

Geometry in the Nature

Structures, atoms, Geometric formations. One-dimensional, two- or three-dimensional - see sphere, cylinder, cone, cube, block, line, circle, hexagon, spiral, any curve, etc. We can notice shape depending on size or basic dimensions. When we have a sphere, regardless of the size of its radius, the sphere still looks the same, except it's bigger, so is the cube, or the hexagon. See Fig. 1.



Fig. 1 – two spheres with another radius

But when we have a cone where we change the top angle, the cone looks different every time. See Fig. 2.

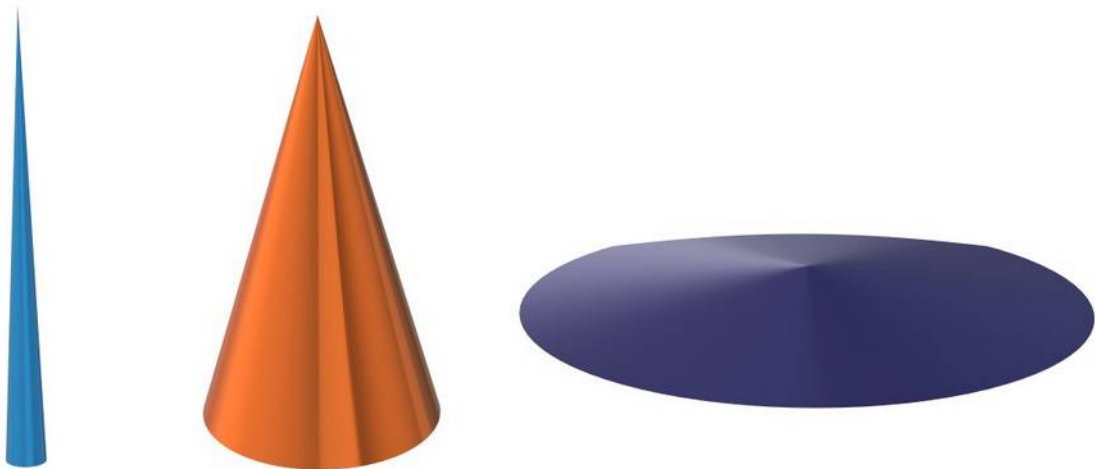


Fig. 2 – three cones with another top angle

So is a block or an ellipse or an ellipsoid. In other words, there are bodies or surfaces that look the same regardless of their size (ball or circle, cube or square). There are bodies or areas whose appearance varies greatly (cone, needle, block or rectangle).

What to say?

Firstly - we are unable to distinguish two or more spheres from each other if our scale changes. In other words, our scale will be smaller in a smaller sphere and larger in a larger sphere. In the case of a cone, the situation may be different due to the different top angle. First of all, we can see that we can define a sphere regardless of the size of its radius. But defining a cone is already harder - at first glance we will have a "flat" with a top angle approaching 180° . Conversely, the top angle may be close to 0° .

Secondly - Why are the cones (volcanoes e.g.), why are the spheres (suns, planets, moons, stars), why are the lines (light rays), ellipses (orbits of planets), spirals (forms of galaxies), hexagons (snowflakes, honeycombs), cubes, blocks and polygons (crystal systems) and many other geometric shapes. Surely these curves are not ideal when we look closer we see chaos and equally when we look further.

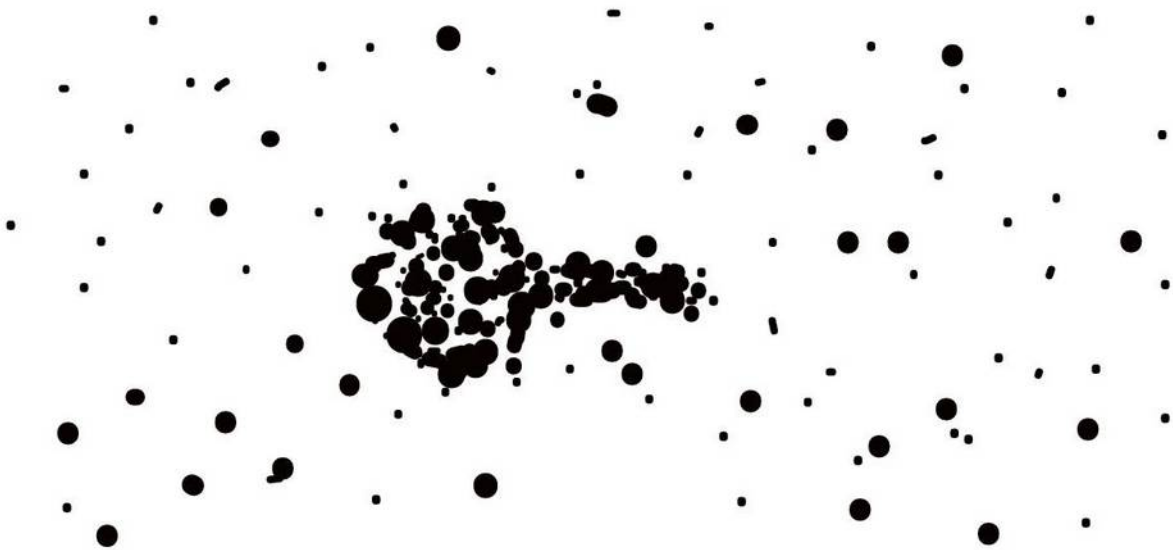


Fig. 3 – random fluctuations of particles in a such set where we can see a familiar shape

The above shapes are perceptible to us only at our level. See Fig. 3. In the macrocosm we do not see them (random, chaotic arrangement of metagalaxies, space matter), nor do we see these shapes at the micro level, quantum fluctuations of vacuum and narrowly superior structures.

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