

Experiencing of 4th Dimension

Subash Konduru¹

Ethical Hacker, Blogger, Writer on IT Security Forum

Sci-Fi Technology Writer -Time Traveling

Mahindra Satyam Computers

Hyderabad-India

ABSTRACT

I welcome you to the Imagination of 4th Dimension with my new illusion. Have you ever imagined the 4th Dimension? So many explanations and samples are available for 1 Dimension, 2 Dimension and 3 Dimension and this question leads to several other questions? Can a Human eye experience and feel the FOURTH Dimensional objects? With that manner questions in people mind? The current generation know very well about 2 Dimension and 3 Dimension movies and here in this paper I am explaining about the 4th dimensions with new approach.

Keywords:- 1D, 2D, 3D, 4D, Time & Distance

I. INTRODUCTION

D simply refers to dimensions. There are 3 spatial dimensions (depth, width, height) and one temporal dimension (time). A 2D object only occupies 2 spatial dimensions, so is flat (eg, a painting), whereas a 3D object also has depth (like a statue). A 1D object would be a line, it can have a length, but no depth or height. The 4th dimension is time, which can be difficult to imagine as we cannot easily move through it like the 3 spatial dimensions

There have been some good explanations about 1, 2, and 3 dimensions. But quickly:

1 dimension = a line (it only has length)

2 dimensions = a square (It has length and height. Its length and height exist at right angles to each other. Images are 2 dimensional.)

3 dimensions = a cube (It has length, height and now depth. These measurements exist at right angles to each other. The world around you is 3 dimensional.)

4 dimensions is where it gets tricky. We exist in 3 dimensions, so we can represent things up

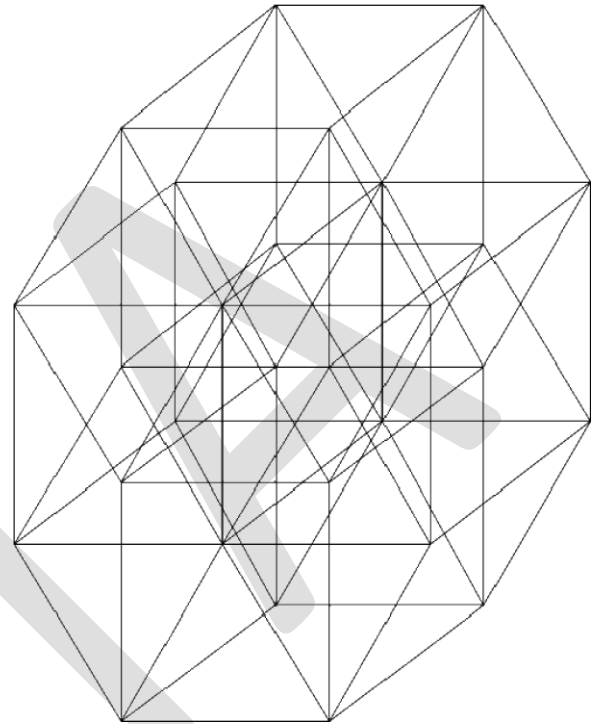
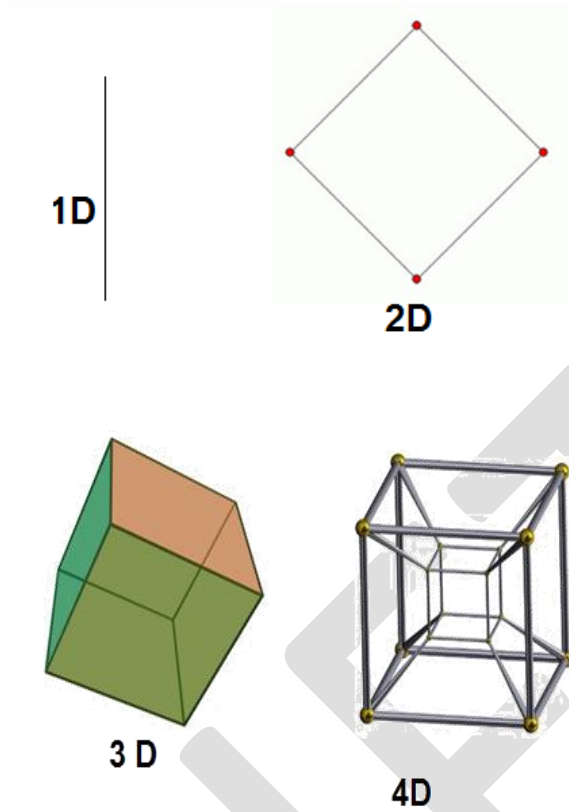
to 3 dimensions and explain these concepts relatively easily. But 4 dimensions? This is where you have to start using your imagination.

I can't show you a 4 dimensional object properly, I don't have enough dimensions to work with. So, I have to show you a 'shadow' of a 4 dimensional object. You know how people draw a picture of a cube? Like this, right? Imagine an actual cube. It has 4 sides, all of equal size, at right angles to each other. But in a drawing of a cube (a 2 dimensional representation of a cube) you warp it; the sides are no longer equal size, and no longer at right angles to each other. This is what a shadow of a cube looks like. A 2D representation of a 3D object. Now here is a tesseract. It's a 4 dimensional object, but since this is a flat image, this is just a 2D representation of it. (Is your noodle frying yet?)

A tesseract, in its full 4 dimensional glory, would have all its sides at equal size, and all its angles at right angles. That cube inside a cube? The cubes would be the same size. The connections between the 2 cubes? Those

would be at right angles to each other. Because in 4 dimensions, there's an extra dimension to work with. There's another way of measuring; Length and height

attached to the document this image, kindly open it to see it working”

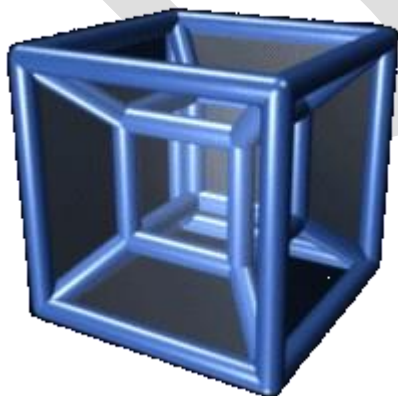


5D Cube

The Fifth Dimension in Business: a 5D model looks just like a 3D model, but it includes component pricing and budgeting reports for the job.

There is more than one way of thinking about this, a lot of people have already explained (what I like to call) the physical way of thinking about it. That is, the fourth dimension as time or some other measurable value that doesn't explicitly refer to position, giving you three space dimensions and two "other" dimensions.

A slightly different way of looking at it is taking a space in which your x, y and z coordinates are all complex, ie. $(a + bi, c + di, e + fi)$. This gives us a 6 dimensional space. The way I think about this is that you take the real part of the coordinate, in this case (a, c, e) ,



This image demonstrates the Fourth Dimension (4D): “It is an animated image; I

and that each of these points contains a second imaginary 3 dimensional coordinate system which you can also move around in. Almost like a pop-up window that exists at each point.

From a more general standpoint yet you can have spaces that have infinitely many space dimensions. All the points here can be represented by co-ordinates of the form (a₁, a₂, a₃... a_n) in n dimensions, or even as infinite sequences of numbers in countable infinitely dimensions. The representation becomes a little vaguer in uncountable infinitely many dimensions.

Some scientists, I believe including Brian Greene, think that we actually live in an 11 dimensional universe and only three of them became "big". That is, the other 8 dimensions for whatever reason are wrapped around these three dimensions on a scale which we can't detect (yet). The basis for this is very complicated math's leading to string and M theory, but simply(-ish) put implies that all the particles in the standard model are made from 11 dimensional strings, and the way they vibrate in these dimensions gives them their different properties.

4D Technology designs and manufactures laser interferometers, surface roughness profilers and interferometry accessories, for accurate measurement of optics, optical systems and precision machined surfaces. Our innovative products utilize state-of-the-art technology that can be deployed in production environments, even in the presence of severe vibration and turbulence.

4D interferometers and optical profilometers are used daily in critical applications in astronomy, aerospace, optical testing and many other industries. 4D's history of innovation has changed how and where interferometry measurement can be used,

from unique space-based projects to high throughput production of precision components.

4D technology is pending to be released within the next few years, and the world waits with baited breath as the details of what 4D technology will involve. While 3D technology only promised length, height, and width, 4D technology offers something brand new: time. The majority of the 4D technology in use today is used for a primarily medical application, but the world may soon see 4D technology come to the world of film.

What 4D technology has done to entertainment and animation is move the object around the mirror image of the exact same object, which provides an extra depth to the object's motion. The effects produced by the 4D technology and the extra dimension actually makes viewers feel as if they were there inside the screen themselves, which is why the release of 4D technology is so highly anticipated.

FOURTH DIMENSION

Let's get started with the Explosion of Limitations of a Human Mind...!! My High School Learning taught me the 3 Dimensions required, i.e. LENGTH, WIDTH and DEPTH [which are perpendicular to each other in space] to create a 3 Dimensional Object which a Human Eye can experience and feel. Then what about the 4D?

Right Now I am imagining the Fourth Dimension. Yes correct!! The FOURTH Dimension is nothing but Space-Time itself. Then how can we treat the TIME as the Fourth Dimensional Entity? Will the Quantum physics accept this? The 3 Dimensional Entities are nothing but the Visual Objects in Space without "Time"; in the Space-Time

conceptions of Quantum Physics.

The 4th Dimension adds a way to the 3rd dimension to CHANGE in REAL TIME. The 3rd Dimension is Space without TIME. The 4th Dimension is Space-Time & it is not special alone. As per the physicists; 4th Dimension is a Temporal Dimension. All 4 dimensions are Inter-related, connected and not isolated. And they claim that TIME is a Directional Entity and not a Dimension. That means the TIME has PAST and FUTURE. When we learn more about Space-Time & General Theory of Relativity; the more we realize that the TIME is not just an arrow [Uni-directional Entity] but it also Stretches and Bends according to Professor Albert Einstein. Professor Albert Einstein has also made a dramatic announcement that “TIME HAS NO SPEED”.

“The Distinction between past, present and future is only a stubbornly persistent illusion”, he adds. And I want to simplify the conception of 4D in my simple words. That is.. “Everything we EXPERIENCE and FEEL with our HUMAN EYES are 4th Dimensional Things.”

PROPOSED SYSTEM

1ST SCENARIO

We know that a Human eye can feel the image only when the Light on that particular object reflects and touches the Human Eye’s retina. And there is a conceptual TIME between the light reflections from that particular object to our EYE’s RETINA. That’s leads to the Conception of “4D”.

2ND SCENARIO

Imagine that you are watching “OBJECTS IN MOTION” like a running Train... You will definitely feel our 4D concept in

reality at that instance. Because if you concentrate on some random object in a moving TRAIN; the Human EYE will definitely feel some slowness to understand that image. That is because the TRAIN is now in 4th Dimension with its SPEED [remember that Speed is a TIME dependent factor]. So the reflection of that Random object in motion will take some time to reach your retina based on the speed of the TRAIN [i.e. TIME based speed].

Now we will go back to our Galaxies. The world of wonders.

As you know; the EARTH like any other PLANET and STARS in this universe; continuously rotating with a speed. As an observer on the EARTH itself; we cannot feel that we are in motion. Even though there are some objects which are sticky with no speed in the universe; we will still feel that those objects are in motion and not we [The Earth itself]. This concept is even TRUE for the lightening Stars which are Thousands of LIGHT YEARS away from EARTH. “If there is no 4th Dimension really exists; we cannot feel the 3rd Dimension.

“Imagine the 3D cube and if there is no TIME given to it to change its present state; the 3D object will just be a conception but not reality. We will see that 3D as a two dimensional object only; when there is no TIME. Likewise, the TESSERACT as the 4th Dimensional Hypercube object; which continuously rotate its dimensions to give the experience that its physical shape is being changed from TIME to TIME. It will be only an idea; if there is no TIME. In order to TESSERACTS to really exist; it has to have a duration within its dimension. When we watch an animation of TESSERACTS; we are visualizing how the

structure can rotate and change its state from TIME to TIME.

CONCLUSION

Every day of a Human Life; our bodies are exchanging atoms with outer world through the AIR we breathe, the food we eat and the water we drink. The constant cycle of the REPAIRING & REPLACING of atoms means the SPIME representational conception of human Birth till his / her Death. With that been said.... We are now living in the 4th Dimensional Objects' world. That's all for Now. I hope that is informative; post your suggestions through comments.

REFERENCES

- [1] <http://en.wikipedia.org/wiki/Spacetime>
- [2] <http://en.wikipedia.org/wiki/Dimension>
- [3] <http://www.challengeyou.com/forum/archive/index.php/t-2985.html>
- [4] http://en.wikipedia.org/wiki/Five-dimensional_space
- [5] <http://www.gravitation3d.com/magiccube5d/>
- [6] <http://phillips.blogs.com/goc/2008/04/dimensions.html>
- [7] http://www.reddit.com/r/explainlikeimfive/comments/1s33ra/eli51d_2d_3d_4d_5d/
- [8] <http://www.vicosoftware.com/3D-4D-5D-BIM-ModelingServices/tabid/79439/Default.aspx>
- [9] http://en.wikipedia.org/wiki/Convex_regular_4-polytope
- [10] http://en.wikipedia.org/wiki/Fourth_dimension
- [11] <http://www.4dtechnology.com/home/index2.php>