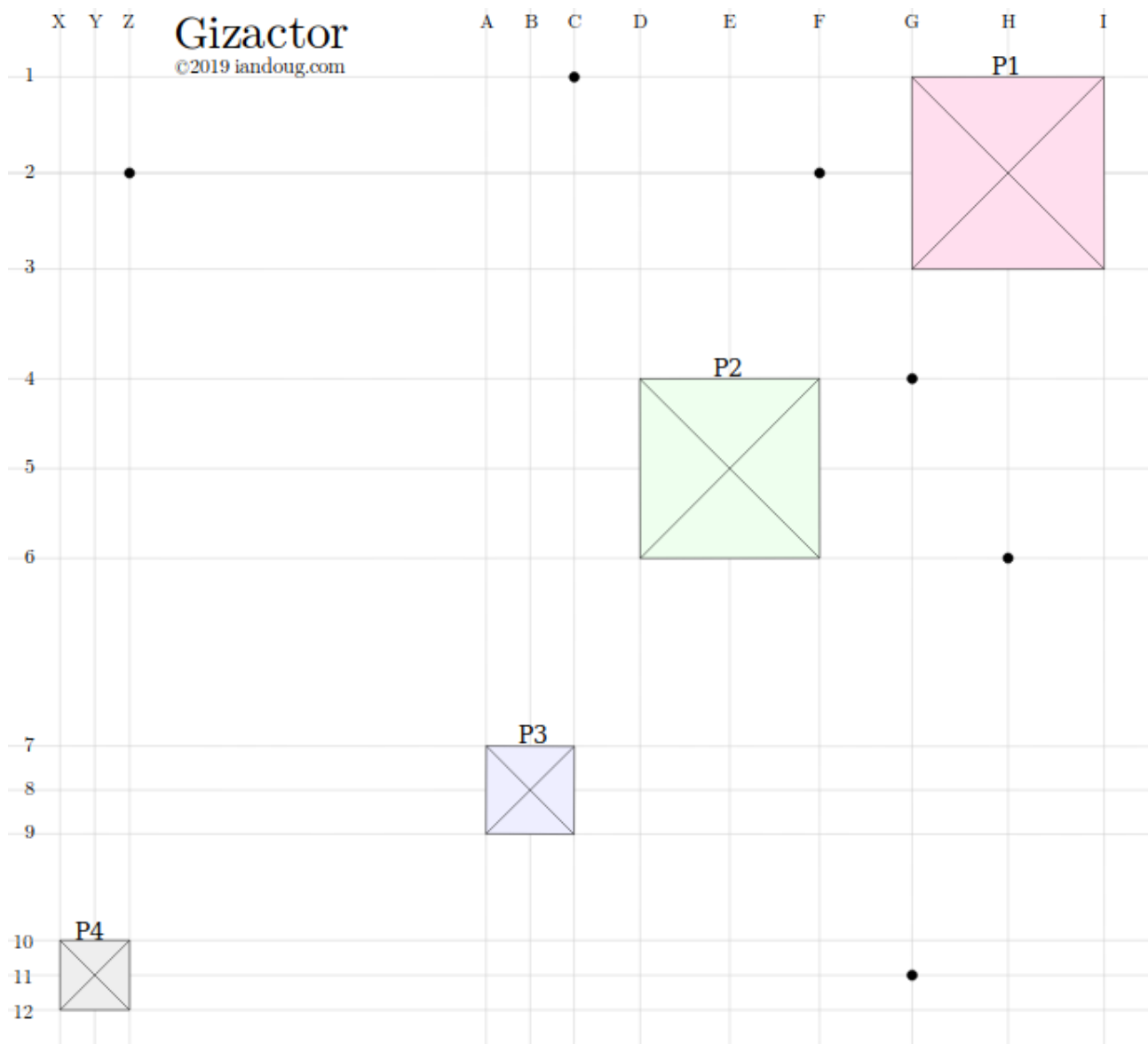
Figure 3b: Other points needed to align with the stars

We start with G4, which is where I started. I was trying to find an explanation for the alignment of the three pyramids, and finding that G4 connected to the three centres via π, e, and $\pi\varphi$e, was one of those light-bulb moments. When I later added the fourth pyramid, adding $\sqrt{\tau}$ to the mix came as another of those little jokes that the designers seem to love.

$\sqrt{\tau} = \sqrt{(2\pi)}$ or $\sqrt{2}\sqrt{\pi}$ depending on your notation preference.
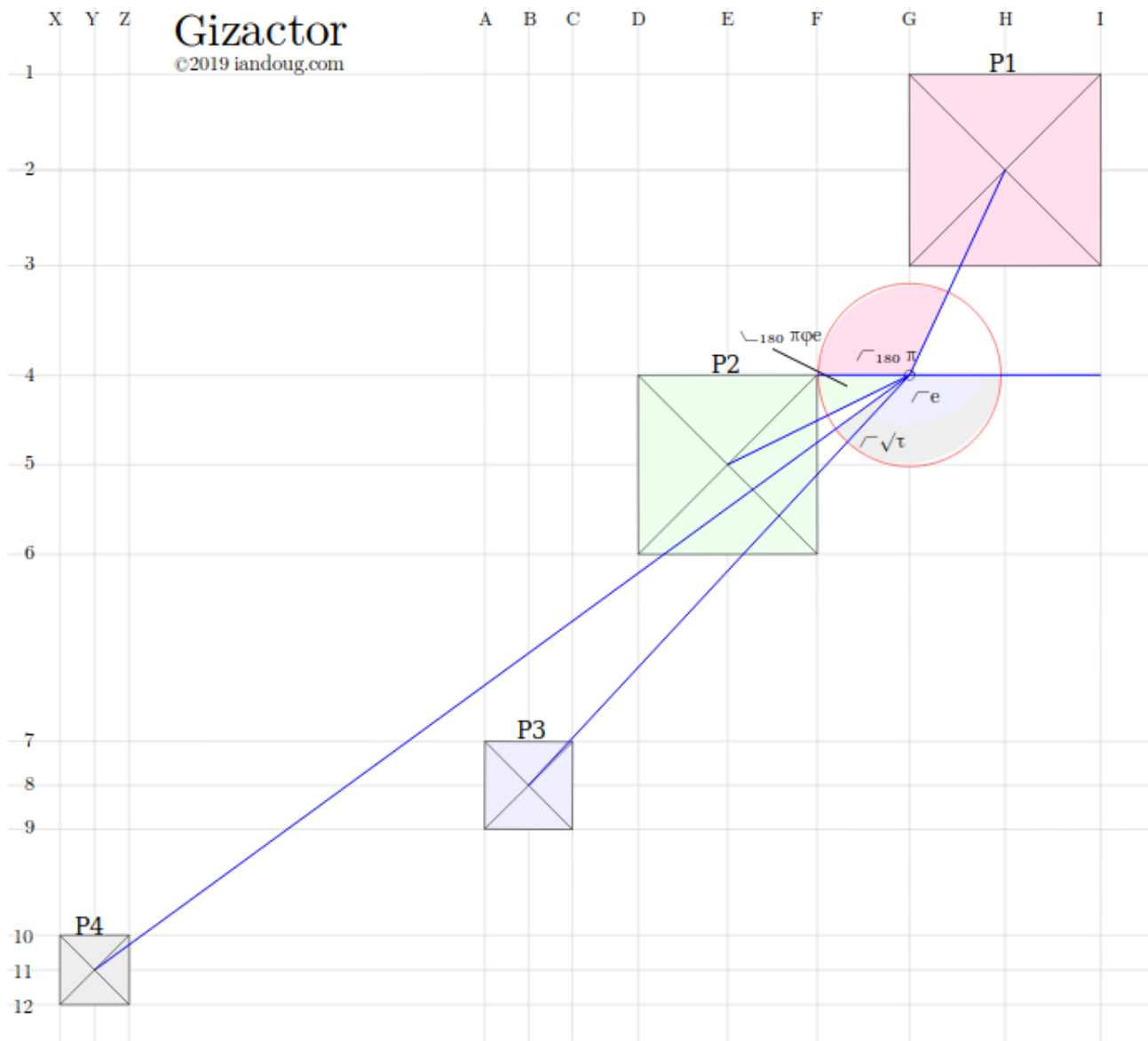
Figure 4: Connections from G4 to the four pyramid centres

Source	Target	Angle	Calculated	Desired	Absolute delta
G4	P1 C	⌐180 π	115.01°	114.59°	0.41°
G4	P2 C	⌐180 πφe	26.23°	26.05°	0.18°
G4	P3 C	⌐e	132.89°	132.44°	0.45°
G4	P4 C	⌐√τ	143.89°	143.62°	0.27°

Table 1: Analysis of angles in Fig. 4

Note that the angle G3-G4-B8 is 360/φ, effectively the same line between G4 and P3 C as 360/e.
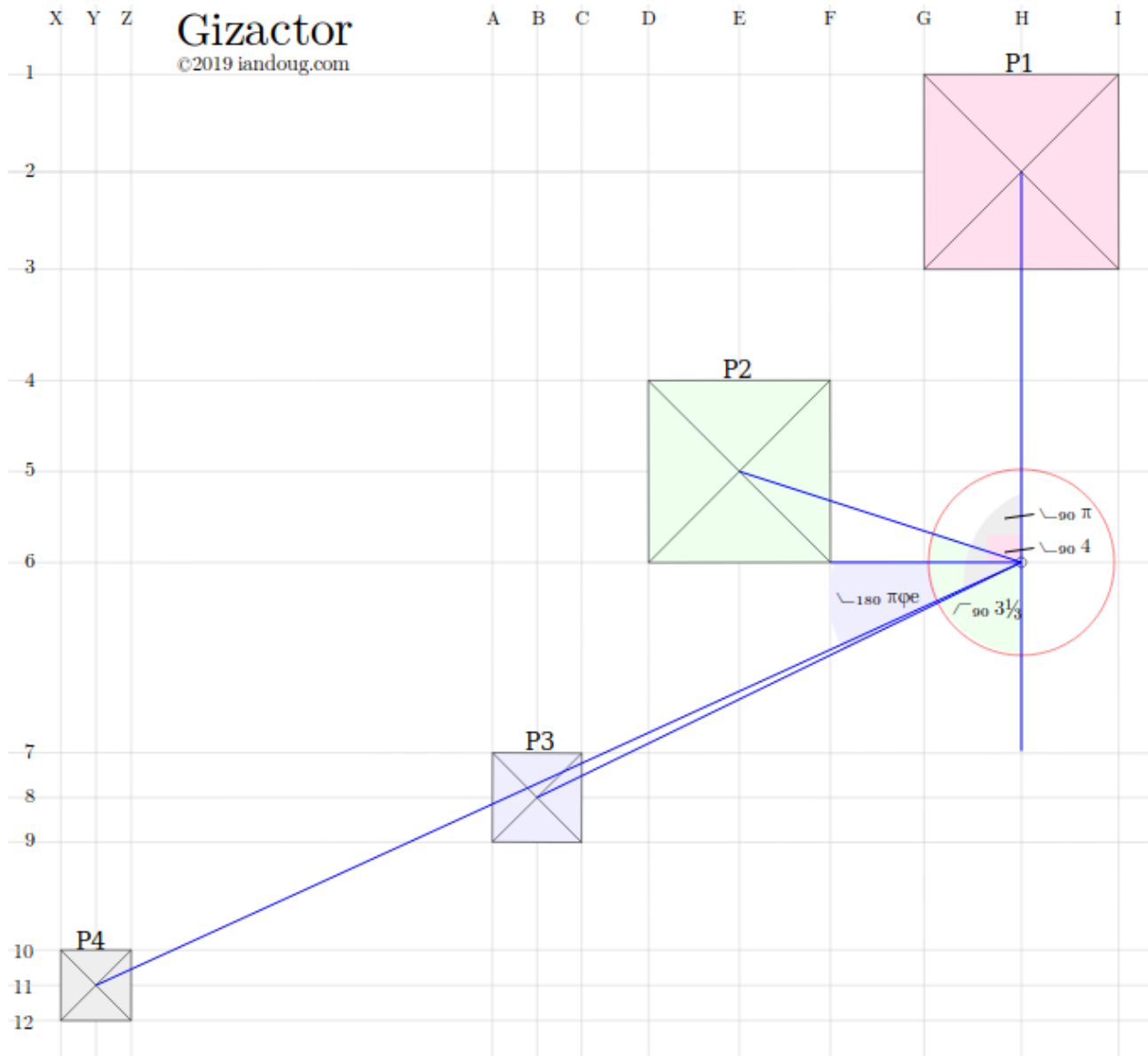
For point H6, the angles are as in Fig. 5.

Figure 5: Connections from H6 to the four pyramid centres

Source	Target	Angle	Calculated	Desired	Absolute delta
H6	P1 C	∟90 4	90.00°	90°	0.00°
H6	P2 C	⌐90 3⅓	107.76°	108°	0.24°

Source	Target	Angle	Calculated	Desired	Absolute delta
H6	P3 C	$\llcorner_{180}$ πφe	25.80°	26.05°	0.25°
H6	P4 C	$\llcorner_{90}$ π	114.46°	114.59°	0.13°

Table 2: Analysis of angles in Fig. 5

The angle to P2 is our second mathematical joke … the ratio is 360/3.33333… (as in: we really like 3s) … and P2's ratio of twice base over height is exactly 3. Three will be a recurring theme with Khafre.

Likewise, we can show connections from point F2. It links to all four pyramids, as well as to point G4 and H6.
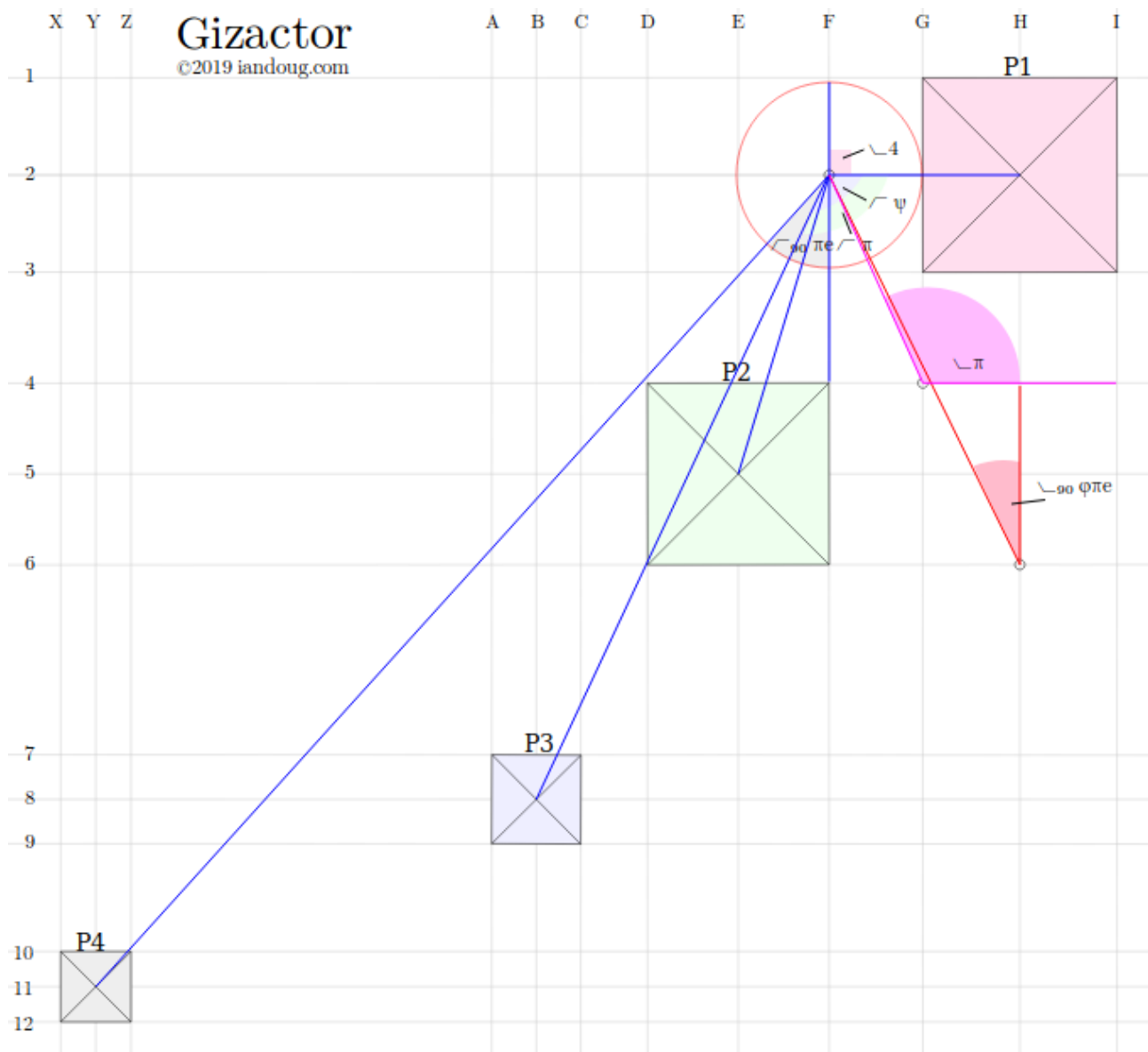
Figure 6: Connections from H6 to the four pyramid centres, as well as from G4 and H6

Source	Target	Angle	Calculated	Desired	Absolute delta
F2	P1 C	360/4	89.89°	90°	0.11°
F2	P2 C	360/ψ	106.78°	107.15°	0.37°
F2	P3 C	360/π	115.08°	114.59°	0.49°
F2	P4 C	360/πe	42.07°	42.16°	0. 09°
G4	F2	360/π	114.43	114.59°	0.16°
H6	F2	360/πφe	26.17°	26.05°	0.11°

Table 3: Analysis of angles in Fig. 6

ψ is the reciprocal Fibonacci ratio, given by

$$\psi = \sum_{k=1}^{\infty} \frac{1}{F_k} = \frac{1}{1} + \frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \frac{1}{8} + \frac{1}{13} + \frac{1}{21} + ... \approx 3.359885666243$$

The last three points we need are G11, Z2 and C1. I've done this on two drawings, the first has G11 and Z2. I find this drawing deeply disturbing, particularly the lower triangle.
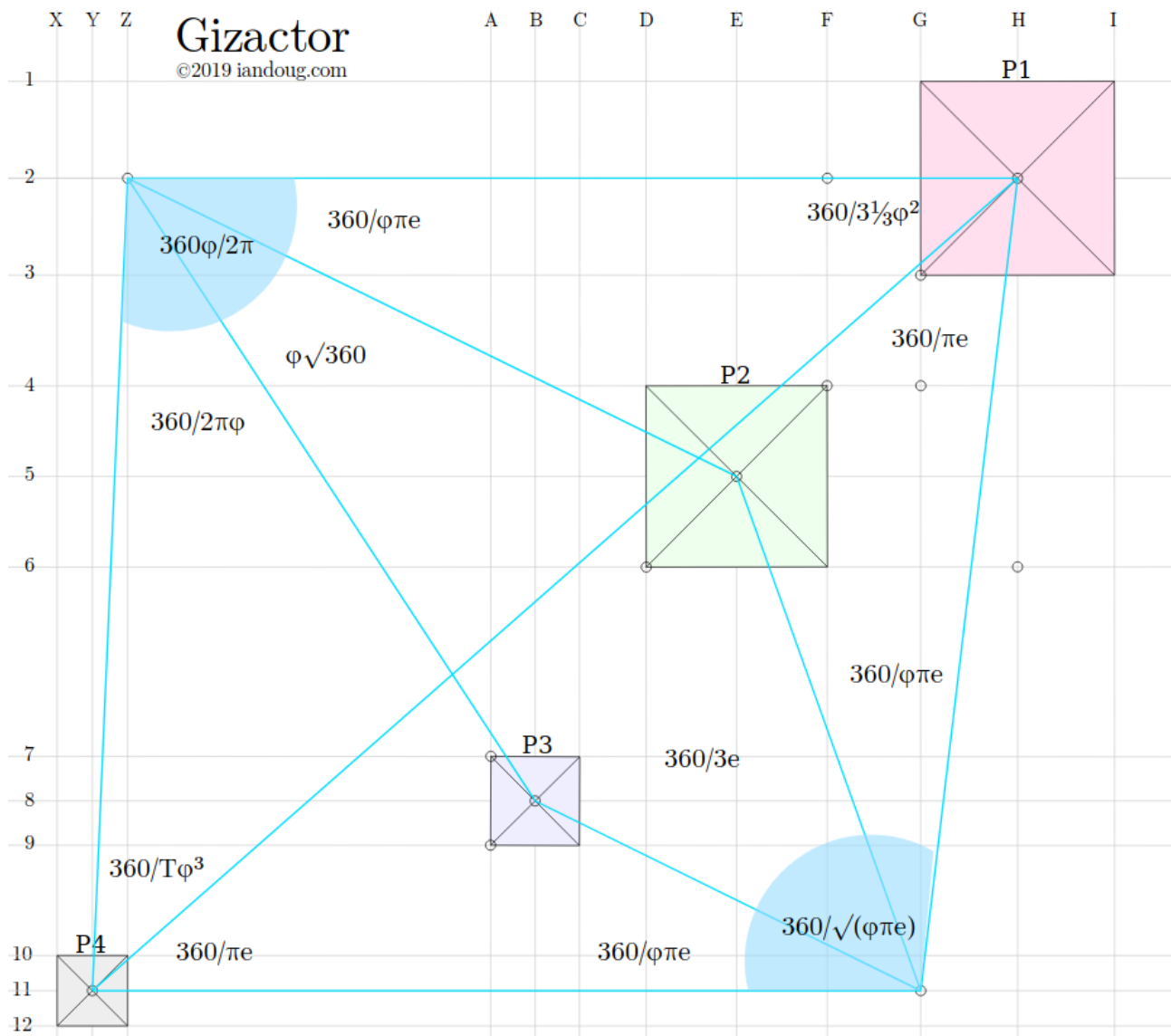
Figure 7: Connections from Z2 and G11 to the four pyramid centres

A thing of beauty and a joy forever. Every time something like this surfaces, I stare in disbelief at the skill behind the site design. The analysis is in Table 4 below.

We again see the number 3 connected to Khafre. I'm starting to think we should be numbering the pyramids from the smallest to the largest, so that Khafre is third.

The upper left triangle features mostly π and φ, the lower right features mostly π and e. Our last point features both φ and e, but no π.

There can be no further doubt that the site planners were familiar with e. If the dynastic Egyptians had known about e, the Greeks would have passed it on to us. Ergo, they didn't.
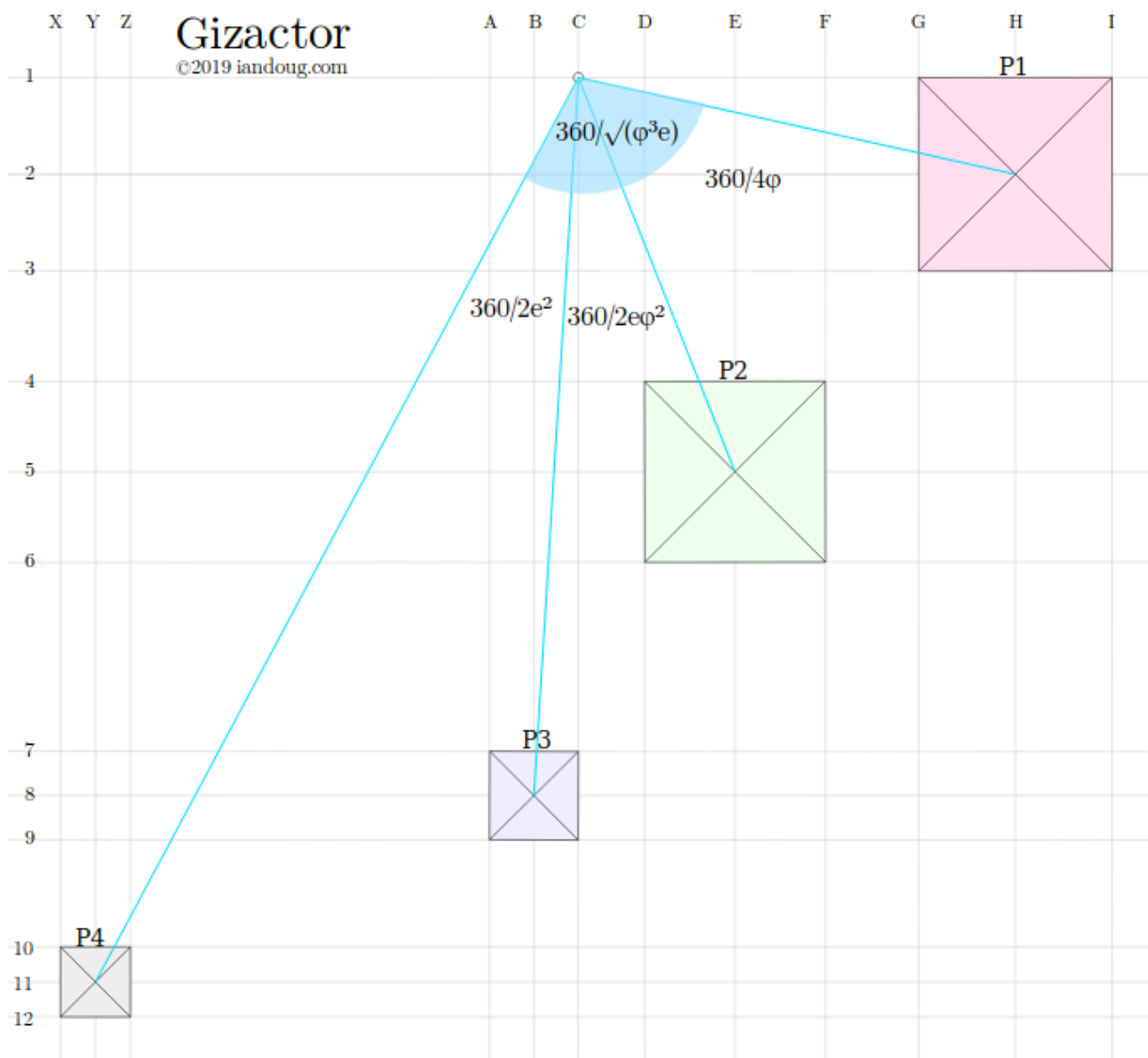
Figure 8: Connections from C1 to the four pyramid centres

Points	Angle	Calculated °	Desired °	Absolute delta °
P4C : G11 : P3C	$360/\varphi\pi e$	25.846	26.054	0.208
P3C : G11 : P2C	$360/3e$	44.346	44.146	0.200
P2C : G11 : P1C	$360/\varphi\pi e$	26.630	26.054	0.576
P4C : G11 : P1C	$360/\sqrt{(\varphi\pi e)}$	96.822	96.847	0.025
G11 : P4C : P1C	$360/\pi e$	41.284	42.156	0.871
G11 : P1C : P4C	$360/\pi e$	41.894	42.156	0.262
P4C : Z2 : P3C	$360/2\pi\varphi$	35.480	35.411	0.069
P3C : Z2 : P2C	$\varphi\sqrt{360}$	30.798	30.700	0.098
P2C : Z2 : P1C	$360/\varphi\pi e$	26.206	26.054	0.152
P4C : Z2 : P1C	$360\varphi/2\pi$	92.484	92.707	0.223
Z2 : P4C : P1C	$360/T\varphi^3$	46.231	46.205	0.026
Z2 : P1C : P4C	$360/3\frac{1}{3}\varphi^2$	41.284	41.252	0.032
P1C : C1 : P2C	$360/4\varphi$	55.866	55.623	0.243
P2C : C1 : P3C	$360/2e\varphi^2$	25.211	25.293	0.082
P3C : C1 : P4C	$360/2e^2$	24.558	24.360	0.198
P1C : C1 : P4C	$360/\sqrt{(\varphi^3 e)}$	105.634	106.099	0.455

Table 4: Analysis of angles in Figs. 7 and 8.

"T " is the tribonacci constant.

For the record, $360/\pi e + 360/\pi e + 360/\sqrt{(\varphi\pi e)} = 181.1588312°$ not 180°, and $360/\varphi\pi e + 360/\varphi\pi e + 360/3e = 96.25306466°$ while $360/\sqrt{(\varphi\pi e)}$ is 96.84707383°. So the angles are not mathematically perfect but close enough to suggest intent.

4. The Big Dipper hint

Now we have identified the points we need, we can align Giza with the stars.

The actual process I followed was cyclical. I was initially working with only the three pyramids, and after identifying the linkages between the three shown in the companion paper, and point G4, I was instructed to "join the dots." See the companion paper for a discussion of where this instruction came from.
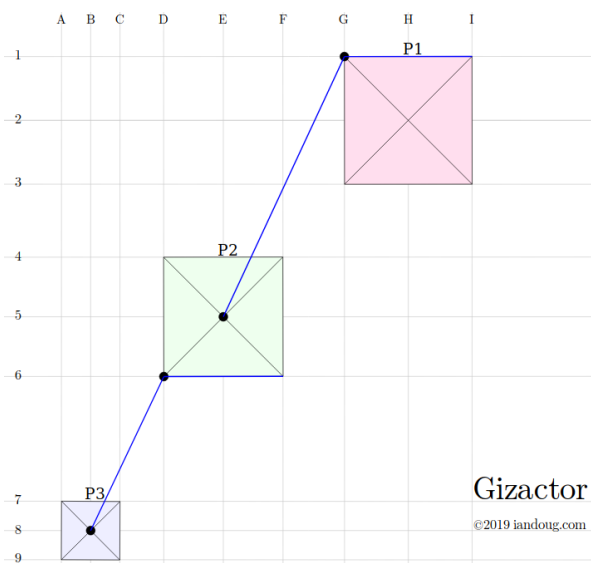
We first take these highlighted points:

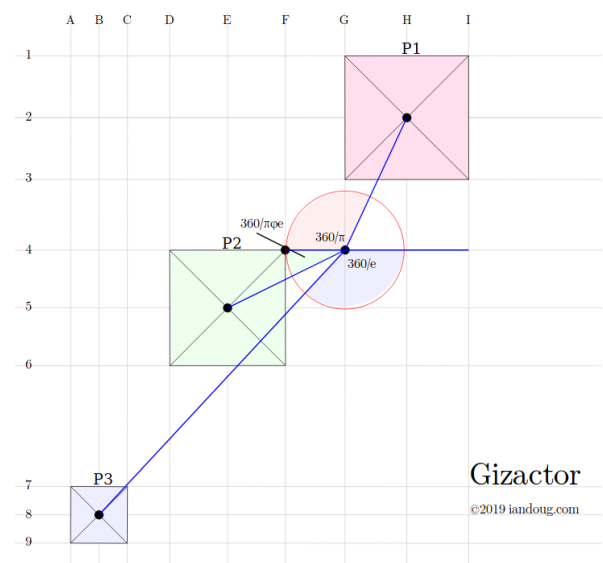Figure 9: Selected points from the π connections between P1, P2 and P3

Figure 10: Selected points from the G4 connections between P1, P2 and P3

Then merge these points onto one diagram and "join the dots" between these points.
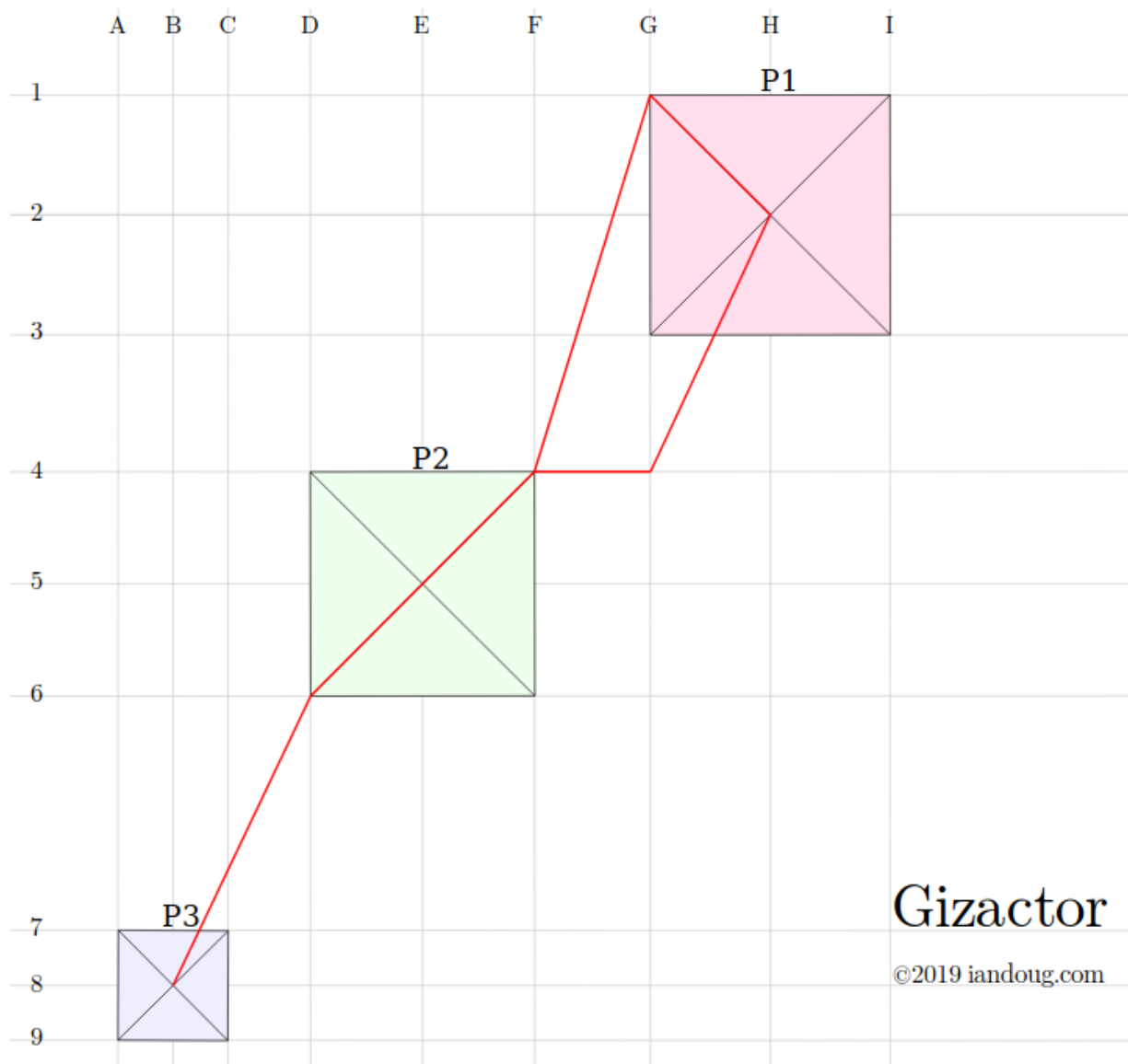
A familiar pattern emerges.

Figure 11: Suddenly, there's a Big Dipper pattern

Seeing that pattern emerge was the first of many deep shocks in the process.

This "bears" a striking resemblance to the Big Dipper constellation, part of Ursa Major, and one of the most recognisable constellations in the northern sky. For comparison, Figure 12 shows how the Big Dipper renders in the Skycharts package (extra parts of the bear removed).

It's a reasonable match, but the leg down to Alkaid is too angled, and the bowl part does not line up very well.

The stars move over time, so I started time travelling backwards, going past the time of the 4th and 5th dynasties, and even further back past 10,000 BCE.

The actual process of discovery from here on was iterative, as one thing led to another. Sometimes things needed to be added without a clear reason, and the reason (or at least justification) surfaced later. This includes the various points discussed above which do not map to the pyramids, as well as the fourth pyramid.

5. The Stellar Alignment

We propose to show a correlation between the four pyramids in the Giza layout, plus some points on the ground, and the following fifteen stars, mostly in the Big Dipper constellation.

1. Arcturus
2. Alkaid
3. KAP02 Bootis
4. 13 Bootis
5. Mizar
6. Alioth
7. Megrez
8. Phecda
9. Taiyangshou
10. θ Ursae Majoris
11. Dubhe
12. Merak
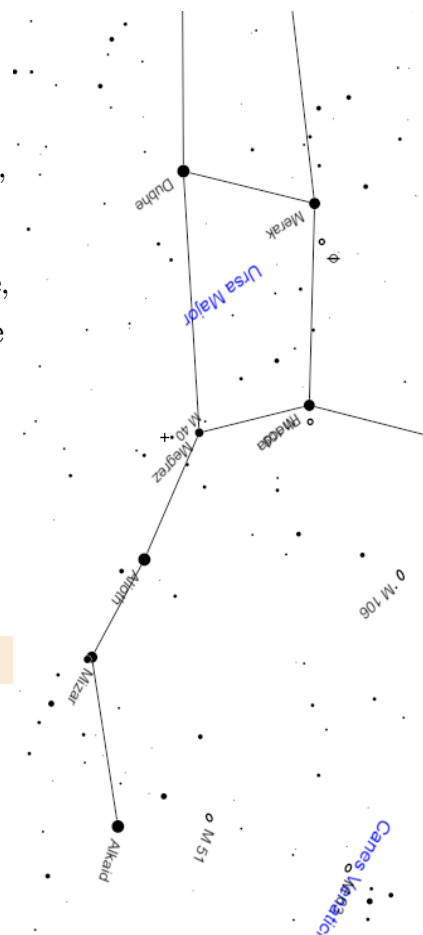13. Cor Caroli
14. Kochab
15. Giausar

Figure 12: View of Big Dipper in current era

The plan of Giza, with constellation lines and target star names, is in Fig. 13, with target star locations as small circles. Conventional constellation lines are in red, while other lines in blue are to highlight the other stars involved.
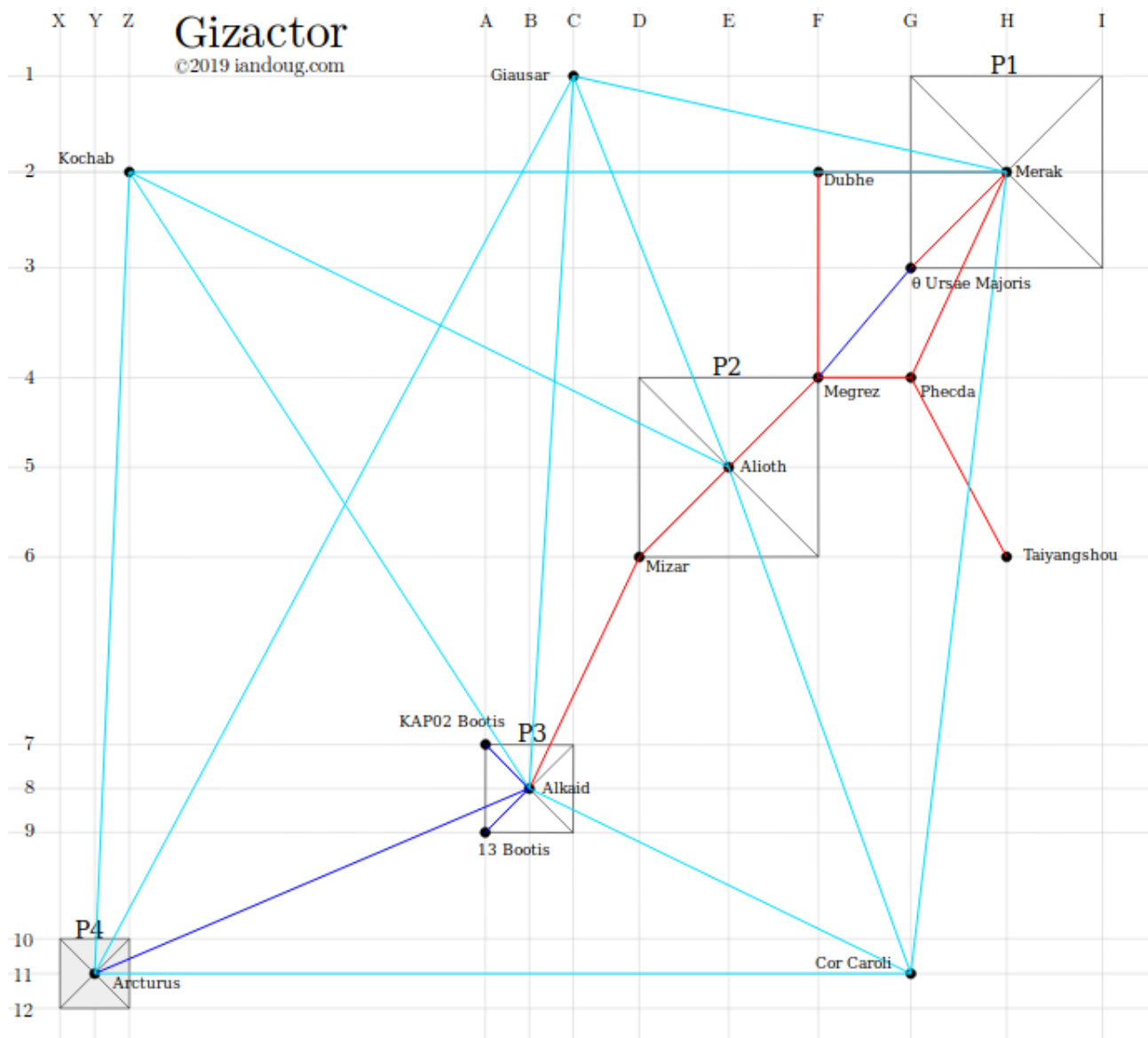

Figure 13: Giza plateau with target stars as per grid. Actual stars not necessarily in exactly the same location.

As shown in the companion paper, the Giza site was laid out to according to or to demonstrate precise mathematical knowledge. The correlation between the pyramids and

the stars can not be exact, because the heavens will not oblige. Instead, we should treat the stars as a source of inspiration, with the alignment given as a clue for dating, rather than as an exact blueprint. As Hollywood might put it, "inspired by real constellations." Nevertheless, the alignment is interesting.

Astronomy programs differ in how they calculate how the heavens looked in the past. Three different programs (Kstars, Stellarium, Sky Charts/Carte du Ciel) display different results as you go back in time. However, the general trend is the same. I discussed the discrepancies with the author of Sky Charts/Carte du Ciel, and perused formal analysis of different packages [17]. I accept that Sky Charts/Carte du Ciel, and in particular the dataset included from version 4.1.1 is the most accurate available to me at this time.

Fig. 14 has a view of the heavens, with the target stars highlighted.
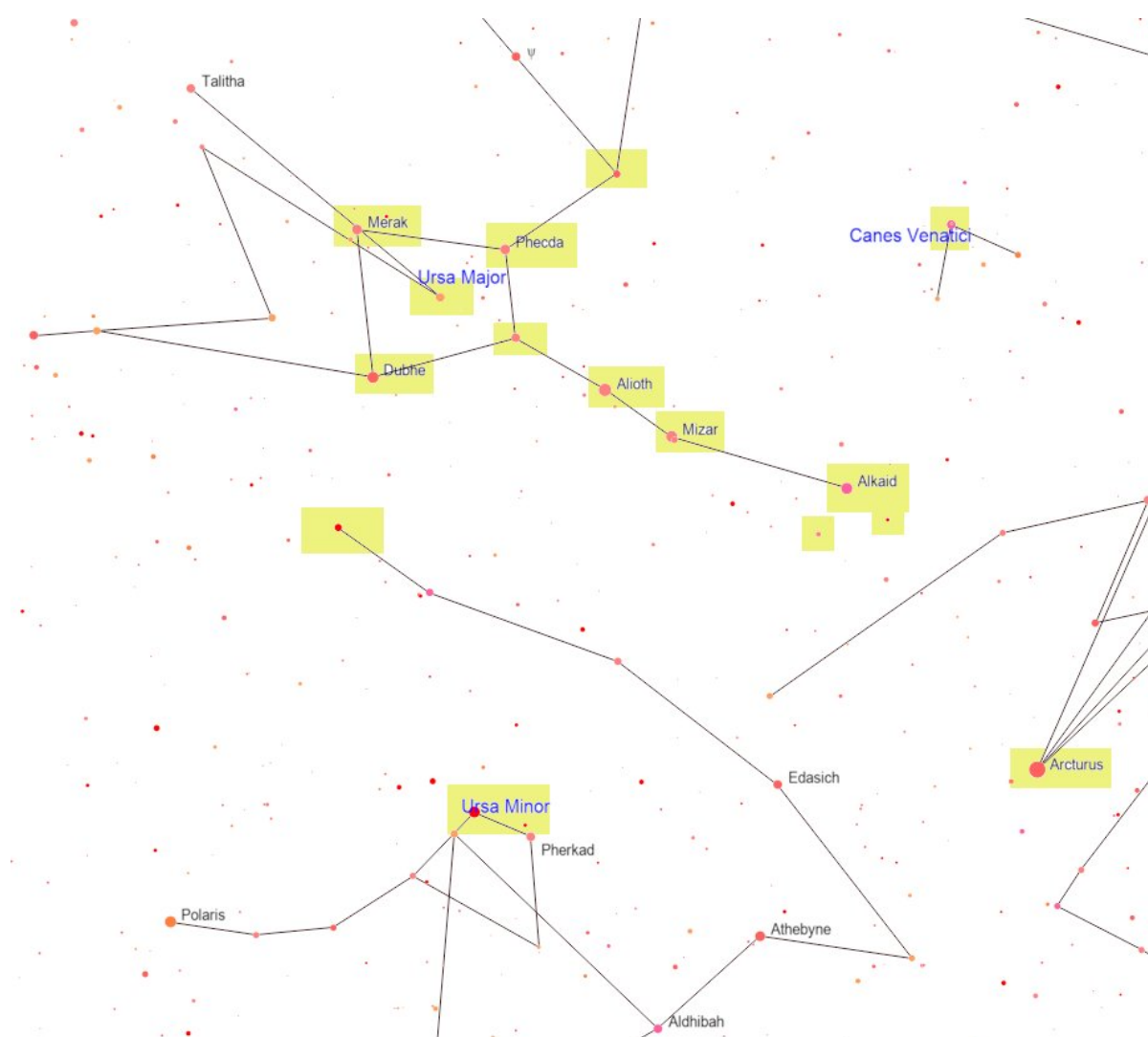

Figure 14: The target stars

Fig. 15 is the map of Giza as above, overlaid with the star section above, with Merak and Arcturus exactly aligned, and Alkaid and Mizar very closely aligned. The others vary from close to not so close, but this should be treated as a design suggestion not an exact blueprint.

Software: Carte du Ciel version 4.1.1 Beta
Date set to : 21 March 55,550 BCE
FOV: 158°
Projection: ARC Zenital equidistant projection.

The SVG of Giza was superimposed, rotated and scaled to match the star map. Stars are in red, star labels are vertical while Giza labels are horizontal. I am in two minds about including Upsilon Ursae Majoris, just under the G below as matching P1 NW.
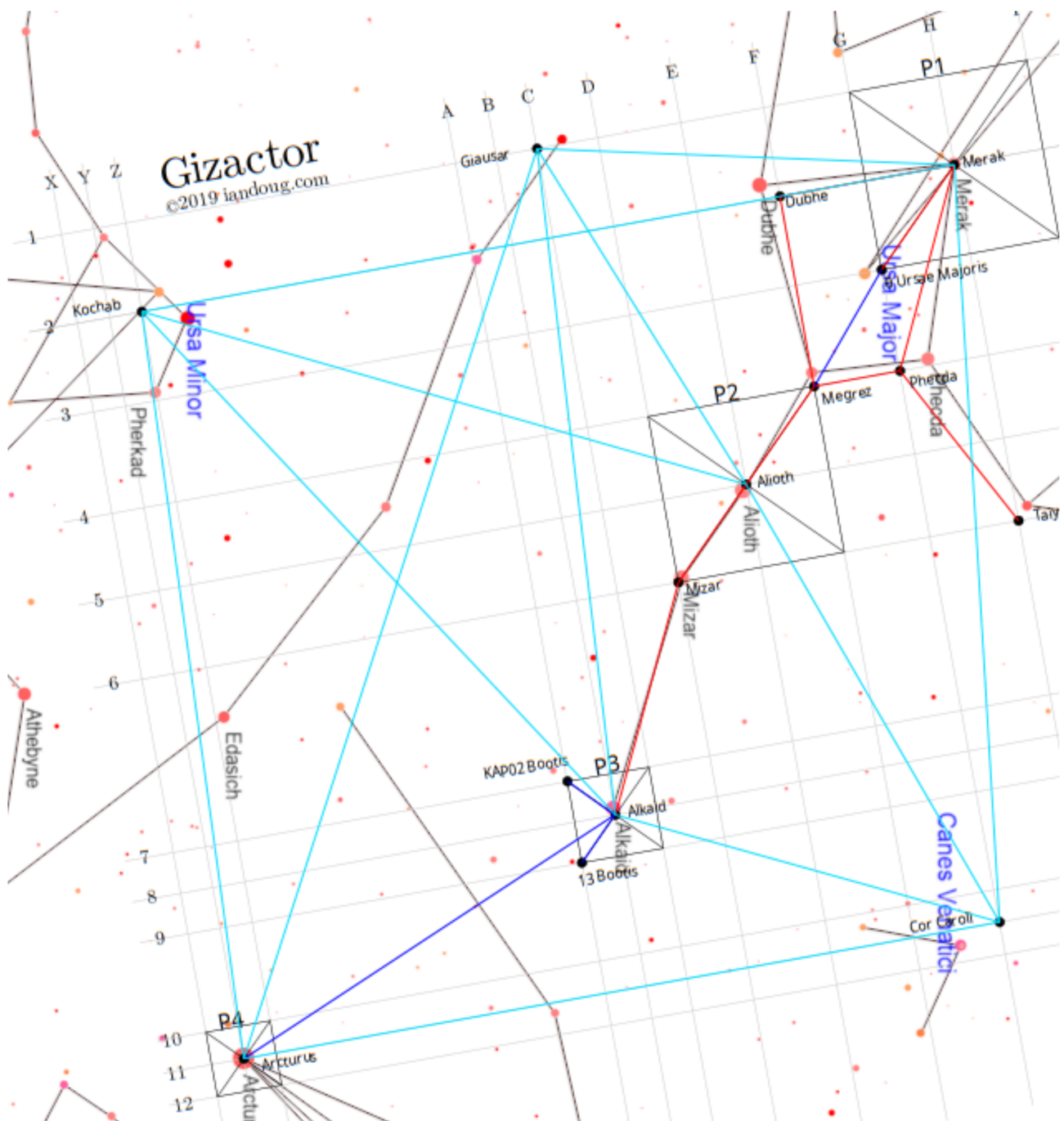
Figure 15: Giza aligned with the stars, 55,550 BCE

I take this alignment of Arcturus on P4 as final confirmation of the location of the fourth pyramid, despite that I did use it as a hint. Arcturus is actually why I research the 4th pyramid. It is such a prominent star I was convinced the planners would have included it, and they did not disappoint.

The geometry provided the actual location, the alignment is just the cherry on the top, to confirm the date.

Arcturus is moving rapidly (122 km/s) relative to the Sun, and such an active star provides a good candidate for dating. This also demonstrates that there is zero correlation between "brightness of star" and "size of pyramid." There may be other factors at play, like colour, distance, or X-ray transmissions. Arcturus would also have been fainter 56k years ago, at a greater distance from us.

For comparison, to show how Arcturus is moving, Figure 16 has the situation 5k years later in 50,550 BCE, and Figure 17 shows how it was in 60,550 BCE.
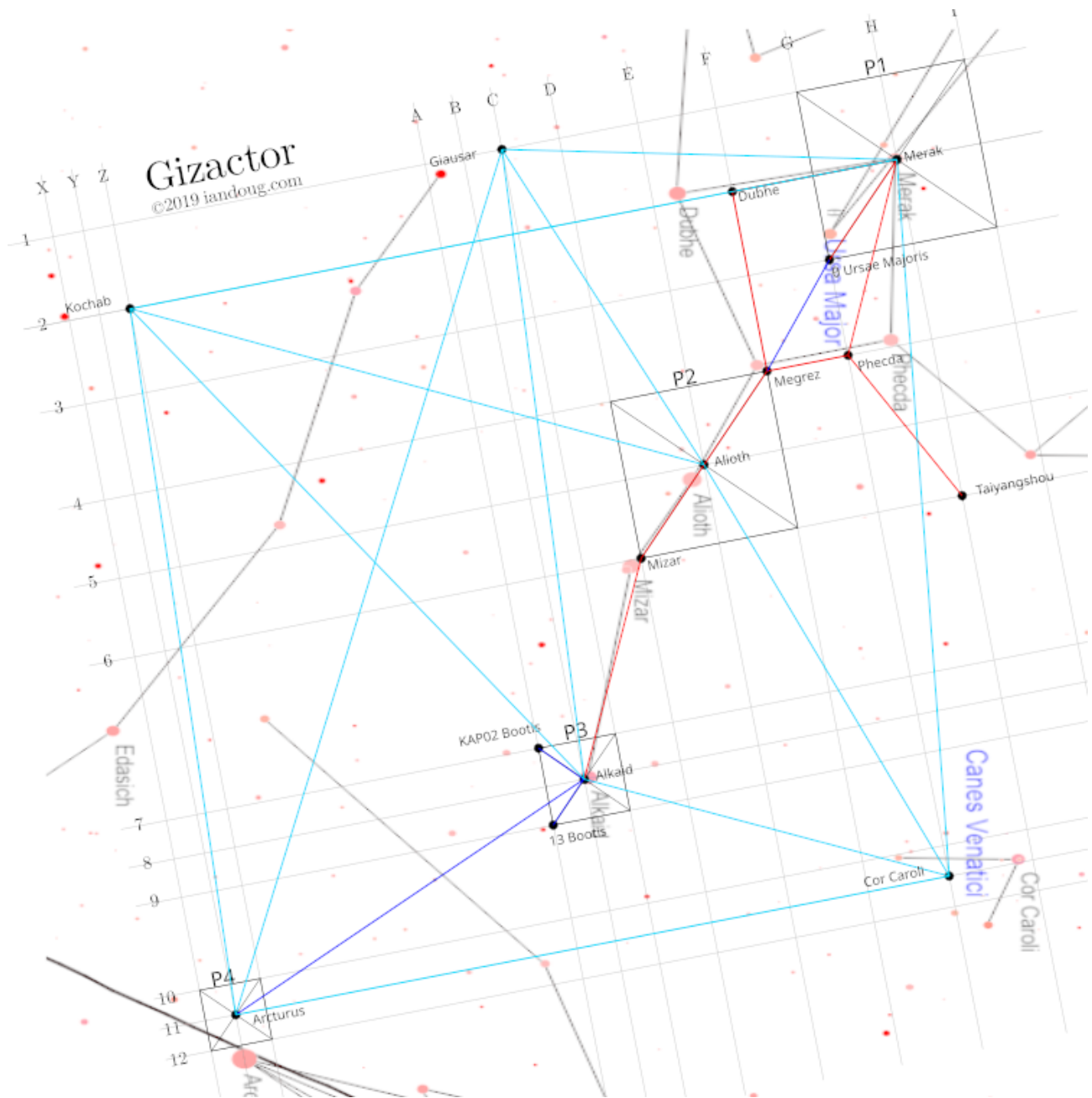
Figure 16: The correlation attempt in 50,550 BCE
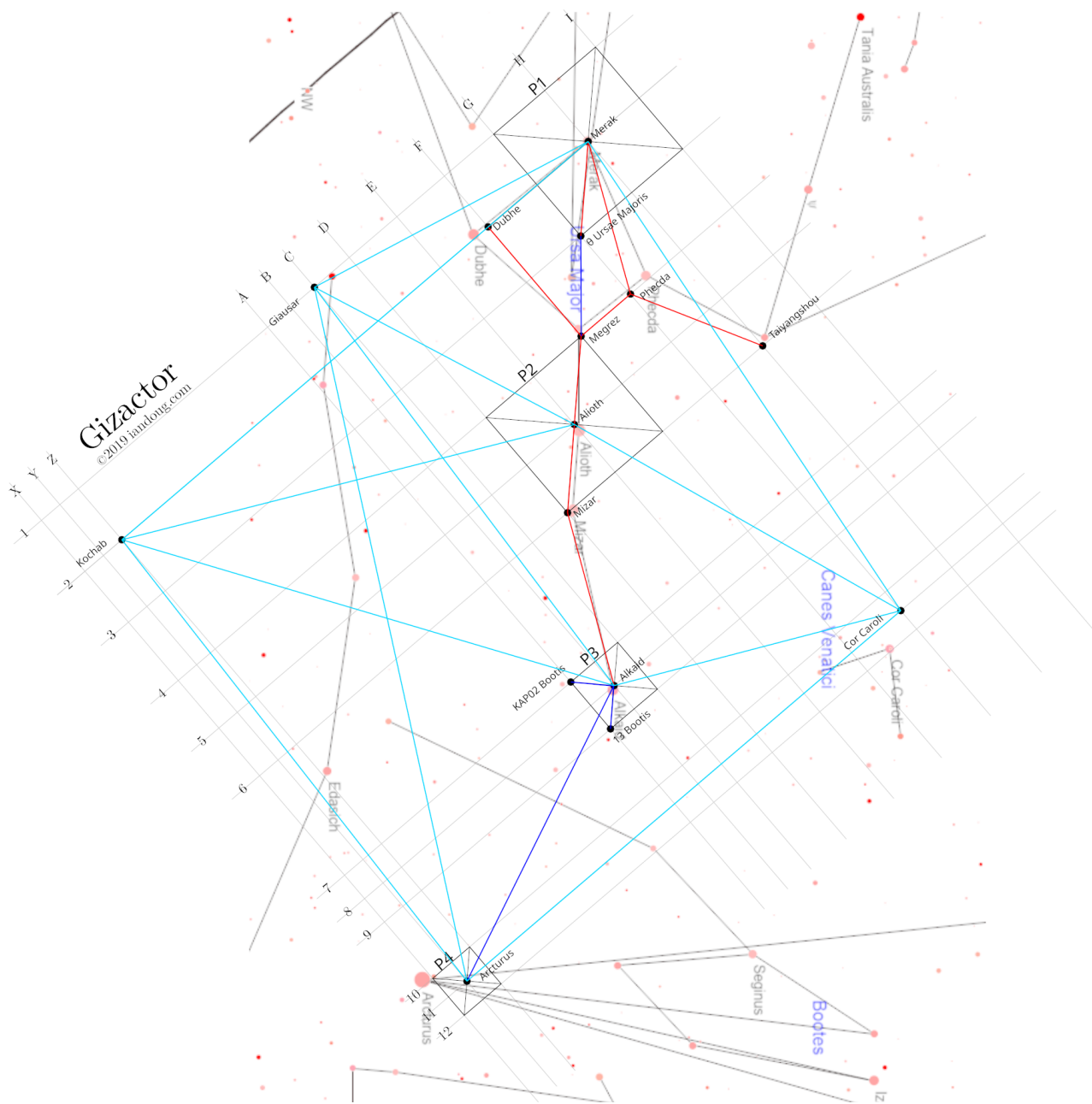
Figure 17: The correlation attempt in 60,550 BCE

For completeness, Fig. 18 shows how the grid system locations and associated star names map on the ground. Note that the pyramid peaks are off-centre due to the angle of the satellite.
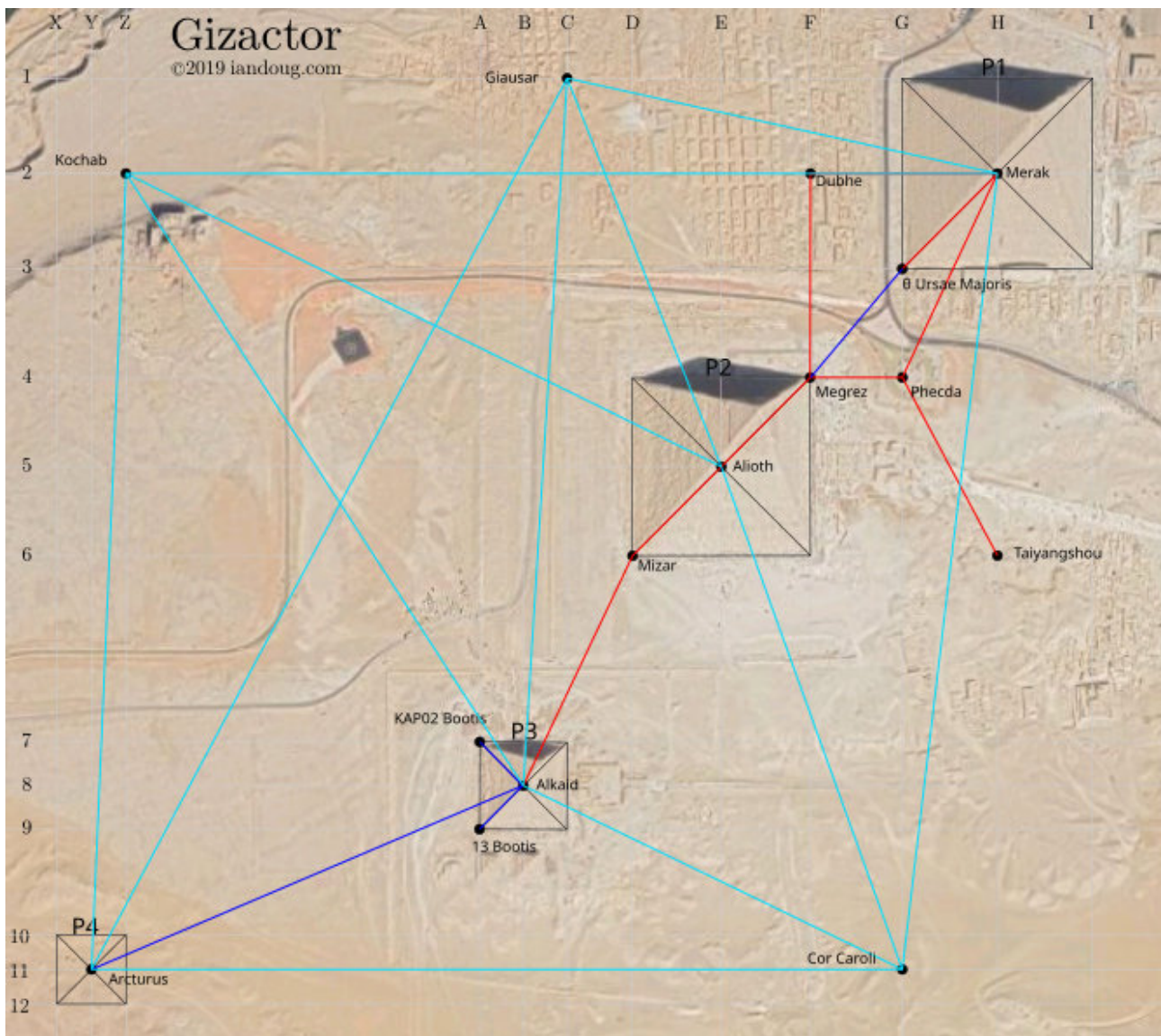
Figure 18: The Giza grid with target star locations, overlaid on Google Earth image

Fig. 19 shows how the star map correlates to the ground.

Figure 19: The star map overlaid on Google Earth image

We could also draw a more interesting asterism with most of those stars. I've dubbed this The Running Man or it could also be a bird [18] of some sort, in Figure 20. It is also possible to join Kochab and Cor Caroli and get a shape resembling a flying saucer … or an umbrella.

Figure 20: The Running Man asterism

Finding North

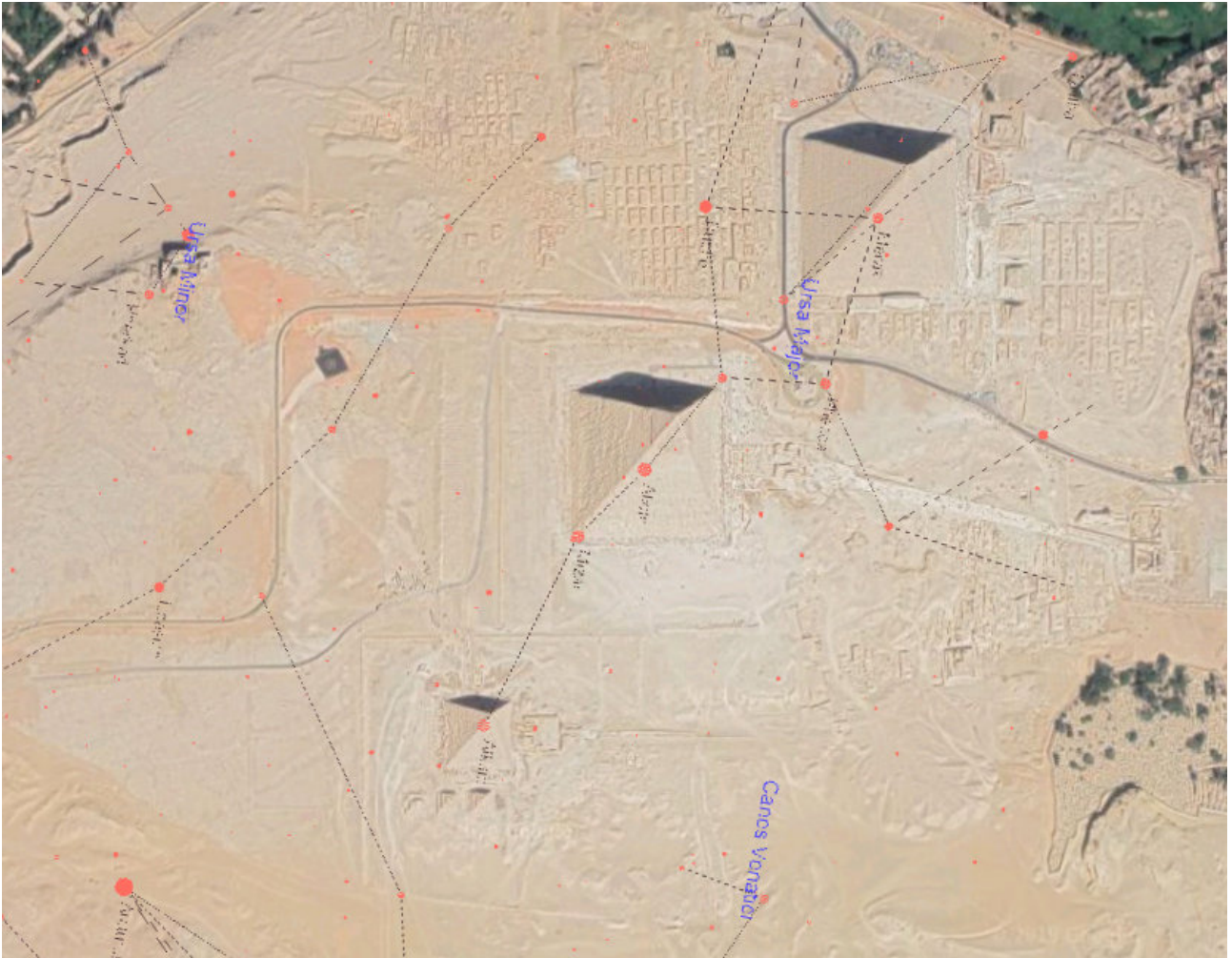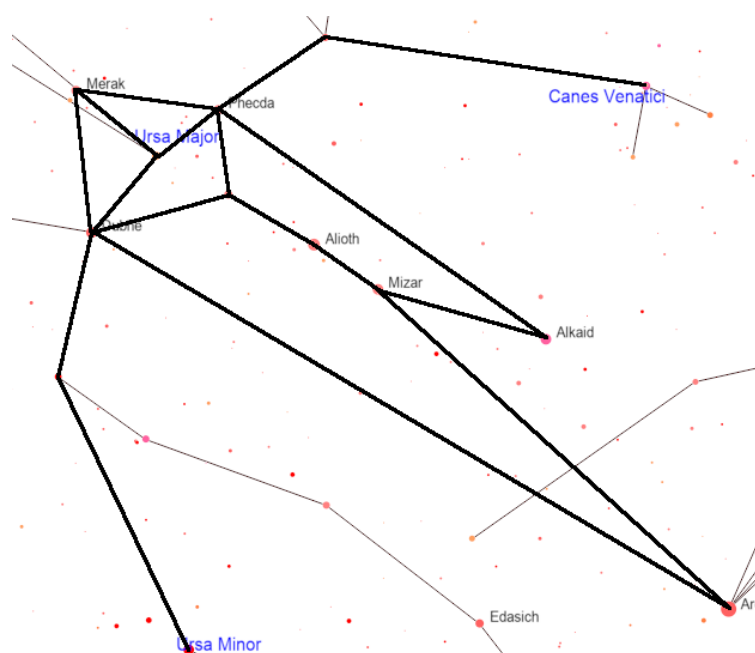At circa 55,550 BCE, the star Thuban was orbiting the pole in a tight circle. A viewer on the ground could make a circular hole say 30cm in diameter in a piece of wood, and adjust it so that Thuban appeared to travel around the edge of the circle. The intersection of two diagonal threads across the hole would then indicate true north.

Alternatively, the intersection of lines drawn from Aldhibah to Mizar, and Pherkad to Alkaid, would give a very close North position.

8. Round 2

At this point I thought I was done with Giza, and started polishing the paper. However, Giza was not done with me.

The "not-so-good" alignments of the off-pyramid stars was bothering me. I accepted that "nearby" was good enough to show intent, and the stars are randomly distributed, so getting a building site to align with random spots is challenging. Despite that, it still felt

like "close, but no cigar," or a teacher writing "must try harder" in my workbook. In truth, I had a touch of disappointment that those spots didn't align better.

My guides were not much help, apart from prodding me to look again. So I did, and then one word popped into my head... the word was "phi." Knowing how much the designers loved φ, it dawned on me that the pyramid bases are square, and it's easy to convert a square base to a golden rectangle. Or you could split the square by φ. Once I started to "think different" along those lines, then suddenly, just as with the previous 360/φ alignments, everything just popped into place, and I found myself dealing with 23 or more stars instead of 15.

So just like the designers, I find myself doing the alignment twice, slightly differently, so that it's not considered a fluke. I also felt some ancient people laughing at me kindly...

We begin by extending P1 westwards into a golden rectangle, and P2 likewise eastwards. We mark those new edges with blue lines A and B. Then we split P1 and P4 internally by φ, at C, D, E and P, and extend those lines, also blue, as shown in Fig. 21.

Create a golden rectangle westwards on P3 at F, and eastwards on P4 at G.

Then divide the horizontal space between P4 and P3 by the golden ratio, at H.

Then divide the vertical space between P3 and P2 by the golden ratio, at I.
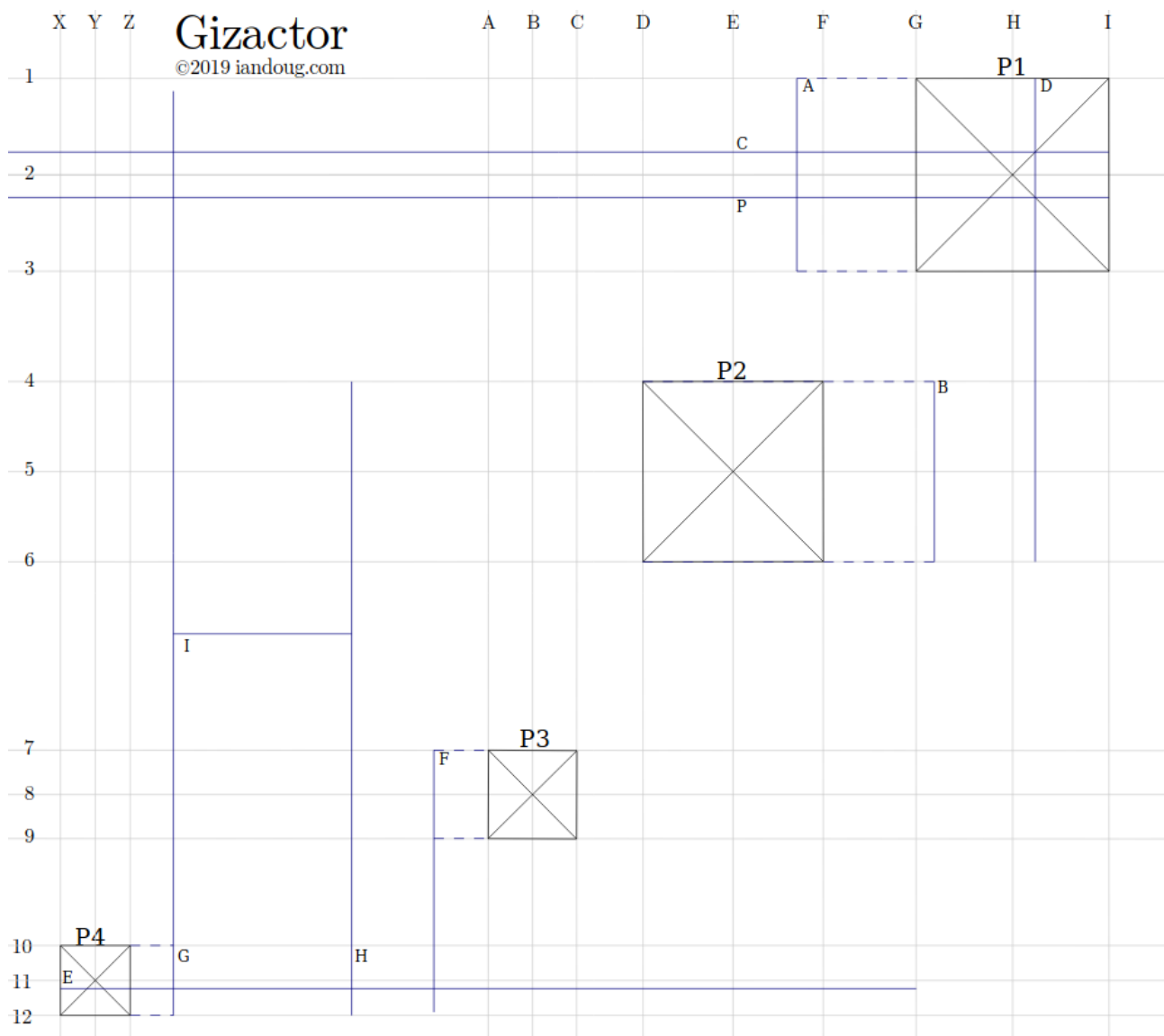
Figure 21: Phi dividers needed for the stellar alignment

Now we need to divide some spaces in half. For clarity, I've started again with a mostly-blank drawing, and will merge all the lines onto a final diagram.

Divide the space between P1 and P2 horizontally at J, and between P2 and P3 at K.

Divide the space between lines G and H in Fig. 21 at L.

Then divide the vertical distance between P1 South and P2 South at M, and between P2 North and P3 South at N. The half-way divisions are shown in Fig. 22 in green.
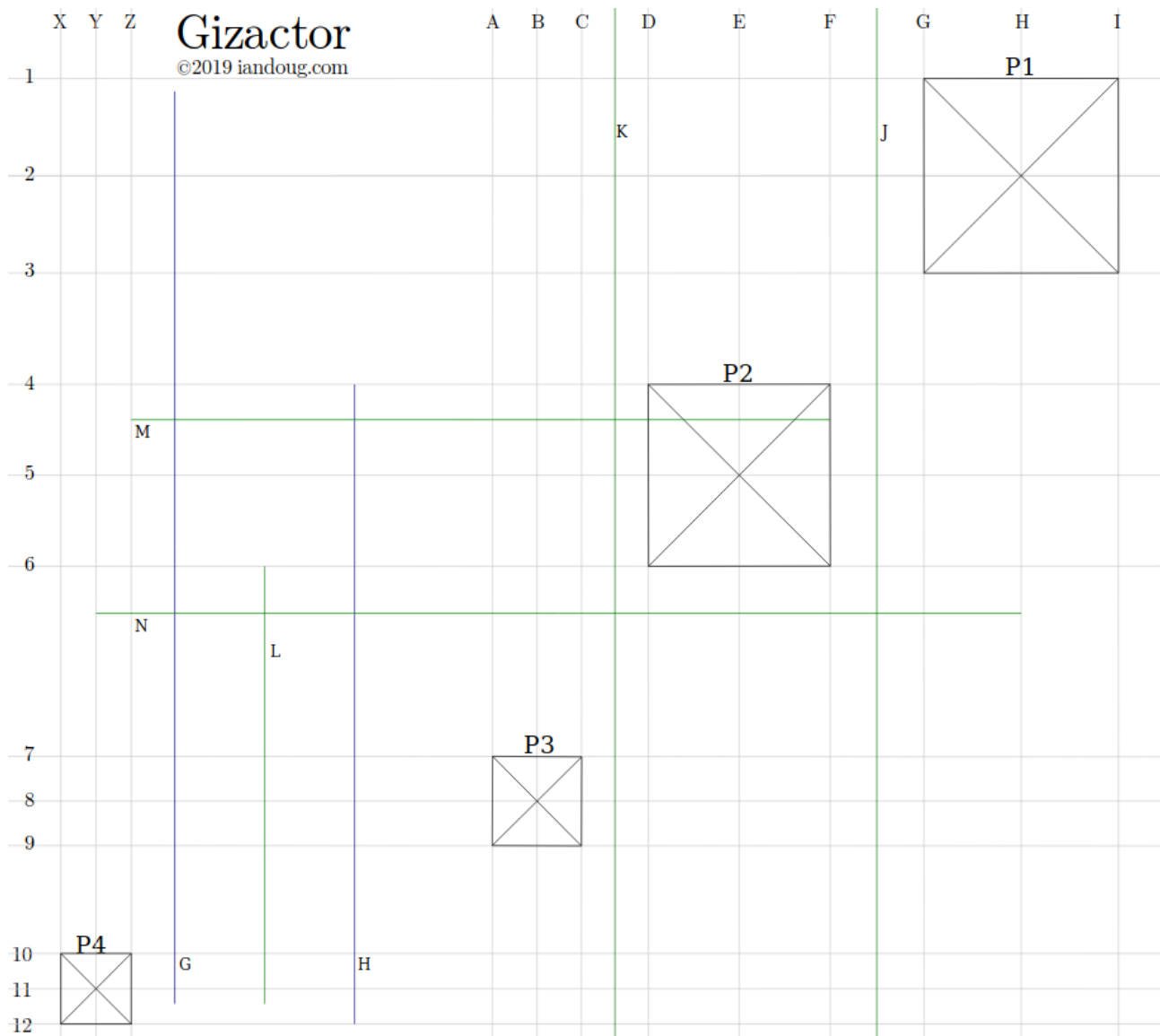
Figure 22: Halfway divisions needed for star alignments

Now merge the two sets of lines onto one diagram, select the points of interest, and label the target stars.
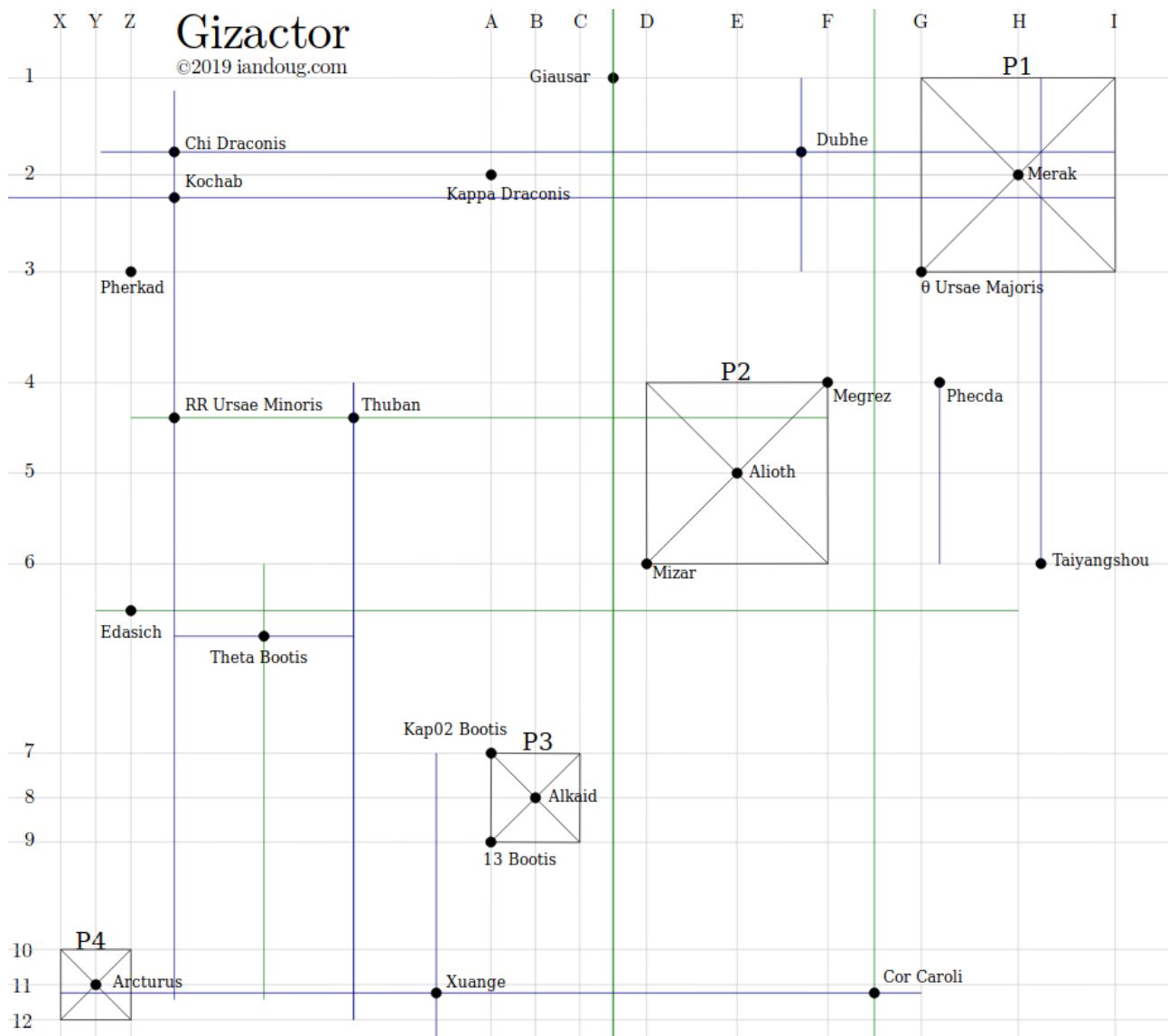
Figure 23: Points of interest and target star names

We now align Giza with the stars again, the result is in Fig. 24. I've removed the lines and switched to blue dots, the stars are in reds and oranges. Some blue dots are over their matching stars.

Figure 24: Giza aligned with the stars, round 2

This way of doing the alignment produced generally better results, as well as matching up to more stars, which are listed here for completeness.

1. Arcturus
2. Alkaid
3. KAP02 Bootis
4. 13 Bootis
5. Mizar
6. Alioth
7. Megrez
8. Phecda
9. Taiyangshou
10. θ Ursae Majoris
11. Dubhe
12. Merak
13. Cor Caroli
14. Kochab
15. Giausar
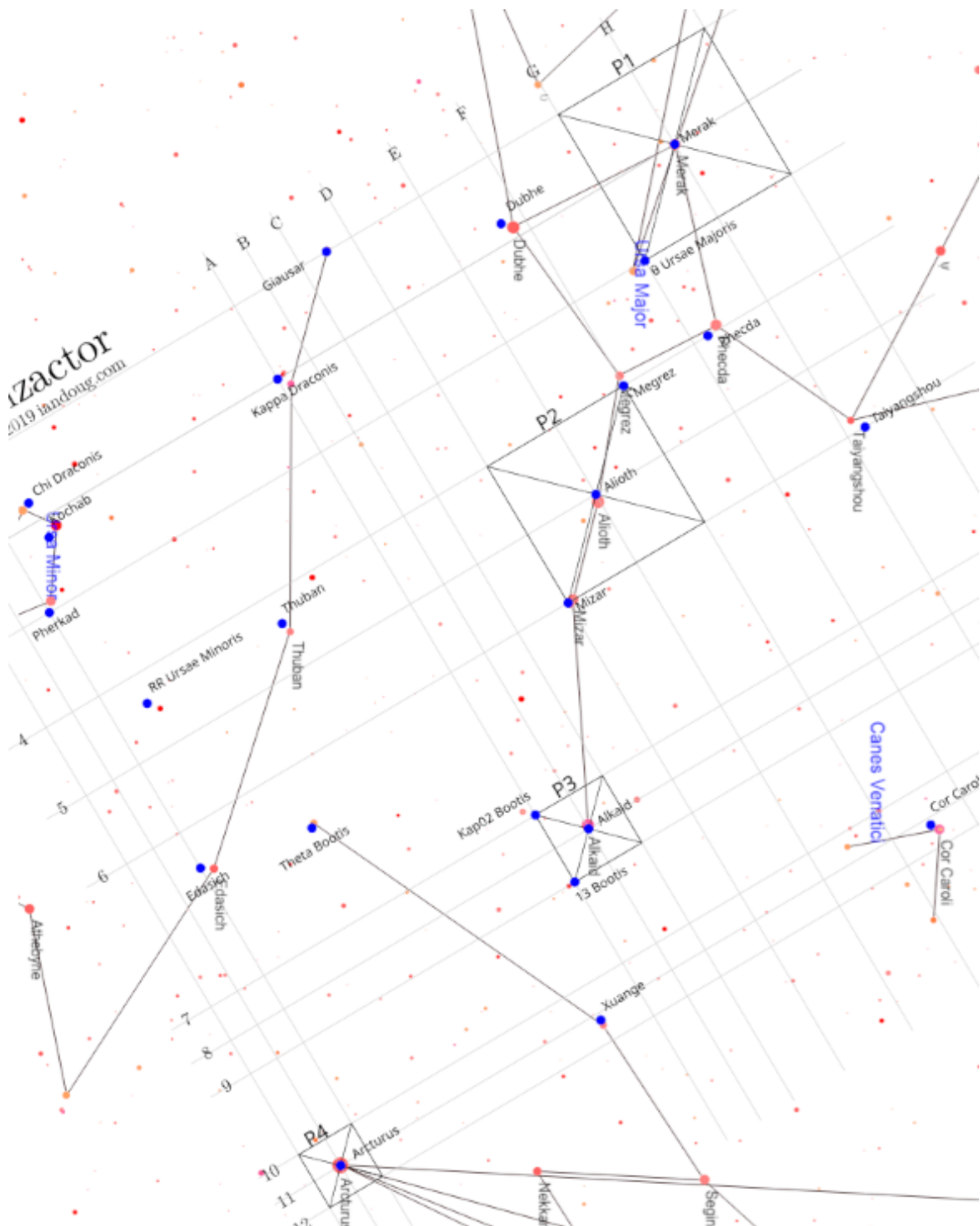16. Chi Draconis
17. Pherkad
18. RR Ursae Minoris
19. Thuban
20. Edasich
21. Theta Bootis
22. Xuange
23. Kappa Draconis

There are actually a few more stars, East, South and West, that I could have targeted, but we have to draw the line somewhere. Twenty-three stars should be enough for ancient origins...

Fig. 25 shows how the calculated star positions map to the ground at Giza. For how the actual stars map, that's still as per Fig. 19. In Fig. 25, the red dot corresponds to about where the celestial north pole would be. If I was making a treasure map, that's where I would put the big black X. Curiously, it seems to be along the middle line of P2 and halfway between P3 and P4.
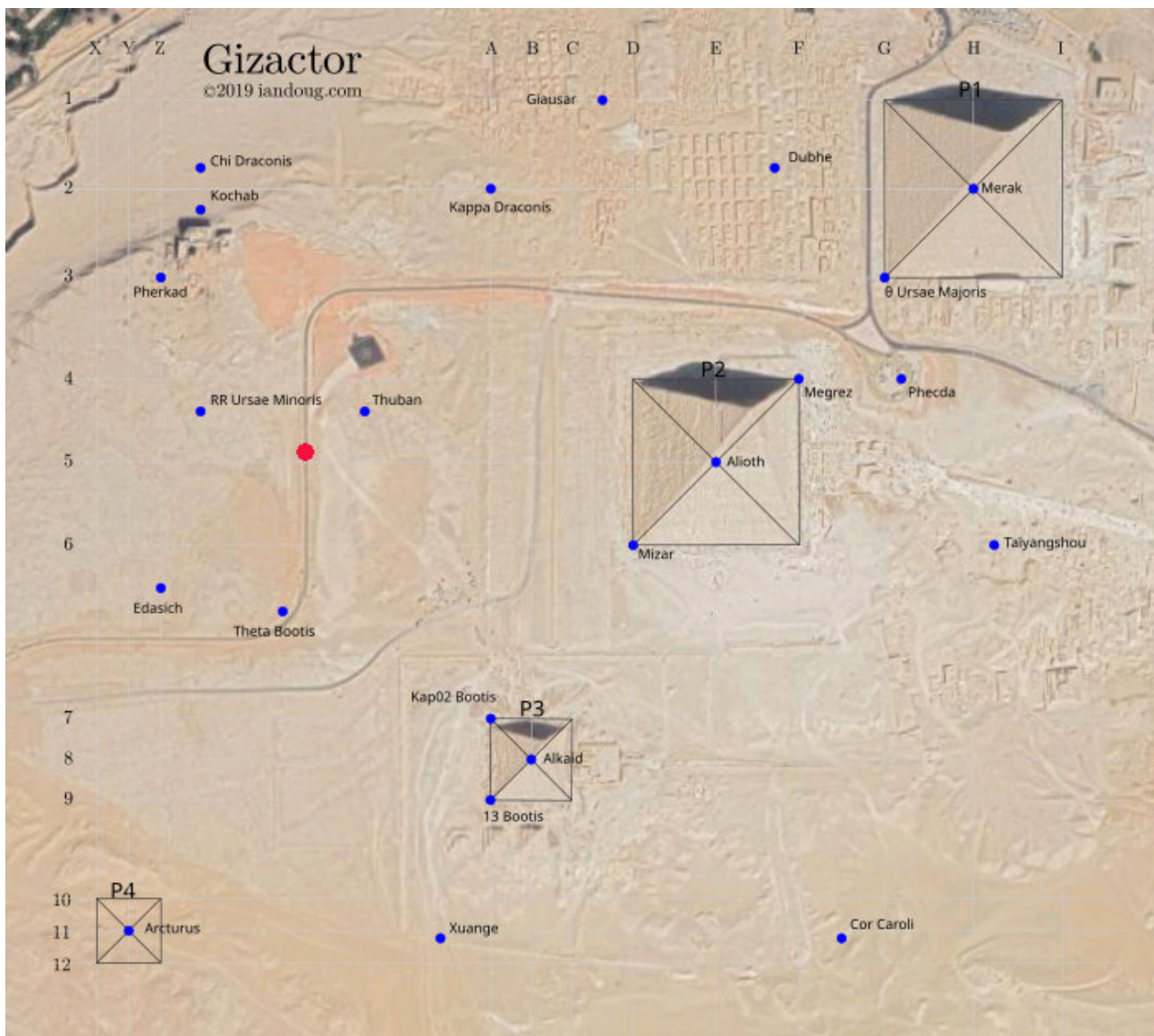
Figure 25: Revised calculated star positions overlaid on Google Earth image.

7. Comparative chronology

A brief overview of various dates. I have included dates from The Historian's History of the World (HHOTW, encyclopaedias published in 1909) to show how the "accepted" date has changed over the years.

c. Year BCE	Event	Source
55,550	Giza built	Ian Douglas, this paper
39,000	Giza built	Edward F. Malkowski [19]
36,400	Giza built	Armando Mei [20]
36,000	Giza built	John Anthony West [21]
4,500 - 26,000	Giza built	Mario Buildreps (nom-de-plume) [22]
10,500	Sphinx	Orion Correlation Theory [23]
10,000	Sphinx	Robert M. Schoch (2019) [24]
7,500 - 5,000	Sphinx	Robert M. Schoch (earlier) [24]
7,000 - 700	Giza built	Emilio Spedicato [10]
5,004	I Dynasty	HHOTW Vol1 p291, quoting Manetho
Before 4,500	Enshagkushanna, King of Kengi, Babylonia	HHOTW Vol1 p323
4,400	Accession of Menes	HHOTW Vol1 p68
4,235	IV Dynasty	HHOTW Vol1 p291, quoting Manetho
3,733	Khufu reign starts	HHOTW Vol1 p69
3,666	Khafre reign starts	HHOTW Vol1 p69
3,633	Menkaure reign starts	HHOTW Vol1 p69
3,605	I Dynasty	Ian Onvlee [25]
2,924	IV Dynasty	Ian Onvlee [23]
2,871	Khufu reign starts	Ian Onvlee [26]
2,796	Khafre reign starts	Ian Onvlee [24]
2,870 - 2,460	Khufu pyramid	Alexander Puchkov [27]
2,880 - 2,425	Khafre pyramid	Alexander Puchkov [25]
Before IV dynasty	Sphinx	Colin Reader [28]
2,600	Sphinx + Giza?	Orion Correlation Theory [4]
2,580 - 2,552	Khufu	Currently accepted date
2571 - 2472	Building Giza	Harry Rogers [29]
2,570 - 2,520	Khafre	Currently accepted date
2,530	Menkaure	Currently accepted date
2,480	Khufu pyramid started	Kate Spence [30]

c. Year BCE	Event	Source
2,448	Khafre pyramid started	Kate Spence [28]

8. Discussion

As mentioned in the companion paper, I started out trying to find an explanation for the alignment of the pyramids, and one thing led to another. In truth there were times when I distinctly felt "guided" in certain directions, a phenomenon that I can not explain, but it happened. Credit where it is due etc.

I was not expecting to end up here, with a date so far in the past, but the evidence is there in the numbers and the design. If the date is correct, then Khufu was the largest, tallest building on the planet not for 6k years but for close to 58k years. They sited this on a latitude that echoes the speed of light in metres/second. They then repeated the trick with a base side of 440 Ĝ, which produces a number again echoing the speed of light[1]. This can not be ascribed to "luck." This is a smart, advanced group of people.

If the date of circa 55.5k BCE withstands scrutiny, then we can stop wasting time trying to explain how the dynastic Egyptians did all the things we can't explain, like building the pyramids or core-drilling granite, etc.

Instead, we can focus our efforts on looking for whatever civilization was around in 56k BCE, and see what else they left for us to find. They were not living in caves, so that's the wrong place to look.

I've come to the conclusion that Giza was left as a message to whichever civilization came along that was able to figure it out. Until now, on this side of the last ice age, we have not had the mathematical knowledge coupled with the technological tools to even begin to figure out all that is hidden in Giza.

The planners clearly underestimated the destructive abilities of people driven by religious fervour or the desire for treasure. Perhaps in their time such things were unheard of.

If I had planned Giza, then I would have made better use of the internal space. Both Khufu and Khafre pyramids must have undiscovered chambers, it makes little sense to build something so massive and use so little interior space. The Giza planners were clearly very smart, and thus logical. So there must be more to Giza than we know. There may also be

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1   Circumference of circumscribed circle minus circumference of inscribed circle, converted to metres.

other spots where we should be digging, perhaps where the celestial north pole maps to the ground.

Göbekli Tepe has already disrupted that consensus time-line, as has the controversy around the water erosion on the Sphinx. We can also ponder how many times in the past the Sphinx has been covered with sand and then dug out, and the effect that would have on erosion patterns.

Our knowledge of religious practices or beliefs from 55.5k BCE is extremely limited.

There is an Arab myth connecting the Big Dipper to a funeral, which may be relevant.

There may be a connection to the concept of "The plough."

However, the Big Dipper is an extremely well-known constellation, and has the advantage of maintaining a recognisable shape over aeons. [31]

I'm not aware of any direct evidence to support the suggested date, and it certainly does not fit the mainstream human-development timeline.

Research by Mario Buildreps [22] (nom-de-plume) using tectonic shift dating indicates a date no earlier than 26k BCE or thereabouts. As I understand his methodology, it relies on the original constructions having been perfectly aligned at the time of construction, and I don't know if that is a valid starting assumption. I note also that there are some issues with the whole theory of continental drift versus its competitor, the shrinking-enlarging crust idea, so until the relevant sciences sort those issues out, I will keep an open mind. I say this as a previous believer in continental drift who now has some doubts.

On the other hand, there is no valid uncontested direct evidence that the claimed builders of Giza actually did build it or were buried there. They may instead just have renovated and claimed it. We are still unable to explain how they built it, or even how they worked granite with copper tools. Thus, the accepted timeline can also be questioned.

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