Quran triplets 7,29,139: Extension

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Abstract

This paper is an extension of an earlier publication where a system of three prime numbers was introduced based on the numerical information of the key chapter (Al Fatheha).

Introduction

Recalling the tetrahedron with a center and four vertexes where each vertex has three edges (as shown in Figure 1), the first few primes from such structure.
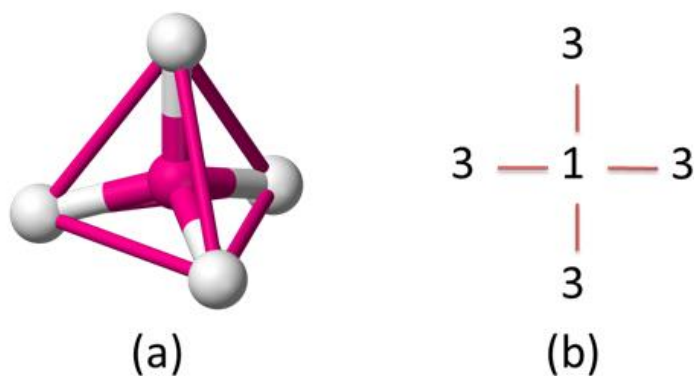

Figure 1. tetrahedrom structure

Here 1 is not a prime. The structure has two pairs of (3,3) and five numbers. The primes are constructed using any mathematical operator can be used between 1,3,3,3,3 as well as digits concatenation. Each number can be used once at most. Using these conditions, the following table can be constructed

Prime	Operation	Prime	Operation
2	3–1	37	(3,3+1+3)
11	3+3+3+3–1	41	(3+1,3/3)
13	(1,3)	43	(3+1,3)
17	(3/3, 3+1+3)	47	?
19	(1,3+3+3)	79	(3+1+3,3*3)
23	(3–1,3)	97	(3*3,3+1+3)
29	(3–1,3+3+3)	139	(1,3,3+3+3)
31	(3,1)	163	(1,3+3,3)

Table 1 Construction of few primes using the structure in figure 1.

Using the structure in Figure 1, the numerical information of Al–fateha chapter(number of verse, number of words and number of letters) can be constructed as

Information	value	construction
Number of verse	7	3+1+3
Number of words	29	(3–1,3+3+3)
Number of letters	139	(1,3,3+3+3)

Table 2

Structure expansion

It is observed from table 1, that a prime such as 47 can not be constructed from the structure in figure 1. To resolve this issue, expansion is needed to the originally proposed tetrahedron structure. Based on the analysis before, we expand this graph as follows:

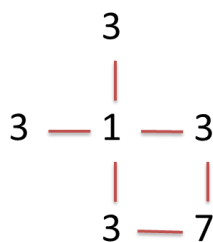Since 7=3+1+3, we write 7 at the corner of the square as in figure 2.

```
        3
        |
3 — 1 — 3
        |       |
        3 — 7
```

Figure 2. Expanding the original structure adding 7 at the corner.

Now, suppose x,y,z are three primes,

```
        3
        |
3 — 1 — 3 — x
        |       |       |
        3 — 7 — y
        |       |       |
        x — y — z
```
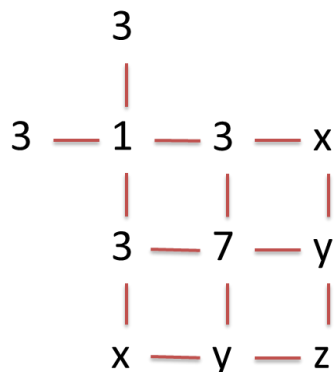
Figure 3. Expansion of the structure with x,y,z primes

They satisfy:

$$y=x+3+7, \quad z=y+y+7.$$

Then,

$$x, \ x+10, \ 2x+27 \text{ are all primes.}$$

Since 10≡1 (mod 3), x≡1(mod 3). That is,

$$x=3k+1.$$

Hence x=13. (We want to seek the smallest prime.) In this case y=23 and z=53. The graph in figure2 can then be expanded to the one shown in figure 4.

```
        3
        |
3 – 1 — 3 — 13
        |       |       |
        3 — 7 — 23
        |       |       |
13 — 23 — 53
```
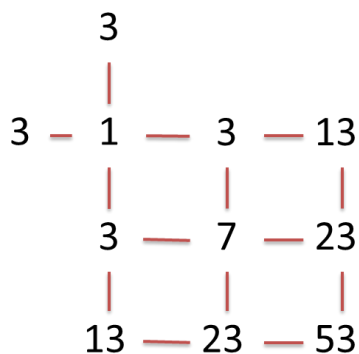
Figure 4. The new structure including 7,13, 23 and 53.

Using the structure in figure 4, the original issue with 47 presented in Table 1 is now resolved as

47=(1+23+23)

The following are examples of some more primes and their constructions

Prime	Construction	Prime	Construction
59	3+3+53 or 23+13+23=3+3+7+23+23.	83	7+23+7+23+23 or 1+23+59
61	1+7+53	89	13+23+59
67	1+3+3+7+53	97	13+23+61
71		101	3−1+23+23+53
73	1+13+13+23+23	109	7+13+13+23+53
79	3+23+53	113	1+3+3+7+23+23+53

Table 3

Note that

100=1+3+13+7+23+53.

The sum of all the nine numbers is

1+3+3+7+13+13+23+23+53=139

This is the number of letters of Al–Fateha chapter.

Expansion limitation

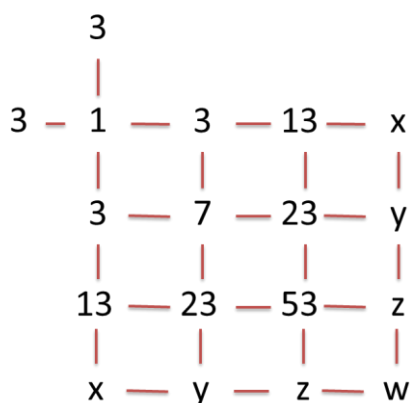Note that, we can not expand this graph to the form in Figure 5

Figure 5. The impossible expansion of the structure.

Where

$$y=x+13+23,$$
$$z=y+23+53$$
$$w=2z+53.$$

It is easy to show that if x, y, z are both primes, then w is a multiple of 3.

Claim

If x, x+36, x+112 are three primes, then $2(x+112)+53=2x+277$ is a multiple of 3.

Proof.

Note that

$$36=0(\bmod\ 3), \quad 112=1(\bmod\ 3),$$

we have x=1 (mod 3). Thus, $2x+277=0(\bmod\ 3)$. Q.E.D.

Further analysis

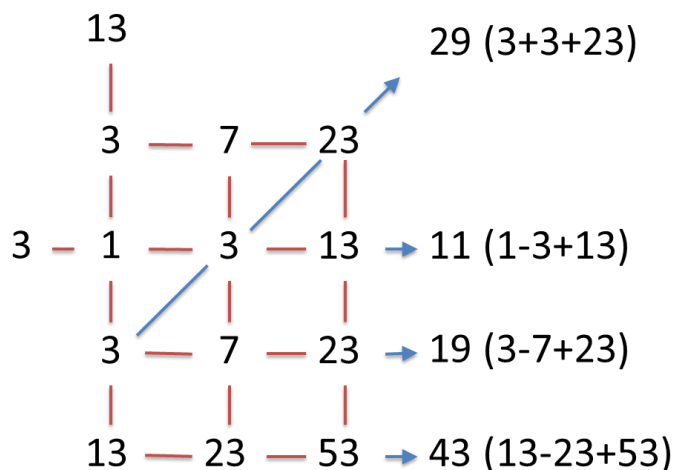

Figure 6. extraction of different primes

Arranging some of the numbers in the expansion in Fig. 4, the following is obtained

		1		
	3		3	
1	3	7	1	3
	3		3	
		1		
1	**9**	**9**	**7**	**3**

→ is a prime,   and 1+9+9+7+3=29

Note that there are **29** primes among the 60 numbers constructed by the digits{1,3,7,9,9} as in the table below

1–10	11–20	21–29
13799	37991	93179
13997	39719	93719
17939	39791	93971
19379	39971	97931
19739	71399	99137
19793	71993	99173
19937	79139	99317
19973	79193	99371
31799	79319	99713
37199	91397	

Table 4.

Also

		1		
	3		3	
1	3	7	1	3
1	**6**	**8**	**4**	**3**

➔ is a prime

		1		
	3	3	3	
1		7		1
	3	1	3	
		3		
1	**6**	**15**	**6**	**1**

➔ is a prime   (165161, 16661 are also primes)

Completing the square of prime numbers

```
53 — 23 — 13 — 23 — 53
 |     |     |     |     |
23 — 7 — 3 — 7 — 23
 |     |     |     |     |
13 — 3 — 1 — 3 — 13
 |     |     |     |     |
23 — 7 — 3 — 7 — 23
 |     |     |     |     |
53 — 23 — 13 — 23 — 53
```

Figure 7. Expanding the four quarters

The sum of the numbers surrounding the square are 448, and add 1 we get 449. Note that 449 is a special prime number. It can be written as $449=20^2+7^2$.

3+19+179+199=400,
3+10+17+19=49,

where the second equation is the sum of the digit sum of the summands in the first equation. You can find many interesting numbers or figures related with special numbers.

```
13                    29 (3+3+23)
 |
 3 — 7 — 23
 |       |    |
 3 - 1 — 3 — 13 →  11 (1-3+13)
 |       |    |
 3 — 7 — 23 →  11 (-3-7+23)
 |       |    |
 13 — 23 — 53 →  17 (-13-23+53)
 ↓    ↓    ↓
Sum  17   33   89
```
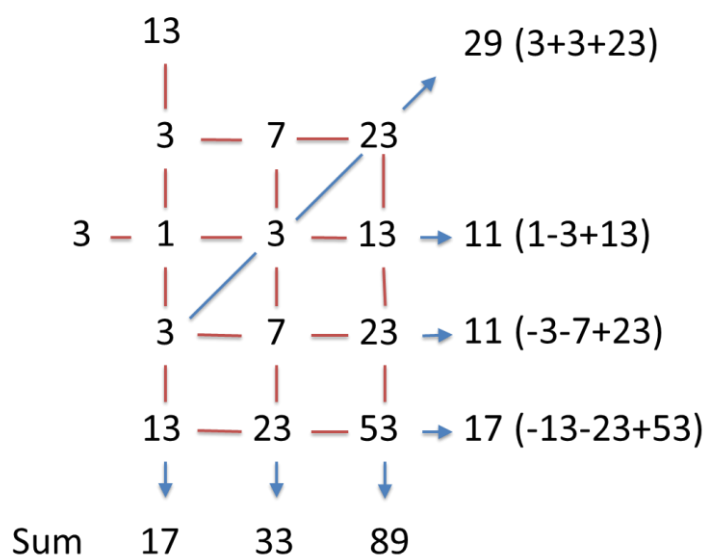
Figure 7. Further examples

Note that when concatenating the different primes and the resultant prime in the horizontal direction above we obtain:

- 131311, 3131311 and 311 are primes
- 372311 and 2311 are primes
- 13235317 and 35317 are primes

For the sum of the values along the horizontal direction, concatenating the sum results we obtain the following:

- 38933 and 1753 are primes. It is the case for the flipped form (3571)
- 175333 is a prime
- 3389 and 8933 are primes as well as the flipped form (9833)
- 173, 389, 38933 and 33893 are primes as well as the flipped form (983)
- 1733 and its flipped form (3371) are primes
- 73 and 733 and their flipped forms (37,337) are primes
- 31317 and 13235389 are primes as well as the flipped form (98353231)

Al–Fateha numbers

If we concatenate the number of verses and the number of words the result is the sixth power of 3

$$729 = 3^6$$

Combining the number of verses , number of words and number of letters one can derive the following relations

$$(7,29,139) \bmod 11 = 7$$

The relation above is expanded as follows

	7		
	2	9	
	1	3	9
1	**1**	**2**	**9**

→   1(12)9 , (13)9 →49=7^2, 1(39) → 112

→   1129, 229, 139 are primes

Repeating the numerical values in a symmetric form below

	7		
	2	9	
	1	3	9
	2	9	
	7		
2	**1**	**1**	**9**

→ 13×163, 11119 is a prime

Replacing 29 with 26 (flipping 9 vertically)

	7		
	2	9	
	1	3	9
	2	6	
	7		
2	**0**	**8**	**9**

→ is a prime, 1009,109,2017, 181, 811 are all primes

In a similar way

			7			
	2				9	
1			3			9
	2				9	
			7			
1	**4**	**1**	**7**	**1**	**8**	**9**

→ is a prime also (9817141)

Similarly

			7			
	2				9	
1			3			9
	2				6	
			7			
1	**4**	**1**	**7**	**1**	**5**	**9**

→ is a prime also (9517141)

Also

		7		
	2		9	
1		3		9
1	**3**	**0**	**9**	**9**

→   is a prime

Also

		7		
	2		9	
1		3		9
	2		9	
		7		
1	**5**	**8**	**8**	**9**

→   is a prime (15)889=6889=83*83

Recalling the first combination

	7		
	2	9	
	1	3	9
1	**1**	**2**	**9**

→   is a prime

Adding this result to the Al–Fateha numbers

	7			
	2	9		
	1	3	9	
	1	1	2	9
1	**2**	**4**	**1**	**9**

→ 11*1129, 12(41)9=1259 is a prime, 1(25)9=179 is a prime

References

[1] Haifeng Xu , "Quran Triplets: 7, 29, 139," Issue 1 , Paper 3, PP 45–48 (2014)

[2] Ali Adams, "Quran and primaogy: Prime numbers and the key," J. Num. Anal. Holy Quran, Issue 1, pp 28–44