



ANOTHER WORLD

Or The Fourth Dimension

Alfred T. Schofield

Datum

A N O T H E R W O R L D
O R T H E F O U R T H D I M E N S I O N
B Y A L F R E D T .
S C H O F I E L D

First edition, London,
George Allen & Unwin Ltd, 1888

This electronic version by
Datum, Publisher

<http://4Dlab.info>

Copyright 2008 © by E. Pérez

All rights reserved.

Book layout and design by E. Pérez

Contents

Dedication	v
Introductory	vii
1. Many dimensions	1
2. The land of one dimension	5
3. The land of two dimensions	11
4. The land of three dimensions	19
5. The land of four dimensions mathematically considered	27
6. The land of four dimensions mathematically considered	33
7. The land of four dimensions. Facts and analogies	39

Dedication

To
Professor
J.H. Gladstone
PhD., F.R.S., F.G.S., Etc.
In Grateful Recognition
O Valued Help,
This Book Is Dedicated
By
The Author

Introductory

IT IS UNDOUBTEDLY THE CHERISHED BELIEF of the vast majority of mankind, whether they be Christian, Mohammedan, Hindoo, or Heathen, whether they be savage or civilized, in every: quarter of the globe, that there is another world besides the material universe in which we live.

All unite in considering that world to be a higher sphere than ours, and its inhabitants to be more or less spiritual beings.

It is also generally believed that the beings of that spirit world can and do visit ours, manifesting themselves in a human or animal shape.

When we come, however, to further details of this higher world, we have every diversity of belief and superstition.

The only account and description of it to which we, as Christians, attach any credence, is found in the Bible, a book which we regard as a revelation of its rulers, inhabitants, and laws, given to man by the supreme Ruler, not only of the spiritual, but of our material world, God.

In our own persons we get confirmation of the existence of a higher sphere, in being able consciously to distinguish between our spiritual, intellectual, and moral selves and our bodies and brains, through which we act and by which we live.

Materialists will, we know, have none of this. To them, if true to their creed, there is, and can be, nothing beyond the material. Mind, morals, feelings, passions, are to them only protoplasmic changes of ganglion nerve cells, producing carbonic acid gas and water.

To them the almost universal consensus of opinion in favour of a spirit world goes for nothing, unless such a world can be demonstrated, handled, and weighed.

We therefore propose, in the following pages to discuss from a somewhat new point of view the question of the existence of such a world, what are its powers, its laws, and its relationship, with this universe, and in doing so, will observe how far these powers and laws, deduced by analogy from mathematics, correspond to the spiritual claims of the Christian religion.

I would here take the opportunity of acknowledging my deep indebtedness to the anonymous author of a small book, called "Flatland," which I have used extensively throughout, and without which I am quite sure the public would never have been troubled with these remarks; my object being to carry on the line of argument there brought forward, to what seems to me its true and necessary conclusion.

Finally, let me ask the indulgence of my more advanced mathematical readers for the many fallacies and "non-sequiturs" that doubtless abound, in spite of my true endeavours simply and impartially to draw none but legitimate and logical conclusions from the arguments and facts I have advanced.

Preface to Third Edition.

MANY speculations concerning the fourth dimension have been made since this book was first issued, notably that by Mr. Wells that it is "Time." But no theory carries conviction, and indeed the whole is a speculation, the interest however of which remains untouched in the close parallel afforded between what would be true of a fourth dimension and all that is written or known concerning the spirit world. A few additions have been made in this edition.

A. T. Schofield.

1

Many Dimensions

WE ARE ALL SO HABITUATED to take visible realities around us as a matter of course, and so accustomed to every variety of solid or material form, that why all the universe should be limited to solidity, or three dimensions, is only asked at rare intervals by a few of the more thoughtful among us.

To make this plain. Even those unaccustomed to algebra will understand that if x represents three inches, or a line of this length, x^2 (x square) represents 3×3 , or nine square inches on a flat surface, three inches each way; x^3 (x cube), again, represents $3 \times 3 \times 3$, or twenty-seven cubic or solid inches, or a solid body measuring three inches every way. Hence we consider x as representing lines, x^2 squares, x^3 solids, and then comes the question, What does x^4 represent? for mathematics passes as easily from x^3 to x^4 as from x^2 to x^3 , and yet while x , x^2 , x^3 , refer to objects known to all of us, the wisest can form no possible conception of what x^4 , or a world of four dimensions, is like.

Perhaps, however, before disturbing our minds, and entering seriously upon the question as to whether there can be and is any object or world represented by x^4 , and whether or no we can comprehend it, my reader will not be offended if, for the benefit of those less learned than himself, I labour in the simplest language further to explain these various dimensions.

To begin: *No dimension, or size in no direction*, is represented mathematically by a point, which is an object described as having no parts or magnitude, thus:

One dimension(x), or *size in one direction*, is represented mathematically by a straight line, which is described as having length without breadth, thus:

Two dimensions (x^2), or *size in two directions*, is represented mathematically by a superficies or surface, which is described as having length and breadth without thickness, thus:

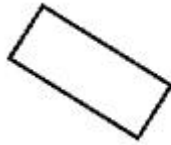


Figure of a rectangle

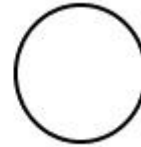


Figure of a circle

Three dimensions (x^3), or *size in three directions*, is represented mathematically by a *solid body*, which is described as having length, breadth, and thickness, thus:

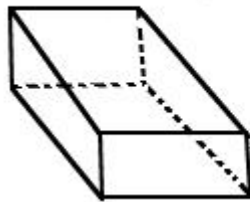


Figure of a box

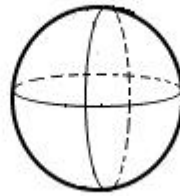


Figure of a sphere

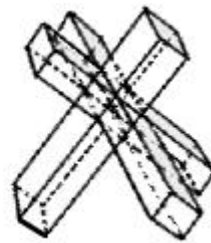


Figure of a cross in 3D

Four dimensions (x^4), or *size in four directions*, we cannot represent mathematically, nor can we describe in what direction its fourth dimension lies, nor can we draw, or even imagine it; the fact being that the whole material world which we can see, and of which we can speak, is a world of three dimensions (or x^3) and no more, nor is it possible for the mind of man to indicate or imagine any other direction than three—length, breadth, and height (or depth or thickness, etc.).

On this account it is that so many have denied the possibility of there being anything higher than a solid. To show the fallacy of this argument, then, we will consider the imaginary case of an inhabitant of a country where nothing but perfectly flat objects exist, when an endeavour is made to explain to him our own world of solids; and by putting ourselves in his place, and carefully observing the difficulty he, accustomed only to x^2 or flatness, would have in grasping x^3 , or solidity, which nevertheless exists, we may understand better that the difficulty we in x^3 , or

solidity, have in our turn of grasping x^4 , or the fourth dimension, is no argument whatever against the existence of such a world.

First of all, however, we will consider the still lower conditions of *no dimensions* and of *one dimension*.

Imagine, then, a world or universe consisting entirely and absolutely of a single POINT, a country which therefore possesses neither length, breadth, depth, nor height. Imagine (if you can) the sole being in such a world, and observe what his experience would be, as described in *Flatland*.¹

He is himself his own world, his own universe; of any other than himself he can form no conception; he knows not length, or breadth, or height, for he has no experience of them; he has no cognizance even of the number two; for he is himself one and all, being really nothing. Yet mark his perfect self-complacency, and hence learn this lesson, that to be self-contented is to be vile and ignorant, and that to aspire is better than to be blindly and impotently happy. Now listen! There arose from the little buzzing creature a tiny, low, monotonous tinkling, from which I caught these words. ‘IT fills all space, and what IT fills IT is, what IT thinks that IT utters; and what IT utters, that IT hears, and IT itself is thinker, utterer, hearer. IT is the one, and yet the all in all.’

This then gives us an idea of what a world would be that consisted only of one being, and that being having no parts or size.

Having duly performed this excruciating effort of imagination, and succeeded in realizing what nothing, or “Pointland,” really is, the exhausted reader had better pause for five minutes before taking the next step higher into the more interesting world of one dimension, or “Lineland.”

¹*Flatland*. Seeleys.

The land of one dimension

LET NOW MY FAITHFUL READER, somewhat recruited from the study of Chapter I., proceed to picture a world of one dimension—a universe that consists only of innumerable straight lines, long and short, all arranged in one and the same interminable straight line—nothing else at all, no deviation to right or left, no right or left even existing to this linear world, still less any height or depth. To duly appreciate and grasp the phenomena of such a world, it would greatly assist the mind if my reader were to arrange a number of pencils or matches in one long line, end to end, and follow the fragments with his eye. Let not any think that these preliminary studies are needless, for every link in the chain of analogy must be carefully followed, if we are to reach the important conclusions we are here aiming at.

Let my reader, then, now retire into his inner consciousness, and proceed to imagine a kingdom or world, as we have said, consisting of an infinite number of inhabitants, each one being a shorter or longer straight line, and all arranged in one and the same straight line, thus:

If one end of these creatures or lines be furnished with an eye, it is obvious they will each see the end of the line next in front of them, which will be a simple point.

None, therefore, in this line (or world) can ever see anything beyond a point. To see a line one must obviously be out of the line (or the Land of One Dimension) altogether.

If this is not clear, place your eye at the end of any straight line (a needle or knitting needle), and you will only see a single point.

Let the mind now proceed to picture a being of two dimensions, such as a square (illustrating it at the same time by a piece of cardboard),

furnished with an eye at one of its angles, approaching this world of Lineland (Slide the cardboard square along the table towards the long line of pencils or matches, etc.); and then listen to the following remarks from our unknown author. The square speaks.

I saw before me a vast multitude of small straight lines . . . all moving to and fro in one and the same straight line. Approaching the largest, I accosted it (Here bring the square close to a match), but received no answer. Losing patience at what appeared to me intolerable rudeness, I brought my mouth into a position full in front of it (Here slide a corner of the square into the line in front of the match), and repeated my question. "What signifies this monotonous motion to and fro in one and the same straight line?"

"I am the Monarch of the World," replied the small line. "But thou, whence intrudest thou into my realm of Lineland?"

Receiving this abrupt reply, I begged pardon; and by persevering questions extracted the following facts:

It seems that this poor ignorant monarch, as he calls himself, was fully persuaded that the straight line which he called his kingdom, and in which he passed his existence, constituted the whole of the world, and indeed the whole of space. Not being able either to move or see, save in his straight line, he had no conception of anything out of it.

Though he had heard my voice when I first addressed him, the sound had come to him in a manner so contrary to his own experience, that he had made no answer, 'seeing no man,' as he expressed it, and 'hearing a voice, as it were, from his own inside.'

Until the moment when I placed my mouth in his world, he had not seen me; nor had he now the least conception of the region from which I had come. Outside his world or line all was blank to him; nay, not even a blank, for a blank implies space; say rather, all was non-existent. Such a life,

with all vision limited to a point, and all motion to a straight line, seemed to me inexpressibly dreary, and I was surprised to note the vivacity and cheerfulness of the king.

Such were the observations of our supposed living square, and such would be the only life possible, were the world but one straight line. Our square, however, rejoicing in his own two dimensions of breadth as well as length, tries to enlighten the king of Lineland, and proceeds:

Thinking that it was time to bring down the monarch from his raptures to the level of common sense, I determined to endeavour to open up to him some glimpses of the truth; that is to say, of the nature of flat things, or two dimensions.

So I began thus: ‘Before I entered your kingdom, I noticed that some of the lines were larger—’

“You speak of an impossibility,” interrupted the king; “you must have seen a vision, for to detect the difference (even) between a line and a point by the sense of sight is, as every one knows, in the nature of things, impossible. How could you see a line, that is to say, the inside of any man?”²

“*I can discern a line from a point, and let me prove it. Before I came into your kingdom I saw you dancing backwards and forwards, with seven lines and a dot in front of you, and eight lines and a dot behind you.*”

He then proceeds to tell the king that there is another motion possible, besides backwards and forwards; namely, from left to right.

“Let me ask,” said the king, “what you mean by these words ‘left’ and ‘right.’ I suppose it is your way of saying northward (forwards) and southward (backwards).”

²A line having no breadth, its outsides (so to speak) are its two extremities, that which lies between being the inside of the line; and this inside is naked and open to the eye of our square in two dimensions, but can never be seen by being in one. This will become clearer as we proceed.

“Not so” replied I; “besides your motion of ‘forwards’ and ‘backwards’ there is another motion; which I call from left to right.”

“Exhibit to me, if you please, this motion from left to right.”

“Nay, that I cannot do, unless you could step out of your line altogether.”

“Out of my line? Do you mean out of the world? Out of space?”

“Alas! How shall I make it clear? When you move straight on, does it not sometimes occur to you that you could move in some other way? instead of always moving in the direction of one of your extremities, do you never feel a desire to move in the direction, so to speak, of your side?”

“Never! And what do you mean? How can a man move in the direction of his inside?”

“Well then, I will try deeds; I will gradually move out of Lineland in the direction which I desire to indicate to you.”

At this word I began to move my body out of Lineland. As long as any part of me remained in his dominion, and in his view, the king kept exclaiming, “I see you.” But when I had at last moved myself out of his line, he cried, “He is dead.” (Move card slowly out of the straight line.)

“I am not dead,” replied I; “I am simply out of Lineland, that is to say, out of the straight line which you call space, and at this moment I can see your line, or side, or inside, as you are pleased to call it”

But the monarch replied “If you were a man of sense, you would listen to reason. You ask me to believe that there is another line beside that which my senses indicate, and

another motion beside that of which I am daily conscious. I, in return, ask you to describe in words, or to indicate by motion, that other line of which you speak. Instead of moving, you merely exercise some magic art of vanishing and returning to sight. Acknowledge your folly, or depart from my dominion.”

Furious at his perversity, I retorted, “Besotted being, you think yourself the perfection of existence, while you are in reality the most imperfect and imbecile. You profess to see, whereas you can see nothing but a point”

We have given these extracts at length, in order that the reader may fully grasp what would be the general conditions of life, prospects, and intelligence in a world of one dimension, and also the necessary impossibility of one in such a world being able to understand the existence of another by argument or illustration. Various other suggestive analogies present themselves here, but we will defer their discussion until we have the other dimensions before us, and then consider them all together. In the next chapter, therefore, we will move a step higher, and attentively view life in a world of two dimensions.

3

The land of two dimensions

WE MUST NOW AGAIN TAX THE IMAGINATION of our readers, and ask them to picture a country of two dimensions, where only length and breadth are known. This country our author aptly calls “Flatland,” and in order to present it vividly before our readers, we must again quote extensively. Our old friend, the animated square, speaks³.

Imagine a vast sheet of paper, on which straight lines, triangles, squares, and circles, instead of remaining fixed in their places, move freely about on the surface—very much like shadows—and you will have a pretty correct notion of my country and countrymen. In such a country you will perceive at once that it is impossible that there should be anything of what you call a ‘solid’ kind, but I daresay you will suppose that we could at least see the triangles, squares, and other figures moving, about as I have described them. On the contrary, nothing was visible, nor could be visible to us, except straight lines.

Our readers will see the strict analogy here: that just as those in one dimension could only see points, not lines,—so those in two dimensions can only see lines, not squares, etc. if the eye is placed on a level (that is, in the same world) with the edge of one of the cardboard figures, whatever its shape, only a straight line will be seen; for it is only as we

³This chapter will be better understood if the reader provides himself with a few squares, circles, triangles, etc., cut out of cardboard, to represent the inhabitants,—the country being represented by the top of the table on which they are laid; while a house in flatland may be easily made by enclosing a space with bits of cotton.

rise above or go below it—that is, enter the third dimension—that we see the shape of the figure.

The houses in “Flatland,” according to our author and to reason, consist of spaces enclosed by lines, openings being left for doors. Of course the idea of a roof to such houses is necessarily absurd, there being no space except in length and breadth in that world; hence the houses are to our ideas open. There is a north, south, east and west; the first two being equivalent to length and the latter two to breadth.

Of course, any being in such a house, when the door was shut, though inaccessible and invisible to any inhabitant of Flatland, could be as easily touched and seen by us if outside the house. (One of the pieces of cardboard placed inside a circle of thread will illustrate this.)

Such a world, then, being imagined, thickly peopled with flat figures gliding incessantly to and fro on the surface, or in and out these spaces surrounded by lines, which they call houses, we will now try and understand the extraordinary experiences of our animated square in Flatland, when, after having tried and failed to enlighten the king of one dimension, he is, in his turn, instructed by a being from our world of solids, or three dimensions. The incident occurred thus:—

It was the last day of the year 1999 of our era. My four sons and two orphan grandchildren had retired to their several apartments, and my wife alone remained with me to see the old millennium out and the new one in.

I was wrapt in thought, pondering in my mind some words that had casually issued from the mouth of my youngest grandson. Taking nine squares, each an inch every way, I had put them together so as to form one large square with a side of three inches, and I had proved to my grandson that, though it was impossible for us to see the inside of this, or indeed of any square, yet we might ascertain the number of square inches in a square, simply by squaring the number of inches in the side; ‘and thus,’ said I, ‘we know that 3^2 , or 9, represents the number of square inches in a square whose side is three inches long.’

The little Hexagon (my grandson) meditated on this awhile, and then said to me: ‘But you have been teaching me also

to raise numbers to the third power; I suppose 3^3 must mean something in geometry. What does it mean?

‘Nothing at all,’ replied I, ‘not at least in geometry; for geometry has only two dimensions.’ And then I began to show the boy how a point, by moving through a length of three inches, makes a line of three inches, which may be represented by 3; and how a line of three inches, moving parallel to itself through a length of three inches, makes a square of three inches every way, which may be represented by 3^2 .

Upon this my grandson, again returning to his former suggestion, took me up rather suddenly, and exclaimed,—

“Well, then, if a point by moving three inches makes a line of three inches, represented by 3, and if a straight line of three inches moving parallel to itself makes a square of three inches every way, represented by 3^2 ,—it must be that a square of three inches every way moving somehow parallel to itself (but I don’t see how) must make a something else (but I don’t see what) of three inches every way,—and this must be represented by 3^3 .”

Let the reader observe here how the Hexagon, by reasoning strictly by analogy, thus discovers and describes a cube or solid figure.

“Go to bed,” said I, a little ruffled by his interruption. “If you would talk less nonsense, you would remember more sense.”

So my grandson had disappeared in disgrace. Rousing myself from my reverie, I exclaimed, “The boy is a fool!”

Straightway I became conscious of a presence in the room, and a chilly breath thrilled through my very being. Looking round in every direction, I could see nothing. I resumed my seat again, exclaiming, “The boy is a fool, I say; 3^3 can have no distinct meaning in geometry.”

At once there came a distinctly audible reply, "The boy is not a fool, and 3^3 has an obvious geometrical meaning."

My wife, as well as myself, heard the words, although she did not understand their meaning; and both of us sprang forward in the direction of the sound. What was our horror when we beheld before us a figure!

My wife retreated to her apartment. I began to approach the stranger with the intention of taking a nearer view. He remained motionless while I walked round him, beginning from his eye, and returning to it again. Circular he was throughout; there could not be a doubt of it. Then followed a dialogue.

(The reader will be much helped if he will illustrate this by first placing a cardboard square inside a large circle of thread, and then place a ball inside the circle; or, better still, let the surface of a basin of water represent Flatland, and a floating circle of thread and piece of cardboard the house and its inhabitant, and then a ball, half immersed, the visitor—capable of sinking through or rising out of Flatland at will.)

I. "Before your lordship enters into further communication, would he deign to satisfy the curiosity of one who would gladly know whence his visitor came?"

Stranger. "From space, sir; whence else?"

I. "Pardon me, my lord; but is not your lordship already in space—even at this moment?"

Stranger. "Pooh! What do you know of space? Define space."

I. "Space, my lord, is length and breadth, indefinitely prolonged."

Stranger. “Exactly. You see you do not even know what space is. You think it is of two dimensions, only; but I have come to announce to you a third—height, as well as breadth and length.”

I. “Your lordship is pleased to be merry. We also speak of length and height (which are the same), or breadth and thickness (which are the same), thus denoting two dimensions by four names.”

Stranger. “But I mean not only three names, but three dimensions.”

I. “Would your lordship indicate or explain to me in what direction is the third dimension?”

Stranger. “I came from it. It is up above and down below.”

I. “My lord means, seemingly, that it is northward and southward.”

Stranger. “I mean nothing of the kind. I mean a direction in which you cannot look, because you have no eye in your side.”

(If the reader makes a dot for an eye on the cardboard square, he will see that such an eye in the “side” of the square would look upwards. Observe also that the borders of the square form its outside, and all of it that can be seen by any one on the same level, and that the surface of the square is its inside, enclosed by the four borders.)

I. “Pardon me, my lord; a moments inspection will convince your lordship that I have a perfect luminary at the junction of two of my sides.”

The reader will see the square calls his borders sides, whereas the stranger refers to the surface of the square. Both may be called sides; thus a cardboard square has four sides, or two sides⁴.

⁴By analogy these are of course “insides.”

Stranger. “Yes; but in order to see into space you ought to have an eye, not in your border, but in your side that is, what you would probably call your inside; but we in Space-land call it your side.”

I. “An eye in my inside! An eye in my stomach!! Your lordship jests.”

Stranger. “I am in no jesting humour. I tell you I came from space. From that position of advantage I discerned your houses, yea, even your insides, all lying open to my view.”

I. “Such assertions are easily made, my lord.”

Stranger. “How shall I convince him? Surely a plain statement of facts, followed by ocular demonstration, ought to suffice. Now, sir, listen to me. You are living in a plane. I am not a plane (or flat) figure, but a solid. You call me a circle, but I am a sphere. Your country of two dimensions is not spacious enough to represent me, –a being of three; but can only exhibit a slice or section of me, which is what you call a circle. See, now I will rise, and the effect on your eye will be that my circle will become smaller and smaller, till it dwindles to a point, and finally vanishes.”

There was no “rising” that I could see; but he diminished, and finally vanished, and then, after a while, reappeared and regained his original size. He heaved a deep sigh, for he perceived I had altogether failed to comprehend him. Indeed, I was now inclining to the belief that he was an extremely clever juggler.

After a long pause he continued our dialogue.

’How many sides has a square, and how many angles?’

I. “Four sides and four angles.”

Sphere. “Now stretch your imagination a little, and conceive a square in Flatland (you are a square) with its side, or what you call its inside, moving parallel to itself, upwards.”

(The reader performs this by just gradually raising the cardboard square from the table and parallel with it.)

I. “What! northward?”

Sphere. “No; not northward; upward—out of Flatland altogether.”

Restraining my impatience, I replied: “And what may be the nature of the figure which I am to shape out by this motion which you are pleased to denote by the word ‘upward’?”

Sphere. “A cube, with eight terminal points (or angles).”

I. “And how many sides will pertain to this being whom I am to generate by the motion of my ‘inside’ in an ‘upward’ direction?”

Sphere. “The cube which you will generate will be bounded by six sides—that is to say, six of your insides. You see it all now, eh?”

“Monster!” I shrieked, “be thou juggler, enchanter, dream or devil, no more will I endure thy mockeries. Either thou or I must perish.”

And saying these words, I precipitated myself upon him. It was in vain. I could feel him slowly slipping from my contact—not edging to the right or left, but moving somehow out of the world, and vanishing to nothing. But I still heard the intruder’s voice.

Sphere. “Why will you refuse to listen to reason? I had hoped to find in you a fit apostle for the gospel of three dimensions. Listen, my friend. I have told you I can see from my position in space the inside of all things that you consider closed. For example, I see in yonder cupboard, near which you are standing, several of what you call boxes (but like everything else in Flatland, they have no tops or bottoms) full of money. I see also two tablets of accounts. I am about to descend into that cupboard, and to bring you one of those tablets. I saw you lock the cupboard half an hour ago, and I know you have the key in your possession. But I descend from space; the door, you see, remains unmoved. Now I am in the cupboard, and am taking the tablet. Now I have it. Now I ascend with it.”

I rushed to the closet, and dashed the door open. One of the tablets was gone. At the same time it appeared on the floor of the room. All this, however, failed to convince our square, who at last threw himself in impotent rage upon the apparent circle again.

The sphere then, unwilling to leave him in his ignorance, as a last resource lifted our poor square right up out of Flatland—out of the land of two dimensions altogether—into our world of space of three dimensions. Here we will follow him in the next chapter.

4

The land of three dimensions

THE FIRST object that met the bewildered gaze of our square, when thus finally translated from the world of two dimensions into that of three, was the perfect figure of the sphere beside him, still appearing as a curiously shaded flat circle, this being the first surface he had ever gazed upon; all flat objects, when in his own country, appearing, as we have seen, as straight lines.

He then turned his wondering eyes downwards, and beheld to his amazement Flatland as it really was, with its flat inhabitants of different shapes all snugly ensconced in their different rooms of their roofless houses, all of which were of course now perfectly open to his view. He could gaze down upon his own house and the room he had just quitted, and could see his wife and children. He, in his turn, now could look into his own locked cabinet, and discern the very tablets already spoken of.

But as he was carried higher he saw more. His whole native city, hitherto known to him only as lines, lay revealed, with the shape of every inhabitant equally plainly to be seen, whether in the street or within doors.

Naturally he thought at first he had become a god, in thus seeing all that he had only surmised before.

With the sphere as his guide, he then travelled on through space, till beneath him he saw the interior of the great judgment hall of Flatland, with all its wise men assembled. He then heard the following decree, to his dismay, read out before them all.

“Whereas the States had been troubled by divers ill-intentioned persons pretending to have received revelations

from another world, it has been for this cause unanimously resolved by the Grand Council to make strict search for such misguided persons, to scourge and imprison any triangle, and to arrest any one of higher rank, to be examined and judged by the council.”

“You hear your fate,” the sphere remarked; “death or imprisonment awaits the apostle of the gospel of three dimensions.”

“Not so,” replied our square; “the matter is now so clear to me, the nature of real space so palpable, that methinks I could make a child understand it. Permit me but to descend at this moment and enlighten them.”

“Not yet,” said the sphere, who then taking our friend with him further into space, proceeded to introduce him to solid figures, beginning with a cube.

Taking a number of square cards (the reader can do this if he have enough), each the shape of his friend, he placed them one on another till they were as high as they were broad, and thus he built up a cube.

To the uneducated eye of the square, however, accustomed only to see lines and points, and to whom the sight of even a flat surface was a new revelation, this solid form (like the sphere) appeared to be an irregular six-sided flat figure thus, (1)—not a solid like this, (2)—



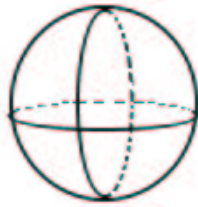
Fig. 1



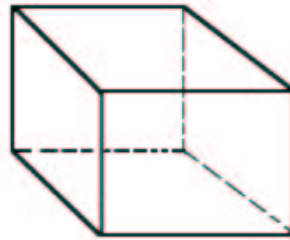
Fig. 2

The reader can verify this by closing one eye, and drawing the outlines of a cube seen sideways, on paper.

It was not until some time after, when he had by the direction of his friend carefully felt its six sides and its eight angles, and walked round and round and under and over it, and had many views of it in different lights, that the stupendous fact began to dawn upon him, that this new world which he had entered, not only enabled him to see all objects in his own familiar Flatland in a new and truer light, but contained bodies of a fresh and glorious order, utterly transcending all his powers of imagination or description, and of a form so novel, so unexpected, as to be incredible, were it not that his senses convinced him of their existence. It took, indeed, a long time for him to understand that the surfaces he saw of the sphere and cube, thus,—



Sphere



Cube

were not their interiors⁵, thus:—



Shaded circle



Shaded square

Once our friend the square had, however, fairly grasped, as far as he could, the fact that he now beheld in actual fact the realization of the mathematical formula of x^3 , and of that problem of his grandson he had scouted as being alike unreasonable and impossible, he was not content to stop here. See now in the words of our author to what he aspired.

⁵Observe the surface of a higher dimension appears to be the interior to the dimension below.

“I thirsted,” says he, “for yet deeper knowledge than he (the sphere) was offering to me.”

“Pardon me,” said I, “O thou whom I must no longer address as the perfection of beauty; let me beg of thee to vouchsafe thy servant a sight of thine interior.”

Sphere. “My what?”

I. “Thine interior, thy stomach!”

Sphere. “Whence this ill-timed, impertinent request? And what mean you by saying that I am no longer the perfection of all beauty?”

I. “My lord, your own wisdom has taught me to aspire to one even more great, more beautiful, than yourself. As you yourself, superior to all Flatland forms, combine many circles in one, so doubtless there is one above you, who combines many spheres in one supreme existence, surpassing even the solids of Spaceland. And even as we who are now in space look down on Flatland, and see the insides of all things, so of a certainty there is yet above us some higher, purer region, whither thou dost surely purpose to lead me, from the vantage ground of which we shall look down upon the revealed insides of all solid things.”

Sphere. “Pooh! Stuff! Enough of this trifling.”

I. “Nay—deny me not what I know it is in thy power to perform. Grant me but one glimpse of thine interior.”

Sphere. “Well then, to content and silence you, let me say at once, I cannot. Would you have me turn my stomach inside out to oblige you?”

I. “But my lord has shown me the insides of all my countrymen in the land of two dimensions by taking me into the land of three. What therefore more easy than to take his servant a second journey into the blessed region of the fourth dimension, where I shall look down with him once more upon this land of three dimensions, and see the inside of every three-dimensioned house, and the inside of every solid living creature?”

Sphere. “But where is this land of four dimensions?”

I. “I know not; but doubtless my teacher knows.”

Sphere. “Not I. There is no such land. The very idea of it is utterly inconceivable.”

I. “Trifle not with me, my lord. I crave and thirst for more knowledge. Doubtless we cannot *see* that other higher Spaceland now, because we have no eye in our stomachs. But, just as there *was* the realm of Flatland, though that poor puny Lineland monarch could turn neither to left nor right, and just as there *was* close at hand, touching my frame, the land of three dimensions, though I, blind and senseless wretch, had no power to touch it, no eye in my interior to discern it; so, of a surety, there is a fourth dimension, which my lord perceives with the inner eye of thought.”

“In *one* dimension did not a moving point produce a line with two terminal points?”

“In *two* dimensions did not a moving line produce a square with four terminal points?”

“In *three* dimensions did not a moving square produce a cube with eight terminal points?”

“And in four dimensions shall not a cube alas for analogy, and alas for the progress of truth, if it be not so—result in

a still more divine organization with sixteen terminal points? Behold the infallible confirmation of the series, 2, 4, 8, 16. Is not this a geometrical progression strictly according to analogy? I ask, therefore, is it, or is it not, a fact that ere now *your* countrymen also have witnessed the descent of beings of a higher order than their own, entering closed rooms, even as your lordship entered mine, without the opening of doors or windows, and appearing and vanishing at will? On the reply to this question I am ready to stake everything.”

Sphere. “It is reported so. But men are divided in opinion as to the facts. Therefore pray have done with this trifling, and let us return to business.”

I. “I was certain of it.”

Sphere. “But most people say these visions arose from the brain.”

I. “Say they so? Oh! believe them not; or if indeed it be so, that this other space is really Thoughtland, then take me to that blessed region where—”

“My words were cut short by a crash outside, which impelled me through space—down—down—down to Flatland. Then a darkness, and when I came to myself, I was once more a common creeping square, in my study at home.”

“I awoke rejoicing, and began to reflect on the glorious career before me. I would go forth, methought, at once, and evangelize the whole of Flatland. I would begin with my wife.”

“Just as I had decided, I heard a herald’s proclamation. Listening attentively, I recognized the words of the resolution of the council, enjoining the arrest or imprisonment of any who should pervert the minds of the people by delusions, and by professing to have received revelations from another world. I reflected the danger was not to be trifled

with. Why not therefore make my first experiment with my little grandson, with whom I should be in perfect safety, for he would know nothing of the proclamation of the council?"

"I therefore immediately sent for my grandson, and taught him once more how a point by motion in one dimension produces a line; and how a straight line in two dimensions produces a square. After this, forcing a laugh, I said 'And now, you scamp, you wanted to make me believe that a square may in the same way, by motion 'upward, not northward,' produce another figure, a sort of extra square in three dimensions.'"

"Dear grandpapa", he said, "that was only my fun, and of course I meant nothing at all by it; and I don't think I said anything about the third dimension; and I am sure I did not say one word about 'upward, not northward,' for that would be such nonsense, you know. How could a thing move upward, not northward? Even if I were a baby, I could not be so absurd as that. How silly it is! Ha! ha! ha!"

"Not at all silly," said I, losing my temper; "here, for example, I take this square," –and at the word I gasped a movable square which was lying at hand,– "and move it, you see, not northward but, yes, I move it upward—that is to say, not northward, but I move it somewhere—not exactly like this—but somehow."

"Here I brought my sentence to an inane conclusion, shaking the square about in a purposeless manner, much to the amusement of my grandson, who burst out laughing louder than ever, and declaring I was joking with him, ran away. Thus ended my first attempt to convert a pupil to the gospel of three dimensions."

Our poor square then shut himself up and tried to write a book on the subject, but was greatly hampered for want of illustrations, which he found impossible to draw, or words to convey his meaning, which he found he could not coin.

Meanwhile, his life was under a cloud. He could not help comparing what he saw in two dimensions with the reality of Flatland as seen from three. One day he tried to see a cube with his eyes shut, but was not quite certain he had realized the original. This urged him to take some further steps to make the revelation known, but how to begin he knew not.

At times he could not restrain dangerous utterances, dropping such expressions as the “eye that discerns the interior of things,” “the all-seeing one,” and “the third and fourth dimensions”; and at last he was drawn at a debating society, one day, to give a full account of his glorious journey into Space and of all he had seen and learned there.

He was at once arrested, and taken before the great council, to whom he retold all his story. At the close of a long examination he was finally asked two questions:—

1. Whether he could indicate the direction which he meant when he used the words, “upward, not northward”?
2. Whether, by any diagrams or descriptions (other than the enumeration of imaginary sides and angles), he could indicate the figure he called a cube?

As it was obviously impossible for him to comply with either of these apparently reasonable demands, our unfortunate square was finally sentenced to perpetual imprisonment.

Here, for many years, he ceaselessly tried to teach the gospel of three dimensions to his fellow-prisoners, but alas! without the slightest effect, being universally regarded as a harmless monomaniac.

Here, then, we bid our square friend a final adieu, and leave the little book in which his story is enshrined, to consider further the laws of a fourth dimension.

5

The land of four dimensions mathematically considered

IN NOW SUMMING UP THE RESULT of all that has been said, and trying to carry the facts that have been observed in the relation of the first to the second, and the second to the third dimension into the relations of the third to the fourth, we will first of all consider this higher and unknown dimension as a mathematical figure, and secondly enumerate some of the probable laws of a world of such dimensions and its inhabitants, as deduced by analogy, and their possible relations with our world and its inhabitants.

Then we may further consider the actual facts around us bearing on the question, and compare these deduced laws of the fourth dimension with some of the claims of Christianity as stated in the Bible.

Let us then, first of all, consider the mathematical or geometrical side of the question, and inquire what would be the character of regular figures in the fourth dimension, arguing from analogy.

And in so doing, we must warn the reader that the subject is necessarily somewhat involved and intricate; but that nevertheless the conclusions arrived at are so fascinating and novel, that if he will only traverse the preliminary Sahara in patience, he will probably feel rewarded by the subsequent oasis he reaches in the summing up and application of the whole theory.

Let us therefore proceed to set forth the facts in order.

In one dimension we get—

- (1) Straight lines,
- (2) Varying only in one direction—length;
- (3) Having two terminal points (or sides or outsides, the line between these being the inside); and
- (4) Seen only (by a single eye in line with them) as points.

In two dimensions we get—

- (1) Surface or flat figures,
- (2) Varying in two directions—length and breadth, also in number of sides and angles (we also get irregular figures of one dimension, but lying in two, as curved or crooked lines;)
- (3) Having not less than three⁶ terminal points or angles, and not less than three borders or boundary lines, or sides or outsides (the surface of the figure being the inside); and
- (4) Seen only (by a single eye on a level with them) as lines.

In three dimensions we get—

- (1) Solids,
- (2) Varying only in three directions—length, breadth, depth, also in number and regularity of sides and angles (we also get irregular figures of two dimensions, but lying in three, as curved or crooked surfaces);
- (3) Having not less than four⁷ terminal points or angles, and not less than four borders, surfaces, or sides or outsides (the contents being the insides); and
- (4) Seen only (by a single eye⁸) as surfaces.

⁶No flat figure can have less than three angles and three borders, viz., a triangle; for two straight lines cannot enclose a space. (Circles and curved lines are not considered, being really an infinite number of straight lines.)

⁷A solid body cannot have fewer than four angles and sides, viz., a solid triangle. (Circular and curved bodies are not considered, being composed of an infinite number of sides.)

⁸We see bodies as solids, not surfaces, simply because we have two eyes, and can see them from two points of view at once. The stereoscope is founded on this fact.

In four dimensions we get (by analogy)–

- (1) Unnamed bodies,
- (2) Varying only in four directions, length, breadth, depth, and—, also in number and regularity of size and angles (we also get irregular bodies of three dimensions, but lying in four; as—);
- (3) Having not less than five terminal points or angles, and not less than five borders, solids, or sides or outsides; and
- (4) Seen only (by a double eye) as solids.

Turning now to consider some of the probable laws deducible by analogy from these data and the foregoing chapters, we may suggest the following, the general truth of which the reader will probably be now prepared to admit.

Some of the relations of a being in one dimension, with the dimension below him and the beings in it, e.g, a being in a fourth dimension with the third (our world) and those in it, are: —

1. He can enter or leave the world below him, that is, appear and disappear at will, and that without changing his form.
2. However near to the world below him, he remains invisible till actually in it.
3. He can be in closest proximity with the beings in the world below, and yet outside that world altogether, and therefore invisible.
4. From his dimension he can see and enter at will the inside of every living being and thing in the world below him.
5. When he enters the world below, he can never be wholly seen, and that part of him that is seen is always in the form of the world below him which he enters.
6. His voice, while still in his own dimension, would be heard (if hearing were possible) by a being of the world below as an internal voice, or a voice from his own inside.
7. His appearance and disappearance in the world below are not caused by any change of form or substance, but by his entering or leaving that world.

8. A world and beings of any dimension include all the shapes and characters of those below them, adding to them that further shape and character peculiar to the added dimension.

The relations of a being in one dimension with that above him and its inhabitants, e.g. one in the third dimension (our world) with the fourth.

1. All conception of a higher dimension is impossible, though capable of mathematical demonstration.
2. However vast and populous the dimension, to him it is absolutely and necessarily non-existent.
3. If he could hear such beings, the sound would appear to come from his inner consciousness, and not from his own world without.
4. If such beings enter his world, he can only see and comprehend that part of them that enters it. Such beings may directly enter his own inside.
5. And to him such part *always appears in the likeness of an inhabitant of his world* (the inhabitants of one world being always a partial likeness, or the likeness of a part, of those in the world above them).
6. He can never, by his own power, leave his own dimension or world.
7. While in his world, he can never see the true appearance or shape of any being in it, but only its exterior.
8. If raised into the dimension above, he at once perceives the true dimension and shape of every being in his own world.
9. The beings of the dimension into which he is raised, at first present the same appearance as the beings (now first truly seen) in his own dimension.
10. By close inspection and careful comparison the real difference can be discerned.
11. Even if the dimension above be visited and understood, it is impossible to describe it in the language, or to draw it in the figures, of his own dimension.
12. All such attempts are necessarily unintelligible, and sound foolish and irrational.

13. All attempts to understand or grasp the dimension above, without having entered it, are futile.

14. An eye in one's inside would, according to analogy, look in the direction of the dimension above.

15. Each dimension adds one new direction of size, space, capacity, and form to the one below.

16. The visibility of a being *does not depend on physical properties*, but on its position inside or outside of the world below him.

Analogical table of dimensions

Dimensions	Description
None	No dim. may be represented by a point of no size which has 0 sides and one point and 0 borders, and is represented 0, and may be formed by a fixed luminous point.
One	One dimension may be represented by a finite straight line of 2 linear inches which has 2 sides or 2 points and 2 terminal points and 2 borders, and is represented by 2, or 2 linear inches, may be formed by a luminous line moving through 2 linear inches.
Two	Two dimensions may be represented by a square of 2 linear inches which has 4 sides or lines and 4 terminal points or angles and 4 borders, and is represented by 2^2 or 2×2 , or 4 square inches, and may be formed by a luminous line moving through 2 linear inches.
Three	Three dimensions may be represented by a a cube of two linear inches which has 6 side or surfaces and 8 terminal points or angles and 12 borders, and is represented by 2^3 or $2 \times 2 \times 2$, or 8 cubic inches, and my be formed by a luminous square moving through 2 linear inches.
Four	Four dimensions may be represented by a ... of 2 linear inches which has 8 sides or solids and 16 terminal points or angles and 48 borders and is represented by 2^4 or $2 \times 2 \times 2 \times 2$, or 16 Fourth dim. inches, and may be formed by a luminous cube moving 2 linear inches.

Observe the following ascending series

Sides or points	0	2	4	6	8
Angles	1	2	4	8	16
Borders	0	2	4	12	48
Contents	0	2	4	8	16

6

The land of four dimensions mathematically considered

TURNING NOW FROM ANALOGIES and theories to facts, we find in the first place an almost universal consensus of opinion amongst all nations, throughout all ages (with few and curious exceptions), that there does exist a higher⁹ world than ours, invisible to mortal eyes.

Those among civilized nations who have doubted or denied its existence have done so in spite of their own feelings, and in virtue of a reasoning that denies anything that cannot be apprehended by the senses, in short, anything that is not “matter.” The narrowness of such reasoning gives it all its exactness, and the materialist finds a satisfaction in denying all he cannot account for, or where the clear but limited light of his understanding fails to penetrate. Some minds, I suppose, prefer the well-trimmed order of a London square within its iron railing, or a well-stocked kitchen garden with its four high brick walls, to the boundless prairie or the rolling moorland. The known can at any rate be made to yield a tribute to the complacent human wisdom which can classify, analyse, and otherwise ticket and name it; while the unknown is denied by our little philosophers, partly because the human mind cannot fully grasp it, and finds it easier to ignore it, and partly because the unknown refuses to be measured, weighed, and arranged, and thus furnish another trophy to the greatness of man’s intellect.

It must not be supposed, however, that our patient reader has been asked to wade through all these pages merely to prove to our materialists that

⁹By higher is meant greater in qualities and powers. In speaking of this world, though the whole of it is included, it is mainly with that part of it that constitutes God’s spiritual kingdom that we are concerned.

there is a world that finds no place in their philosophy; for the reader himself doubtless already accepts the fact of this world in a general way, and the number of absolute materialists is too small, and their convictions too strong, to be much shaken by the humble methods adopted here. We seek to do far more than this; we hope to show by analogy how the powers of this higher world, in many an unlooked-for particular, correspond with those that may justly be supposed to belong to x^4 .

Let us now proceed to consider some of the phenomena of this unseen world, as current in tradition, as experienced by individuals, and as recorded in books—mainly in the Bible, this being the authoritative history accepted by all Christians of the spiritual kingdom.

All believe that this world is a higher one than ours; higher in the sense of being greater, wiser, more powerful; that it, like ours, contains inhabitants good and bad, and regions fair, and dark, and terrible. But we all feel that the goodness of some of its inhabitants on the one hand, and the evil of the rest on the other, alike transcend in every way all standards of good and evil here; and that, in the same way, both the fairness and the foulness and horror of its different regions transcend all ever seen by mortal eye, or that can be pictured by the human mind.

Most believe this unseen world to be densely peopled, and that in some way it rules over our own with a sway in every way greater, again stronger, and more comprehensive than that of any known earthly government.

Another curiously universal, instinctive belief and one by no means confined to Christianity, is, that when a man dies, part of him (his soul, or spirit) leaves this world altogether, to enter the higher one. And here we may turn aside to remark that the general belief that man has a spiritual nature—something beyond and above the highest ganglion cell in his brain, something that leaves the body at death, but abides in it through life—may be well illustrated by algebra.

Let, for example, the body, material and solid, be represented fairly enough by x^3 , and the spirit, higher and possessing an unknown power, by x^4 . In taking x^4 here to represent spirits and hereafter the spirit world, it must be remembered that we are absolutely ignorant of what is really involved by this formula. As far as we know, the “material” is strictly limited to three dimensions, nothing in one or two being material, or having any substance whatever. It must therefore be distinctly understood that we firmly believe God is a spirit, and the other world a

spiritual one, and that we have no wish or intention of materializing it in enforcing the truth of some of its laws by means of analogies drawn from a supposed fourth dimension.¹⁰ Then $(x^3 + x^4)$ represents the man in life, while $(x^3 + x^4) - x^4$ represents the departure of the spirit (x^4) at death, which returns to its own dimension, while the body (x^3), which is left, returns to the earth to which it belongs.

If this, then, be true, as is surely believed amongst all Christians, that man *is* at any rate a complex being, having as definite a relation with the unseen world above him as with the visible world around him, a relation which is realized by all after death, then is explained the instinctive craving of all the human race, even apart from Bible revelation, after a higher world; hence, also, the capability to receive and understand its mysteries, and the possibility of communion with it even now.

Turning from tradition to experience, we have not only unnumbered instances of communion between our spirits and the inhabitants of the higher world, but equally numerous instances of the entrance of these higher beings, and their consequent appearance in our world.

Speaking of communion, and turning to the Bible and to the lives of the saints and of all good men in ancient and modern days, and, on the other hand, to certain events in the lives of bad men, especially in connection with great crimes, no student of the subject can doubt that the expressions, "We see Jesus," "David sat before the Lord," "God spake to Moses," "Satan tempted him," "Daniel cried unto the Lord," "I sought the Lord, and He heard me," and hundreds of similar utterances in biographies and from the lips of living men, represent the *fact* of communion and intercourse between the two worlds, just as faith, the evidence of things not seen¹¹, prayer, contemplation and abstraction represent the *means*.

Then, again, as to appearances. The Psychical Research Society may be unable to discover a single authentic ghost, but nevertheless innumerable

¹⁰In taking x^4 here to represent spirits and hereafter the spirit world, it must be remembered that we are absolutely ignorant of what is really involved by this formula. As far as we know, the "material" is strictly limited to three dimensions, nothing in one or two being material, or having any substance whatever. It must therefore be distinctly understood that we firmly believe God is a spirit, and the other world a spiritual one, and that we have no wish or intention of materializing it in enforcing the truth of some of its laws by means of analogies drawn from a supposed fourth dimension.

¹¹Hebrews xi. 1.

appearances from the spirit world are everywhere believed in, and, we think, credibly attested.

The testimony of the Bible alone (if believed) is of course overwhelming on the point. Angels come and go at will, God Himself is seen in Old Testament times in human form, and in New Testament times, when our Lord takes a spiritual body, He appears or disappears in this world of ours at will. A hand wrote on Belshazzar's wall. The form of the Son of God was seen in the fiery furnace. Since then appearances have been seen and voices heard that cannot be explained by anything in three dimensions.

Passing on to consider the history of this higher world, more especially as recorded in the Bible, we find its superiority as to its inhabitants, its regions, and its powers, all amply confirmed. Whether we consider the attributes of God, or of an angel, or of a devil, whether we read about heaven or hell, we are made conscious throughout, that all, from the omnipotent Ruler of this higher world down to its meanest servants, transcend our ideas in every way. We find omniscience and omnividence claimed, "all things being naked and open to Him with whom we have to do" (Heb. iv. 13). We find the angels described as unseen messengers of good and evil, surrounding our path on every side, and carrying out the will of their Master for weal or woe. We find indications that this unseen world itself surrounds us on every side. We are positively told that our soul definitely enters it at death, when it is "absent from the body."

We have more. In the twelfth chapter of the second epistle to the Corinthians we find a detailed account given us by an educated man, well read in the philosophy of his day—Paul, of the fact of his being caught up into the higher world (supposed, by referring to the date which he gives, to have been when stoned and dragged out of a city and left for dead), and the curious statement made that although he saw and heard much, he found it impossible to describe or relate anything in human language, on his return to this world.

We have also the account of Elijah and Enoch and Christ suddenly leaving this world for the higher one, while yet alive.

In some parts of the Bible, notably in the Revelation, a definite endeavour is made to describe some of these higher glories in human language, and all that can be done is to picture them by the commonest earthly symbols—gold, glass, precious stones, pearls, thrones, palms, lamps,

trumpets, white linen, swords, suppers, and so forth. No words existing to pourtray the glories of the spiritual world.

This world is described at length as passing away altogether, and yet the foundations of that world are not even shaken, it being described as a “kingdom that cannot be moved.”

The descent, as we have seen, of beings from it to our earth is constantly recorded, their appearance and disappearance spoken of, the former always in human form, though this latter is never spoken of as being assumed for the occasion. When another form, as that of a dove, is assumed, the fact on the contrary is always expressly mentioned.

Not only are mysterious appearances and disappearances constantly recorded, but very definitely in the case of our Lord, as entering a room in a body “with flesh and bones,” though all entrance to it was barred. Also, at another time, when, sitting at supper, He vanished out of their sight, though in a body and capable of eating and drinking.

The Bible speaks also of our relationship with that world. it tells us that the apprehension of its glories are not by means of the seeing eye or the hearing ear, but by revelation of the Spirit of God¹². It reiterates the fact that the natural (or finite) mind, though linked with the fourth dimension, cannot of itself grasp spiritual realities, but that they must be revealed to us by spiritual means, and that those alone to whom this is vouchsafed can discern, judge, and weigh all earthly things in their true and real light.

The third chapter of John tells us more. It lays down the fact that by no education can any man mentally or morally enter this higher sphere. He must, in the language of our Saviour, be positively born “again,” or, as better rendered, “from above,” that is, introduced as truly into the higher world by birth, as he was first introduced into this world in the same manner.

All spiritual perception of this world is by internal eyesight, the “eyes of our understanding¹³.”

The language and descriptions of those who profess to have been thus introduced, mentally and morally (though not yet physically) into this

¹²I Corinthians i. 9-13.

¹³Ephesians i. 18.

other world, are mostly unintelligible, and foolishness to the inhabitants of this¹⁴.

Attempts, always unsuccessful, to penetrate its mysteries beyond, or apart from what is directly revealed, only help to fill our asylums and lists of suicides, while, on the other hand, we are everywhere surrounded with large bodies of sane people who claim to have been introduced into it, to obey its laws, and to enjoy its privileges, and some of its powers.

With regard to our future relationship with this higher world, the Bible is equally clear. It not only plainly shows that the soul in affinity with it in life, definitely enters it at death, but points to a mysterious time, in the hope of which thousands have closed their eyes on this world, of a resurrection, when the spirit shall be clothed again with a body, but differing from the present one in its origin and in its properties and powers, being called a spiritual body, and fitted to enter physically, for the first time, those higher regions already familiar to the departed soul.

These few detached remarks may serve to point out some leading features of the world "to come," in relation to our own; we will now consider them in connection with the mutual relations of the various dimensions.

¹⁴I Corinthians ii. 14.

The land of four dimensions. Facts and analogies

THOSE WHO HAVE CLOSELY FOLLOWED THE ALLEGORY of the different dimensions in the earlier chapters of this treatise, must have been struck, in the first place, by the absolute impossibility of any inhabitant belonging purely and simply to any one dimension even conceiving the existence of a higher world than his own; which to him, be it point, or line, or surface, or solid space, is all that there is, or can be.

In the second place, a moment's reflection will have shown them that in the very nature of things, it obviously must be so.

To one living entirely on a surface and in a world where there is nothing but length and breadth indefinitely prolonged, the idea of height and depth are absurd and impossible, and there exists no mode of demonstrating them, unless they are absolutely entered.

Having these facts before us, and applying them to ourselves, we find, to our surprise, they are *not* fully borne out in our experience.

We *can* to some extent understand the existence of another world, even apart from all revelation or entrance into it, and this is because *we are something more than mere forms of three dimensions*. Were we such only, no such traditions as we have alluded to would be common to the human race; the idea of a higher world would be as impossible to us as to the brute creation.

But there is a part of us that has been made in the likeness of God, a part breathed into us by the Divine breath, through which we instinctively perceive the higher sphere, and by means of which we are partly able to apprehend its teachings.

Still, to a great extent, the analogies hold good. We, like our friend the square, in Flatland, can see spiritual beings when they enter our world, and like him, explain their appearing and vanishing by magic or miracle, rather than by the simple fact of their entering or leaving our dimension.

Again, analogy has shown us how near, how very near, the new dimension that characterizes the world above us may be, with its inhabitants, and yet be outside ours altogether¹⁵.

On the other hand, analogy shows us that just as a point is comprehended in a line, a line in a square, a square in a cube, so is our world of three dimensions completely included and swallowed up in the universe of four.

Analogy points out how omnividence is an almost necessary property of a higher world.

The careful comparison of the analogies of the third and fourth dimensions with the revealed relation of our world to the spirit world, shows such a likeness between the two, that it is not too much to say that if we call our world a world of three dimensions, we may fairly consider the spirit world in many respects a world of four.

We conclude, therefore, that a higher world than ours is not only conceivably possible, but probable; secondly, that such a world may be considered as a world of four dimensions; and, thirdly, that the spiritual world agrees largely in its mysterious laws, in its language which is foolishness to us, in its miraculous appearances and interpositions, in its high and lofty claims of omniscience, omnividence, etc., and in other particulars, with what by analogy would be the laws, language, and claims of a fourth dimension.

Once these conclusions are admitted, and our eventual destination, body and soul, seen to be in this higher world, the transcendent importance of understanding all about it, the intense and real interest of all connected with it, becomes overpoweringly evident.

If it be true that we are everywhere surrounded by another world, which is our final goal, how foolish to stop our ears to its history, to shut our eyes to its facts, as recorded in what is believed by us to be an authoritative statement of them!

¹⁵This shows also the folly of those who, reasoning on "three dimension" lines, assert that the spiritual world must be beyond the confines of the material, and hence millions of miles away, and farther than the farthest star.

The honest materialist has some excuse for the total neglect of a Bible he disbelieves; but what shall we say of those who, professing to accept these stupendous realities, are utterly indifferent to them and the Book that reveals them?

Surely the study of what we will term this fourth dimension far transcends the highest earthly subjects, and dwarfs to their proper level all objects of human ambition, for we see at once that the lowest inhabitant of the fourth dimension is necessarily of a different and a higher order than the greatest monarch in the third. The lowliest plant is of a higher order than, and different beauty from, the most precious mineral, possessing as it does one sort of life; the feeblest animal, again, is of a higher order than, and different beauty from, the oak or the cedar, possessing as it does another sort of life; and in the same way the humblest subject of God's spiritual kingdom is of a higher order than, and different beauty from the highest animal, possessing as he does yet another sort of life.

Another great advantage these considerations give is that, if admitted, they at once rescue Christianity from being degraded to a code of ethics, whereby men can better adorn this third dimension, and present it in its true and proper character of a new world and kingdom, with its invisible inhabitants, laws, houses, and rulers; in a word, it becomes objective instead of subjective. Light is also thrown on the mysterious connection of soul and body in us personally, and on the entrance of the former into another world the moment it is released from the body by death.

Conversion, the new birth, salvation, or whatever the entrance of the light of Christianity into the heart of man is called, is now seen *not* to be a process of education in morality, in order to produce better members of society, and of this world, but something infinitely higher—a positive resurrection into a higher and purer world, where Christ now is, an instruction in the heavenly principles, and a glimpse into its transcendent glories, coupled with a view into the hearts of men and of the real nature of all earthly things, that reveal their true value, the result being undoubtedly to elevate the tone, life, and manners of the individual, but the object being to fit him to be shortly removed altogether to that higher sphere to which he now belongs, there to be clothed with a spiritual (or fourth dimension) body.

Those who have followed, and who accept the preceding lines of argument and thought, will undoubtedly thus see more clearly the reason

and cause of a great many distinctive features of Christianity. They will understand its lofty claims, and know why, when its laws are truly proclaimed, they are to men foolishness, where, as, when adulterated with the wisdom of this world (of the third dimension), they are more or less intelligible. They will see why it is insisted on so strongly that the natural man cannot receive its mysteries (being of the third dimension), and that they are only spiritually discerned (that is, by revelation), why we must be born again, or introduced by the power of God into this new world.

They will now see how it is possible this kingdom can be within us, and yet surrounding us; how angels may be by our very side, and yet outside this world of space altogether.

They will see the impossibility of guessing the direction of heaven or hell, seeing there is an unknown direction around us, which we cannot conceive, and the puerility of assuming that it must be “up above” or “down below.”

They will see that though the glorious material universe extends beyond the utmost limits of our vision, even artificially aided by the most powerful telescopes, that does not prevent the spiritual world and its beings, and heaven and hell being by our very side.

They will see that, far from these spiritual regions occupying some small corner of the material universe, as surely as the greater includes the less, so surely is the material universe, vast as it is, swallowed up in the spiritual.

The indications of the vast unknown extent of this spiritual kingdom will be more clearly understood in such references as Ephesians i. 21. They will now more clearly discern “the powers of the world to come,” whereof we speak, and understand the mysterious appearances in the Bible of spiritual beings, always in human form, necessarily so to be seen in the third dimension. It will be no difficulty to them to believe all thoughts and hearts are naked and open to the Ruler of this world, still less that every closed object and the inside of every solid thing is and must be clearly seen.

Believing as we do that the soul, or immortal part, of man is connected with this fourth dimension, while the body belongs to the third, the phenomena of death is clearly seen to be the separation of these two dimensions, the body refining in this world while the soul enters the other.

The simple and almost childish language of Revelation, already alluded to, will no longer appear strange, when it is seen that it is an inspired attempt to put the glories of the fourth dimension into the language of the third; hence the necessary use of such words as glass, gold, etc. Nor will the language of Paul, in 2 Cor. xii., fail to be better understood as to what he heard when caught up out of the third dimension into the fourth being impossible to utter or render into human language.

The arrogance of man will receive a severe and salutary check when it is seen how, in the very nature of things, it is impossible he can understand even the new direction in which this glorious world lies, while the Christian will quite see why he is constantly misunderstood, and always so, indeed, when he lives in the region of the fourth dimension; and hence that saying is and must be true, that he “discerns all things, yet he himself is discerned of no man¹⁶.”

It is hardly too much to say that when the possibility is proved of there being another world in close proximity to ours, but necessarily invisible to us, save as its beings enter or leave ours, and when we discern a few of the leading laws, that by strict analogy may be taken as found in such a world in relation to ours; that nearly the whole of Christianity becomes clearer to us, its language more intelligible, and some of its most difficult statements almost axiomatic.

If we consider such scriptures, for instance, as Ephesians i., Colossians i., 2 Corinthians v., and 1 Corinthians xv., we find, just as Adam is the principal being in the third dimension, so is Christ in the fourth, and hence with appropriateness is called “the Second Man.”

The new creation is seen to be as literal and real an introduction of beings into the fourth dimension as the old was into the third, and such a verse as Colossians i. 16, descriptive of the Creator’s power in both dimensions, here designated visible and invisible, is apprehended.

The power whereby Christians are lifted out of the third into the fourth, mentally, at any rate, is graphically portrayed in Colossians ii. 20-iii. 4. They are there spoken of as dead and risen with Christ (into the fourth dimension), and are to be occupied with the superior glories of their new sphere.

It is but little wonder, therefore, that those who have really been made thus alive should speak somewhat slightly of the glories of this world,

¹⁶1 Corinthians ii.

when they consider the higher glories of their own, or that they should be enthusiastic in describing it, or earnest in endeavouring to introduce others into it; nor, on the other hand, that by those who are not thus alive, they should be accounted fools and fanatics, and their language extravagant and unintelligible. The wonder rather is, that those who are thus alive should not be more enthusiastic than they are, and appear more foolish than they do.

In conclusion, we would briefly emphasize these following points.

If we have to any degree succeeded in showing the probability of that other world being of a higher dimension than our own, and that we have a link with it naturally in the spiritual part of our beings; we see most clearly established by analogy, that by no development of our mental faculties, by no advancement in science, by no cultivation of conduct or morals, in short, by no education or improvement of the human race, *per se*, can we understand, enter, or view this higher kingdom. Any comprehension, in short, of it, is not by cultivation, or strengthening even of that link we already have with it in our souls, but by a distinct revelation from that world to these powers within us, and a consequent elevation of these powers into this higher dimension. In relation therefore with Christianity (as we call this scheme of revelation), we see why the most highly cultured in the learning of the third dimension possess little if any advantage (nay, often the reverse) over the wayfaring man, though a fool, inasmuch as it is to both of them a distinct revelation, more easily received indeed in the latter case, since there is here no force of intellect to set aside, for the meaning of our Lord's saying is now clearly apparent, that except we become as little children, we shall *in no wise* enter the kingdom of heaven.

If then these few remarks, and these mathematical analogies, serve to show that the scriptural way of entering the Kingdom of God is the only way possible; if they assist to rouse enthusiasm in believers, to convert unbelievers, and to silence materialists, the object of the writer will be fully gained.

[End.]