The attempt to destroy the cube's symmetries

s.d.a. … = symmetrically disposed about …   3-axis = axis of rotation symmetry order 3, etc.
= single introduced cube   mirror = plane of symmetry

2-COLOUR CUBE ARRANGEMENTS IN 2 x 2 x 2 CUBE	How cubes arranged with respect to symmetry elements							
	s.d.a. a diagonal mirror	on a diagonal mirror	s.d.a. an edge-bisecting mirror	s.d.a. a 2-axis	s.d.a. a 3-axis	on a 3-axis	s.d.a. a 4-axis	distinguishing feature: cubes share …
Number of cubes of second colour and their coded arrangement '3a' means a cube has been added to '2a', etc. The resulting tree is helpful *but not unique* **1**		#				#		
2a		##				##		a space diagonal
2b		##	##	##				an edge
2c		##					##	a face diagonal
3a		###						
3b	##	#						a face
3c					###			
4a				####				
4b1		####		####			####	
4b2	##	##			###	#		
4b3	##	##					####	a face
4c	##	##			###	#		no edges

Observations:

1. Every cube lies at a vertex, on an edge, on a face.
2. Every cube lies on a diagonal mirror and a 3-axis.
3. No cube lies on a 2-axis, a 4-axis or an edge-bisecting mirror.
4. There is no need to go beyond 4 introduced cubes because doing so simply reverses the colours.