CLAIMS

1. A three-dimensional puzzle comprising a plurality of puzzle blocks together forming a predetermined three-dimensional puzzle shape, each puzzle block comprising either a male or a female connecting element facing ~~at least three~~ all different directions of the puzzle block, the directions of the connecting elements being selected from an orthogonal coordinate system, wherein each side of each puzzle block has a surface plane and each connecting element is rotationally symmetric such that the connecting element is identical for every ninety degree rotation in the surface plane;

wherein the connecting elements of the respective puzzle block are configured such that each puzzle block is unique and wherein each connecting element has a shape selected from a group comprising at least three different male connecting elements and at least three corresponding different female connecting elements, wherein each female connecting element comprises a portion protruding above the surface plane such that it is not possible to arrange two puzzle block sides comprising female connecting elements in direct contact with each other.

~~2. The three-dimensional puzzle according to claim 1, wherein the female connecting elements are configured such that it is not possible to arrange two puzzle block sides comprising female connecting elements in direct contact with each other.~~

~~3. The three-dimensional puzzle according to any one of the preceding claims, wherein each female connecting element comprises a portion protruding above the surface plane of the puzzle block.~~

2.~~4.~~ The three-dimensional puzzle according to claim 1, wherein the male and female connecting elements are configured such that it is only possible to connect a male connecting element with a corresponding female connecting element.

~~5. The three-dimensional puzzle according to any one of the proceeding claims, wherein the male and female connecting elements are configured to have rotational symmetry of at least order 4 in the surface plane of the puzzle block comprising the connecting element.~~

3.~~6.~~ The three-dimensional puzzle according to claim 1, wherein the connecting elements of the respective puzzle block are configured such that there is only one solution to the puzzle.

4.~~7.~~ The three-dimensional puzzle according to claim 1, wherein each puzzle block comprises a male or female connecting element facing in all six directions of an orthogonal coordinate system of the puzzle block.

5.~~8.~~ The three-dimensional puzzle according to claim 1, wherein the puzzle blocks are cube-shaped, cuboid, cuboid with truncated corners or spherical.

6.~~9.~~ The three-dimensional puzzle according to claim 1, wherein the three-dimensional puzzle is cube shaped.

7.~~10.~~ The three-dimensional puzzle according to claim 1, wherein the three-dimensional puzzle comprises at least 27 puzzle blocks.

8.~~11.~~ The three-dimensional puzzle according to claim 1, wherein the three-dimensional puzzle is substantially cube-shaped consisting of *n* x *n* x n puzzle blocks, wherein *n* is an integer larger than two.

9.~~12.~~ The three-dimensional puzzle according to claim 1, wherein at least two puzzle blocks are hollow and wherein a first puzzle block has a first wall thickness which is different from a second wall thickness of a second puzzle block.

10.~~13.~~ The three-dimensional puzzle according to claim 1, wherein a first puzzle block is made from a first material and a second puzzle block is made from a second material different from the first material.

11.~~14.~~ The three-dimensional puzzle according to claim 1, wherein at least a subset of the puzzle blocks comprise an optically transparent portion arranged and configured such that the optically transparent portions are aligned to form an optically transparent passage through an assembled puzzle.

12.~~15.~~ The three-dimensional puzzle according to claim 1, wherein at least two of the puzzle blocks comprise magnetic elements such that the two puzzle blocks attract each other.

13.~~16.~~ The three-dimensional puzzle according to claim 12~~15~~, wherein the magnetic elements are arranged towards a side of the puzzle block, thereby forming a magnetic side of the respective puzzle block, such that the two puzzle blocks only attract each other when the magnetic sides are facing each other.

14.~~17.~~ The three-dimensional puzzle according to claim 1, wherein at least a subset of the puzzle blocks comprises numerals such that a completed puzzle reveals a key.

15.~~18.~~ ~~Method~~ A method for configuring a three-dimensional puzzle comprising a plurality of puzzle blocks together forming a predetermined three-dimensional puzzle shape, wherein each puzzle block comprises either a male or a female connecting element facing ~~at least three~~ all different directions of the puzzle block, the directions of the connecting elements being selected from an orthogonal coordinate system, wherein each side of each puzzle block has a surface plane and each connecting element is rotationally symmetric such that the connecting element is identical for every ninety degree rotation in the surface plane; wherein the connecting elements for the respective puzzle block are configured such that each puzzle block is unique, and wherein each connecting element has a shape selected from a group comprising at least three different male connecting elements and at least three corresponding different female connecting elements, wherein each female connecting element comprises a portion protruding above the surface plane such that it is not possible to arrange two puzzle block sides comprising female connecting elements in direct contact with each other, the method comprising:

selecting a first puzzle block for a first position of a first layer;

subsequently configuring adjacent puzzle blocks so that each puzzle block has at least one male or female connector corresponding to a connector of at least one an adjacent previous block, thereby forming a three-dimensional puzzle comprising *n* x *m* x *l* puzzle blocks, *n*, *m* and *l* being integers.