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HELMUT SANDER, HARRY LEAR & COSMIC PI AND SQUARING A CIRCLE

(178th Method on Cosmic Pi)

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Abstract

We have at present traditional, limit, polygonal number 3.14159265358… attributed to and thrust on circle as its Pi value. Misinterpretation of Euler's equation by C.L.F. Lindemann, the age old concept, squaring a circle, became impossible. By the discovery of the true Pi value called Cosmic Pi number 3.14644660941… squaring a circle is done, in this paper.

Keywords: Circle, Circumference, Square, Side, Pi

Introduction

Squaring a Circle, Trisection of an angle, Duplication of a Cube have remained, unsolved geometrical problems. In fact, squaring a circle became impossible because of choosing a **wrong number 3.14159265358…** as π value. This number represents a polygon. Hence, we are expecting the conversion of a polygon into a circle, and not a circle into a square (Tetragon).

In reality, the squaring a circle means, constructing a square (Tetragon) equal in area to the area of a given circle. It is possible. When? If we know the exact π value. An exact π value is a true π value also. In March 1998, the exact and true π value $\frac{14-\sqrt{2}}{4}$ was discovered in India.

In this paper, the work / ideas of **Dr.Ing. Helmut Sander and Dr.Harry Lear** have been taken as the base. As we know that Cosmic π is real and hence, their ideas are **combined**, and this paper is formatted.

The paper consists of three figures. In the 1st figure a length for π-3, 4-π and $\sqrt{4-\pi}$ are obtained. In the 2nd figure $\sqrt{\pi}$ is obtained. In the 3rd figure squaring a circle is done. This author is highly grateful to Dr.Ing Helmut Sander and Dr. Harry Lear **and without their ideas this paper would not have seen the day of light.**

Procedure

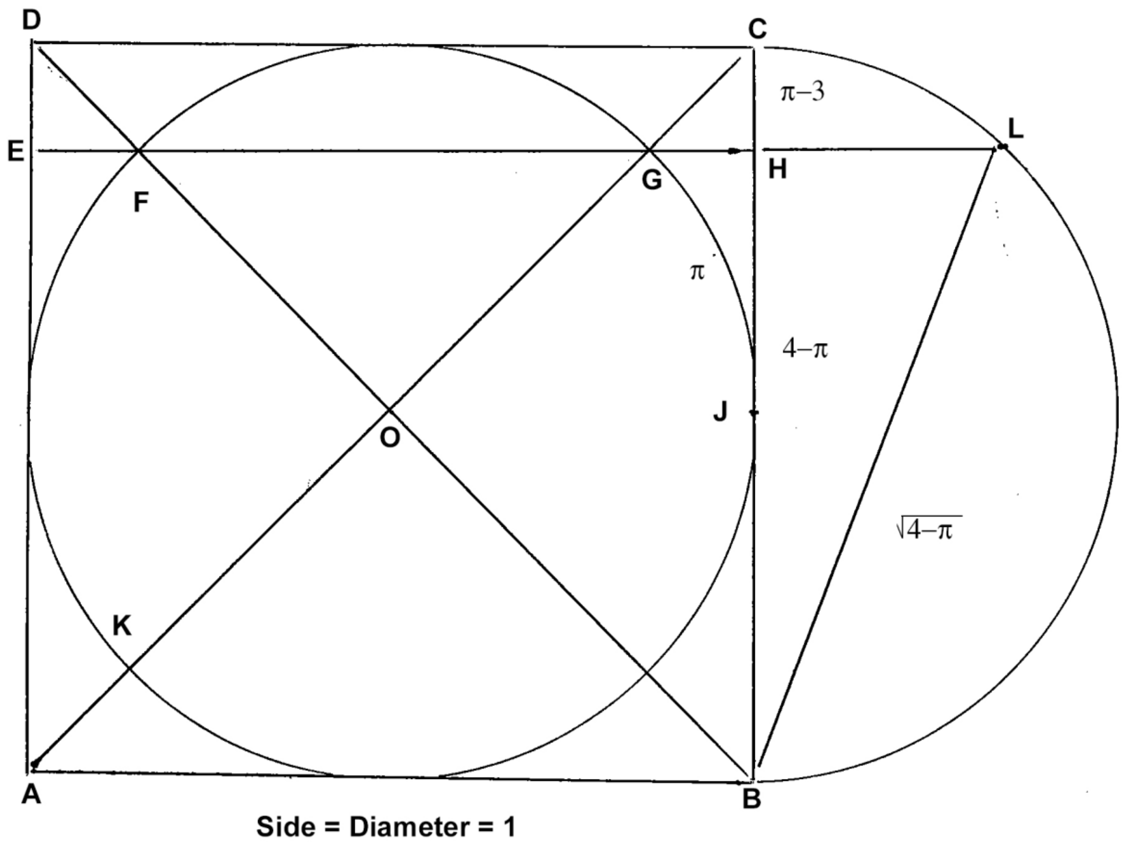

Figure-1

1. Square : ABCD, side = 1
2. Inscribe a circle, Diameter = side = 1
3. Radius = OF = OG = $\frac{1}{2}$
4. Triangle = FOG, Hypotenuse = FG

$$\text{FG} = \text{Radius} \times \sqrt{2} = \frac{1}{2} \times \sqrt{2} = \frac{\sqrt{2}}{2} \text{ So, hypotenuse} = \frac{\sqrt{2}}{2}$$

5. CH = DE = EF = GH = $\frac{side - hypotenuse}{2} = \frac{EH - FG}{2}$

$= \left(1 - \frac{\sqrt{2}}{2}\right)\frac{1}{2} = \frac{2-\sqrt{2}}{4}$ So, $CH = \frac{2-\sqrt{2}}{4}$

6. HB = side – CH = CB – CH = 1 – $\left(\frac{2-\sqrt{2}}{4}\right) = \frac{2+\sqrt{2}}{4}$

7. **In the 19 year continuous study by this author**, it has been **confirmed** that CH length in the perimeter of square is equal to $\pi - 3$ and HB length in the same perimeter of square is equal to $4 - \pi$. It means, that

$\pi - 3 = \frac{2-\sqrt{2}}{4}$, and $4 - \pi = \frac{2+\sqrt{2}}{4}$

$(\pi - 3) + (4 - \pi) = 1 = \left(\frac{2-\sqrt{2}}{4}\right) + \left(\frac{2+\sqrt{2}}{4}\right) = 1$

Part-II = How to obtain $\sqrt{4-\pi}$

8. Mid point of side CB = J
9. Taking J as centre draw a semi circle.
10. Draw a perpendicular line on CB at H which meets semicircle at L.
11. We can obtain HL applying altitude theorem

$$\sqrt{CH \times HB} = \sqrt{\left(\frac{2-\sqrt{2}}{4}\right)\times\left(\frac{2+\sqrt{2}}{4}\right)} = \frac{1}{\sqrt{8}} = \frac{1}{2\sqrt{2}} = \frac{\sqrt{2}}{4}$$

$$\sqrt{(\pi - 3)\times(4-\pi)}$$

12. Join L and B which gives LB length and is equal to $\sqrt{4-\pi}$

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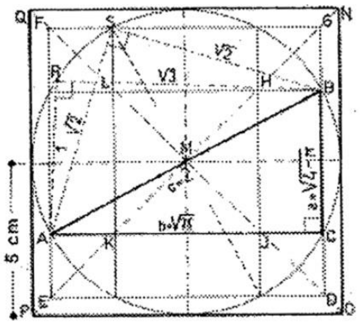
German version

The purely geometrical squaring of the circle with straightedge and compass is possible only within the tolerance of an approximation. But knowing the value of the irrational number *pi* of the circle (π = 3,14159265 ...), it is possible to transform it as a *line* or rather as a *shape* of a circle or a square. The number of the shape of a circle is πr^2 , the number of the shape of the square is (root-πr^2)^2 = (r[root-π])^2. If the radius of the circle is **r = 1**, the shape of the circle and the shape of the square DEFG **equal** π. In the following illustration (Figure 1), the *line of the unit* is 5 cm. The square of the unit therefore amounts 5^2 = 25 cm^2. The larger square NOPQ goes up to 2^2 = 4 units (or 10^2 = 100 cm^2). This means that the shapes of circle (= π) and square (= π) are smaller than this larger square.
The shape of the square DEFG = π observes the Pythagorean theorem $a^2 + b^2 = c^2$ for right triangles, because the two shapes (square DEFG and the surrounding shapes) add up to the square-shape NOPQ. The formula is:

$$[5(\text{root-}\pi)]^2 + [5(\text{root-}4 - \pi)]^2 = 25\ (\pi + 4 - \pi) = 100.$$



The inner circle of the larger square includes the right triangle:

$$ABC = a{:}b{:}c = \text{root}(4 - \pi) : \text{root}(\pi : 2).$$

The Pythagorean theorem confirms the equation (4 - π) + π = 4, and is also applicable to "irrational" right triangles. If you move the point C on its semi-circle between A and B, then there are demonstrated *ad infinitum* all possible right triangles. The sum of the squared catheti in every case equals 4 (for instance the triangle ABS: 2(root-2)^2 = 4; the triangle ABR: 1^2 + (root-3)^2 = 4), because *all* plane triangles are touching a revolving circle, their forms are represented in the picture of the squaring of the circle. It is a really "cosmological arrangement", because we are able to project the optical vaulted sky on to a planar celestial chart. On the other hand the circle with the

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A geometrical ensemble to generate the squaring of the circle by Helmut Sander for the NN..

radius 1 is the inner circle of a virtual right triangle with the sides 3:4:5. We have a given shape of the square in our design of 100, and in so far we could double this proportion 3:4:5 to 6:8:10 and integrate it into the circle: $6^2 + 8^2 = 10^2$ (36 + 64 = 100).

Here we are able to identify a connection to the infinite system of the so-called "primitive Pythagorean triples", which include all *natural* and all *positive* real numbers.
The many various imaginable triangles in the circle like ABC can be put together (as a pair; two identical axes) either to symmetrical rectangles or to deltoids (one identical axis), if you superimpose the triangle ABC over the axis AB. Rectangles and deltoids belong to the symmetrical polygons of the circle. The shapes of the polygons, ACBR and ACBS for instance, are nonsymmetrical. Two of the equal rectangles can be put together (by rotation of 90°) to form the arms of a Greek Cross. Its outer corners are the polygonal points of an inscribed symmetrical octagon on the circle with the radius 1. Octagons have a centered symmetry with eight axes. The shape of the inner square of the cross HJKL equals the shape of the slim frame between NOPQ and DEFG. In consequence of this, the shape with the value π is equal to the shape of the larger frame between NOPQ and HJKL. This relationship is valid in every case. Greek Crosses make it easier to make out the relationships of many shapes and numbers within all plane triangles, also between other polygons and concerning the squaring of the circle. The most important aids (for the squaring of the circle) are the *Strahlensätze* (intercept theorems) and the evident Pythagorean theorem for right triangles. These aids are valid with regards to all plane triangles, including the famous irrational "Fermat triangles" (Pierre de Fermat 1601 - 1665). This hypothesis provided geometrical explanations in correspondence to the theory of numbers. A special case is the centered symmetrical hexagon (Star of King David) with the sides equal to 1, the most simple Fermat-equation $1^n + 1^n = 2$ and the equilateral triangle, the so-called "Eye of God".

Translated by Gert Sperling

166

Part III : How to obtain $\sqrt{\pi}$ from $\sqrt{4-\pi}$

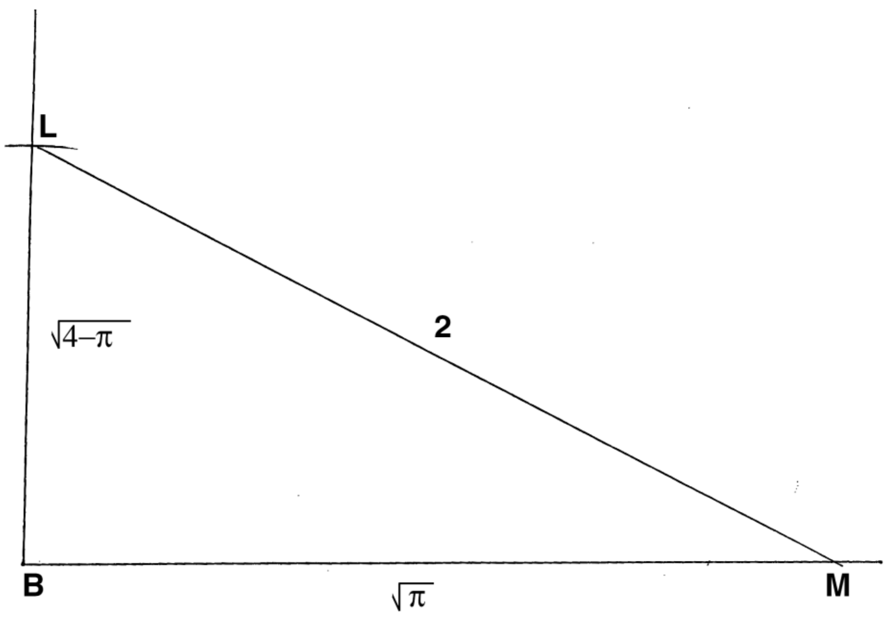

Fig.2

13. BL = $\sqrt{4-\pi}$ = known from Fig.1 = $\sqrt{\frac{2+\sqrt{2}}{4}} = \sqrt{\frac{2+\sqrt{2}}{2}}$

14. LM = 2 = We can measure it with straight edge

15. The length BM is thus equal to $\sqrt{\square} = \sqrt{\frac{14-\sqrt{2}}{4}} = \frac{\sqrt{14-\sqrt{2}}}{2}$

By applying Pythagorean theorem we can obtain BM length.

$$BM = \sqrt{(LM)^2 - (LB)^2} = \sqrt{2^2 - \left(\sqrt{\frac{2+\sqrt{2}}{4}}\right)^2} = \sqrt{\frac{14-\sqrt{2}}{4}}$$

Part-IV : Squaring a circle

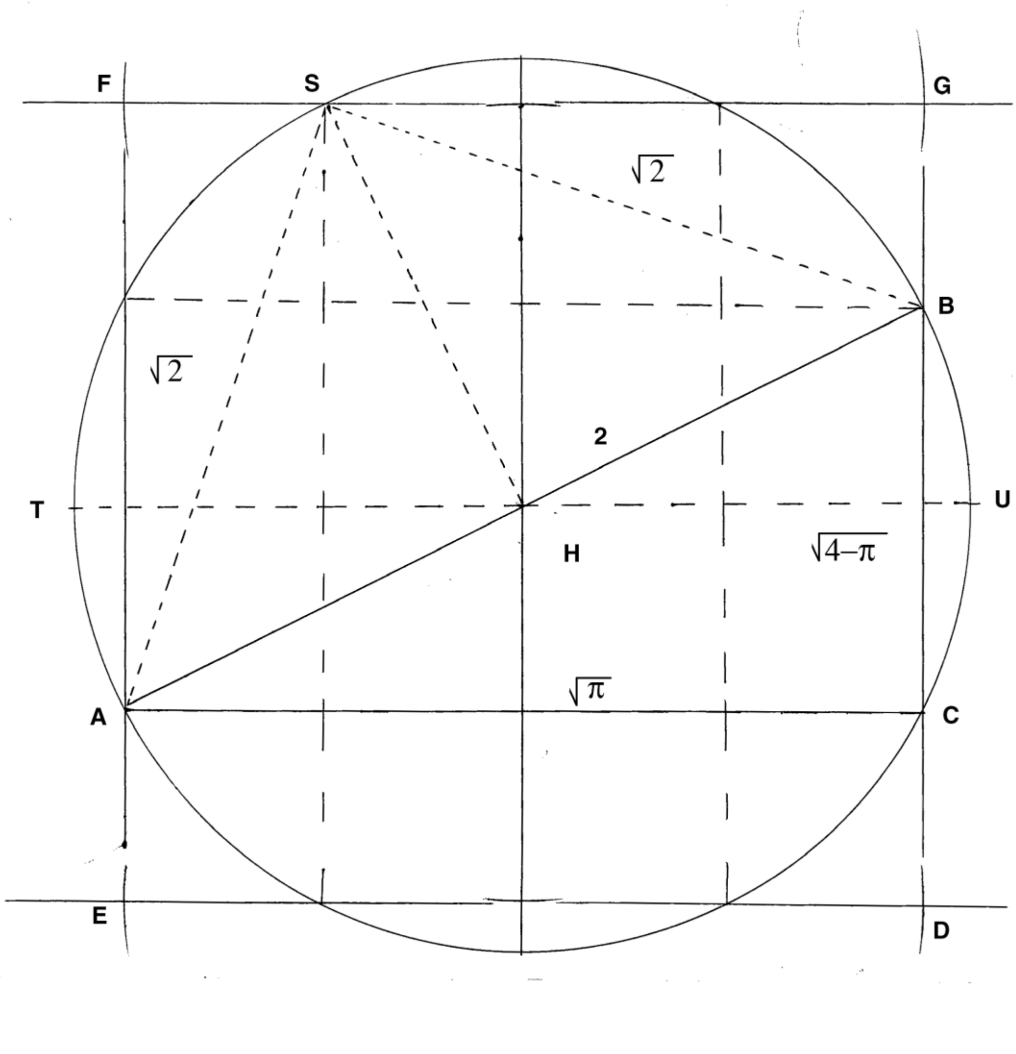

Fig.3

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16. Circle : Diameter = TU = 2

    Centre = H

17. Area of the circle = $\frac{\pi d^2}{4}$

18. π = Cosmic π = $\frac{14-\sqrt{2}}{4}$ = 3.14644660941...

    Area = $\frac{14-\sqrt{2}}{4} \times 2 \times 2 \times \frac{1}{4} = \frac{14-\sqrt{2}}{4}$

    So, area of the circle is equal to Cosmic π value, i.e., $\frac{14-\sqrt{2}}{4}$

19. $BC = \sqrt{4-\square} = \frac{\sqrt{2+\sqrt{2}}}{2}$= 0.92387953251

20. AB = Diameter and Hypotenuse of triangle = ACB in Fig.3.

21. $AC = \sqrt{AB^2 - BC^2} = \sqrt{2^2 - \left(\sqrt{4-\pi}\right)^2}$

    $= \sqrt{4 - \left(\frac{\sqrt{2+\sqrt{2}}}{2}\right)^2}$ π= 1.77382259806

Part V : Explanation of Fig.3

22. Fig.3 totally agrees with the idea of Dr. Helmut Sander of Germany.

23. **There are two triangles BAC and SAB**.

    Triangle SAB, where

    AB diameter / base = 2, AS = BS = $\sqrt{2}$, HS = AH = HB = radius = 1

24. AB = 2 also acts as Hypotenuse of triangle BAC.

25. The above construction is cent per cent correct only with the Cosmic π $\frac{14-\sqrt{2}}{4}$ **because this Cosmic π is real and exact.**

26. Square = DEFG of Fig.3

    BM of Fig.2 = DE of Fig.3 = $\sqrt{\pi} = \frac{\sqrt{14-\sqrt{2}}}{2}$

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Area of the square = $\left(\frac{\sqrt{14-\sqrt{2}}}{2}\right)^2 = \frac{14-\sqrt{2}}{4}$

27. Circle Diameter = 2

$\pi = \frac{14-\sqrt{2}}{4}$

$\frac{\pi d^2}{4} = \frac{14-\sqrt{2}}{4} \times 2 \times 2 \times \frac{1}{4} = \frac{14-\sqrt{2}}{4}$

28. Traditional π, 3.14159265358…and Archimedean **upper limit** of π, 22/7, have no place in the above construction.

29. Square area DEFG = Circle area = $\frac{14-\sqrt{2}}{4}$. So, Squaring of Circle is done.

Conclusion

The true π called Cosmic π equal to $\frac{14-\sqrt{2}}{4}$ squares a circle. Hence, squaring a circle is no more an unsolved geometrical problem.

Postscript

From the work of Dr.Helmut Sander, we understand that he supports the limit π value 3.14159265358… (3rd line, in his paper shown above and in page No.4 of this paper). Inspite of his acceptance of limit π, he constructed theoretically line-segments for $\sqrt{4-\pi}, \sqrt{\pi}$ and are associated with $\sqrt{2}$. All these line-segments are present in the circle having the diameter of 2.

As limit π 3.14159265358… is an **approximation**, the above line-segments cannot be drawn. Only exact π can find a place in the diagram of Dr.Helmut Sander.

So, $\frac{14-\sqrt{2}}{4}$ as π value has **agreed totally** with the line segments of Dr.Helmut Sander and we have necessarily to conclude that $\frac{14-\sqrt{2}}{4}$ is the true and exact π value.