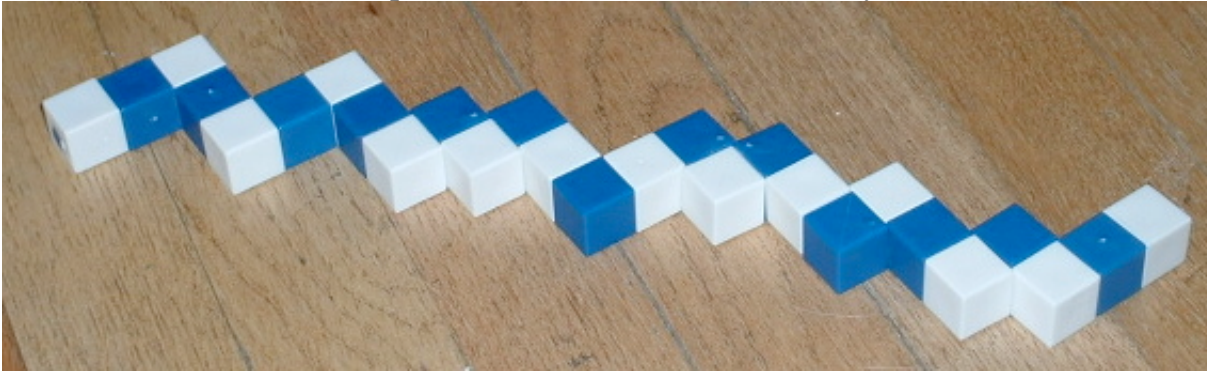


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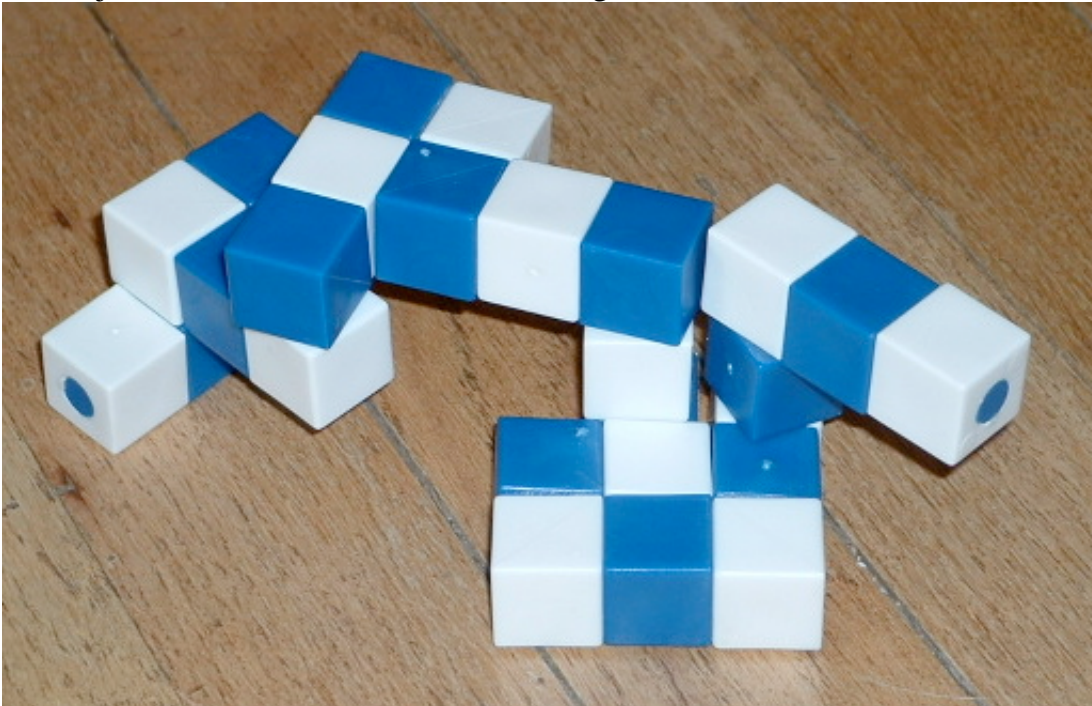
Chain cube puzzles go by a number of different names. I have three different ones.

Description with example

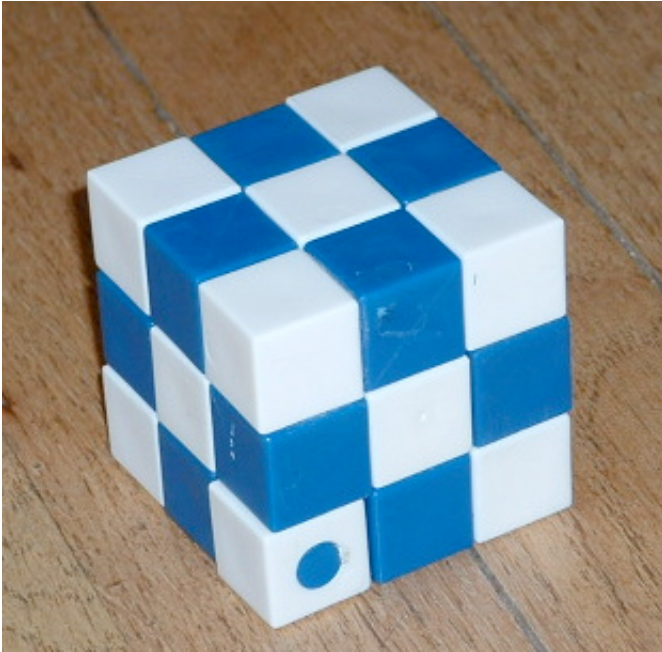
What you have are twenty-seven small cubes joined by an elastic thread running through all of them. The thread either passes straight through the cube or makes a right angled turn. Because the join is flexible you can turn it at will. Here is a picture of one unwound all the way.



The object is to fold the structure into a large 3x3x3 cube. Here is the same cube partially folded.



And completely solved.



There are 11,487 puzzles of this type. So, clearly most of them haven't been manufactured.

Counts of chains of various types

Here is a table I made a long time ago. The first column is the number of unique ways of folding the chain into a cube (ignoring rotations and reflections). The columns labelled '2' through '11' categorize chains based on the number of straight cubies. Each entry is the number of chains with that many straights and that many unique solutions. The last column is the sum of that row. The last row is the sum of the columns. For example, the chain pictured has 9 straight cubies and a unique solution so is one of the 187 chains with 9 straights that have a unique solutions.

	2	3	4	5	6	7	8	9	10	11	
1		15	144	589	1053	1078	556	187	34	2	3658
2		26	145	502	862	770	325	65	9		2704
3		25	118	326	393	255	104	21			1242
4	1	14	98	242	340	203	89	14	1		1002
5		12	56	140	168	86	12	1			475
6	1	11	57	123	181	97	23	3			496
7	2	6	36	101	71	30					246
8		8	35	89	83	43	22	7	1		288
9	3	9	23	51	61	17	5				169
10		10	33	57	34	16	6				156
11		6	28	39	22	11	1	1			108
12	2	4	30	39	35	17	9	1			137
13	2	2	20	31	9	5	1				70
14		6	23	25	24	10					88
15		2	16	28	12	3					61
16		3	15	24	11	7	5	3	1		69
17	1	9	14	16	9	3					52
18	1	3	9	6	10	7	1				37
19		6	12	16	6	2					42
20		1	11	18	11	1					42

21	3	4	8	10	3	1	29
22	1	6	10	7	2	1	27
23	1	5	8	6	2		22
24		2	8	7	6	3	26
25		5	5	5	1	1	17
26	1		8	5	3	1	18
27	1	2	6	5	4		18
28	1	1	10	2	1	1	16
29		1	4	5			10
30			4	3	1	4	12
31		3	1	7	1		12
32		2	4	6	2		14
33		1	3	3	3	1	11
34		2	3		4		9
35		1	1	2			4
36				2			2
37		2	1	1			4
38		1	1	1			3
39			4	2			6
40				1	3		4
41			1		1		2
42			1		3		4
43	1	2			1		4
44		1		3	1		5
45				2	1		3
46		1	1				2
47		1	1	2	2		6
48		2			1		3
49				1			1
50		1	1	1			3
51			1	1			2
52			1		1		2
53			1	1			2
54		2					2
55		2					2
56	1		1				2
57			2		1		3
58			1				1
* 61		1	1				2
62	1	1		3			5
* 64			1				1
* 67				1			1
* 70		1		1	1		3
71		1					1
* 73			1				1
* 81			1				1
* 85				1			1
86			1				1
87			1				1
88			2	2			4
* 90			1	1			2
*104		1	1				2
*112		1					1
*115				1			1
*119			1				1
*123		1					1
*126			1				1

