

Making The Phaistos Disc

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Abstract

Ever since I have laid my eyes on an article about the Phaistos Disc, it has totally obsessed with my minds [1]. First of all, what I am trying to do in this article is not to attempt to solve any mystery of this mysterious disc, but also it is not my intention to prove something of which I am absolutely not qualified. However I would like to present my findings on the Phaistos Disc from a guess work, which I believe has been luckily paid off for something meaningful. It all started from a simple question to myself: if I was him or her, or even them who had made the Phaistos Disc, how I would be so confident that I could successfully arrange all those letters or tokens onto the two surfaces of irreversible clay disc compactly and not so crowdedly before I start my works.

1. Introduction

The Phaistos Disc was excavated in Phaistos, Crete, on July 3, 1908 [2]. It is a clay disc about 6.5 in (16 cm) in diameter and 0.75 in (1.9 cm) thick with a total of 242 characters (one of which is defaced) either stamped or punched on the two faces, arranged into 61 groups separated by lines. Ever since the discovery of the Phaistos Disc, there have been made many attempts to decipher the inscriptions. Despite the continued interests of professionals including amateurs for nearly a century, the writing has not been deciphered, nor have any other examples of this writing been discovered. In a well known book such as Lost Languages by Andrew Robinson in 2002 edition, the Phaistos Disc is classified as a notorious undeciphered script[1]. Also, on the contrary, there are a large number of claims of decipherment of the Phaistos Disc. According to the Wikipedia, the claims may be categorized into linguistic decipherments, identifying the language of the inscription, and non-linguistic decipherments[3]. Set aside all those categorization efforts, it seems some basic questions still are yet to be answered or verified, though the majority of professionals have already agreed upon with. I.e., which side of the Phaistos Disc would be the head and which reading direction is right for the decipherment of text.

2. There would have been a string on side

Personally, I got a lot of questions myself about the Phaistos Disc as soon as I finished my reading. However those questions were all about WHY and HOW, not about WHAT. Why should it be a disc? If it was not his own choice, then why he should put the characters in a spiral passage. It is not that difficult to imagine how hard it will be putting all those characters of variable shapes

and sizes in a spiral passage on a circular disc. On what basis did he decide the size of the disc? It should have been determined before he actually start inscribing those characters and it should be fairly precise since he had got two surfaces to work on. If he fails on one side, there will be no turning-back unless redoing from the start. It will get worse when he found his mistakes right before the end of his works on the second face. The number of characters on the disc is 242: 123 on Side-A and 119 on Side-B. There is only 4 characters difference. When come to think of the fact that the characters are of variable shapes and sizes, the characters on each side should have been divided carefully and balanced out very well. The question of whether the partition of text on each side were intentionally balanced or not could imply an important thing especially when it is proved that both sides are same text in two different languages. But it looks very remote since many characters are shown on both sides at the same time. After having troubled with those unanswered questions, I managed to pick my first question out with the hope for the right professional answer out of amateur's way of thinking. If I was he, how I could determine the length of each passage on both faces at once and for all. If it was my mission, then I would have come up with a string and truly it was my answer to that question. Prepare a long string and stretch it up on a table and put some pebbles or pieces of wooden material along side with it. The exact size of each piece does not matter, the idea is just to get a rough estimate on the length of passage. After the string has been cut to the wanted length, then I would have started with Side-A first since I know how many characters are going to each face and the Side-A has the lengthiest passage. Once I have made the Side-A successfully, there will be no worry about failing the other side since that surface is less crowded than the Side-A. At this point, I wanted to know if I could prove it that there was a string or its equivalent as a safeguard used in the making process of the Phaistos Disc. Figures 1 and 2 illustrate two images from each side of the Disc[3]. Each side image has a graphically over layered passage drawn by using Visio tool, which is the only one that I had and that could tell me the length of each line or curve segment I put on the image.



Figure 1. Graphic overlay passage on Side-A



Figure 2. Graphic overlay passage on Side-B

Each graphically overlaid passage (P1 and P2) consists of many line or curve segments. S indicates where the passage starts and E for the end of that passage. The physical length of each passage is not important even though Visio tells the lengths in inches. Both images were in a same scale from the original images without any distortion. Actually those images look different from the pictures from [1], but even if it was a duplicate, that doesn't matter as long as the scale factor keeps same. Table 1 shows the length of each line segment used in both passages and the total lengths of them.

Table 1. Lines segments used in each graphic passage

	Side-A	Side-B
Number of Lines	13	18
Segments Lengths	0.6282, 1.1085, 1.7647, 2.1556, 0.9851, 2.9439, 2.7168, 1.6629, 1.5029, 3.067, 2.9671, 2.4139, 2.6766	0.636, 0.7093, 0.855, 1.6937, 1.0163, 1.2735, 1.6834, 2.3302, 1.0558, 0.8508, 1.8538, 2.6228, 2.0461, 0.6708, 2.6833, 2.0243, 1.4297, 1.3119
Total Length	26.5932	26.7467
T Line Segment*	0.7367	

*. Actually there is an extra line segment found on the Side-A, which is next to S end of the passage, but it is omitted in the calculation since that segment looks like been added later. Anyway the length of extra line segment is 0.7367.

When both lengths of graphically overlaid passages were compared, they are only 0.57% different in length. Though there are some inherent differences in drawing computerized lines on a hand made passage, that 0.57% of difference would not be enough to defy the string theory. So I believe this is a strong evidence that there had been a string or something flexible equivalent around in the making process. As a byproduct, it backs up the widely accepted belief that the layout of characters started from the end point. Look at the S end of Side-B passage. The end of that passage was closed to create a section for two characters. If he made this end first, he should have known in prior how much portion of the string he is allowed to use to make that loop. But it should also be pointed out that this doesn't apply to the Side-A. This will be addressed later in this Section. From this string theory, one more thing could be confirmed. He had done the Side-A first since it is the most crowded surface with larger character set to place. Honestly speaking, this string theory does not mean much. Actually, there could be another scenario on this theory. He could have placed some pebbles on the disc surface first and then used a string to separate them in layers and then he re-used same string for the Side-B later. However this string theory led me to the answer to next important question. Why did he choose a spiral passage on a circular disc? He might have concerned about others being confused with the reading direction. Imagine that a square clay surface and put a text on it. In that case, he would have to decide on which corner he place the very first character and how to handle the word spacing or line breaks. If this is the case, it also raises a very interesting question. Wasn't there yet any convention or any other common rule set on how the text should be written on any type of surface in any kind of passage? As an amateur, I have no knowledge to settle that question down, but if this was the first attempt ever made to the decision on the way to write and read a text passage, then I guess he is eligible to get a good credit for this spiral passage writings as an innovational method. Anyway, it is a fact that the text should be written in a spiral passage since it was written that way. The next question was what the enclosing line is for. There is one possible answer to this. The separation line means the spacing between words. The spiral writing might be his own solution to solve both the word spacing and the reading direction problems. When a text is being read or written in a spiral passage, it can not deviate from the passage until it is finished. With this, I go back to the questions which I had at the first place. Then which end will be the start? And which side is the first to read? Even if he made the Side-A first, it does not mean that it would be the one to read first. The question still stands. We actually don't know which side and which end would be the start until the text is deciphered and the true meaning reveals. But it is also pretty much true it is a kind of one-out-of-four-choices deal. Figure 3 illustrates my pick, in which the Side-A is the head and the passage is being read from the center outwardly. When I chose my first pick, I considered the findings that illustrated in Figures 1 and 2. Each image has two cross lines in the horizontal and vertical directions. Those two lines meet at the center of disc. You may also have noticed that the character at the center end of Side-A has been located in proximity of the center point of that side. The character placed at the center is the pivot for the passage start. There is one more thing I have realized. Even though he had planned very well before he started his works, there always are enough room for some troubles to intervene in his way. One of the most obvious failures to expect would be that some words could not have enough cell space allocated for them to be placed nicely within. On the Side-A, those troubled cell blocks are found near the outside end [1] and this is another evidence that he started his works from the center at least on the Side-A. If he started the passage from outside inwardly, then those troubled cell blocks may had more higher chances to be found in the central area than on the outermost rim.

SIDE A Read from center outwardly		L1
		L2
		L3
		L4
		L5
		L6
		L7
		L8
		L9
		L10
		L11
		L12
SIDE B Read from center outwardly		L14
		L15
		L16
		L17

Figure 3. Text passage from the center of the Disk-A (font from [4])

Once I have seen this arrangement, I never thought to try others since it meant something a lot to me even with an amateur's plain eyes. The hyphen represents the cell block separation, which would be the spacing between words, but I kept the hyphen to represent instead of removing it since those characters are just small sized pictures or icon-like images, without them it is very easy to get confused. One more thing I did is to paint some words or part of words with pseudo colors which repeats multiple times through the entire text. Some of same word segments have different colors. Since the color means nothing but a marker to create overall impression or intuition, it is not a big deal. I also edited the text by introducing line breaks and had each line numbered. As you may have noticed on the Side-A, I changed the line whenever I met the pair of Shield and Plumed Head (w1) except L12. After I have inspected this arrangement, I found very interesting repetitions of the pair of Helmet and Wavy Band in the lower half. For the Side-B, I introduced the line break right before the pair of Helmet and Wavy Band (w2). That is why the L12 is separated from L13. Those repetitions starts from L13 of the Side-A and continues on the Side-B. I believe this is a reasonable evidence why the Side-A should come first. The only reasonable doubt to turn down this theory will be the one in which the text is being read from the outside of the Side-B since the pair of Shield and Plumed Head could be the start of a sentence. To be honest, I doubt that since if that could work, then it indicates that every line starts with

same leading character of Plumed Head whatever the content was. I could not imagine what kind of language would work that way. I am not trying to insist that the arrangement shown in Figure 3 is the right one, but I would like to point out that how much of impressions the text in that arrangement offer to us. The next question, maybe the last, I had was how the second face of the disc could be inscribed without turning over after one side had been done. Until the clay is baked, the inscriptions made on one side will be vulnerable to scratches or any kind of deformations while the other side is on. The answer to this question brings up a very interesting idea that there could have been a hard flat base which was placed under the clay, on which a negative inscriptions of one side of the Phaistos Disc had been made. Maybe there were two separate plates for each side and it would make more senses. One of them is placed on the ground faced up, which is installed inside of a cylinder type of container with a siding wall and the clay is poured inside that cylinder. In this scenario, there is one more benefit. The clay poured on the bottom plate could be rubbed by hands into the space of inscriptions tightly and then the top side plate was placed on the top of the clay to press down to make impressions. Could this scenario be confirmed by any chance? Well, I can not say it should be, but I could say this much that the inscriptions on one side of the Phaistos Disc would have a bit sharper impressions on it than the other side, if they are noticeable. If this making process is right, then one more thing would come to clear. The inscriptions on the Phaistos Disc would not be meant to be shown as it is at all, but supposed to be printed on something else like a paper or another clay maybe to distribute. In other words, the real message that the Phaistos Discs meant to hold would be its negative inscriptions on the other plates.

3. Closing Remarks

The text of the Phaistos Disc arranged in such a way shown in Figure 3 also shows some peculiarities within it. The lines in the first paragraph from L1 to L11, if I may divide the text into paragraphs, has many of words which repeat shortly. On the contrary, there are not so many repeating activities in the second paragraph from L12 to L16. Especially the character occurrences in L16 even seem almost random and it is the longest sentence in the text of the Phaistos Disc. However it eventually ends with the pair of Shield and Plumed Head as others. Actually those three lines might have been classified as one single line according to the line breaking rule applied to the text on the Side-A. The first three characters of L13 repeats in the L16 and both lines end with the line ending sequence, the Shield and the Plumed Head. What does this imply? The L13 might be a shorter version of the L16 or a brief description of the text on the Side-B. In other words, the L16 might contain some details of the L13. The content of L16 could be a list of something. Then that explains why there are less repetition activities of words in the L16. In the lines from L13 to L16, the first two characters are same. They are the Helmet and the Wavy Band. The third characters of L15 and L16 are different. Maybe the pair of Helmet and Wavy Band indicates the start of sequential numbers such as I, II and III, or first, second and third. Even if the content of the Phaistos Text is unknown, at least some guesses could be made purely based on the text structure. For example, it could be a kind of regulations or statutes, those regulations have three categories explained in L14 to L16, and the L16 contains a list of detailed violations or crimes of the third category. The text on the Side-A could be an explanation about the effective date, or the introduction to the background of those regulations. Well, I have come this far with an idea of a string and I admit that nothing has been proved except for the coincidence of the line lengths on both sides and this is it as far as I could get. Some might see same point of view being found elsewhere. If they do, then it is mainly because I have used only a handful of references for this article.

References

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