

How mathematical theories explain our way of living

What do mathematical theories of choice
and stereographic projection
indicate to thinking patterns of the mind?

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Introduction

In this paper we focus upon thinking patterns. By looking at patterns we might unfold mysteries of the mind. As result we might also be able to say something about the origin of being in relation to the infinite.

As method to unfold the patterns, we use analogies based upon mathematical and scientific theory. Philosophers learned that reality was based upon realism (Plato) and idealism (Kant). Both explained the visual reality was not the world we could rely on.

Furthermore it is interesting to find out what modern science brings us in this discussion. For we focus more on the dynamic world of technological and material development. It is difficult to bridge the technological and material world on the one side and the philosophical theories at the other side. To bridge the gap, we use analogies based upon mathematical and scientific theories. This seems plausible, because technical and material progress is often based upon mathematical and scientific theories. And the same theories are used by for example Plato, who used analogies as well to 'make up his mind' or, may be better, to 'make up our mind'.

Several analogies are used to try to unfold the patterns of the mind. Important theories like the axiom of choice and Riemann sphere reveal thinking patterns. Sometimes the interpretation is not easy to understand. This confirms the area we try to explore is not a common or an ordinary sphere to interpret.

The theories give an indication of a dimension we do not see and we are not able to know. This dimension cannot be reached by common understanding, because it seems empty and infinite. So the dimension is easily rejected by common sense.

Why might this theory be important? First of all it is interesting information if we realize our reason is not omnipotent. This leads to questions of the place of human being in creation. Second, it opens a window to a dimension we do not understand and reveal the question why our mind makes us in the visible dimension dependent on two different points of view to complete the interpretation of the visible dimension. The analogy indicates local and social dependency, we will mention in section two.

We believe we have a way of life, a path we choose in our life. I think the axiom of choice is a representative mathematical theory for this notion. The axiom of

choice presents an undefined starting point (which refers to 'I am') which enables us to make arbitrarily choices during our existence.

If we choose we most likely choose objects in the visible world. We are attracted to them. We discuss the Riemann sphere as analogy of a thinking pattern that does focus the mind upon the local and visible dimension. This condition is in analogy comparable with stereographic projection.

Human existence is not as flat as the sensible world (because our thinking pattern is not focused upon other dimension), the visible world our consciousness is focused upon by reason, a conclusion which we cannot ignore if we enter the theory and apply analogies.

This paper might be interesting if you have affinity with both mathematical and philosophical concepts. The analogies are based upon theoretical interpretation and are not scientific approved.

Section one: the postulation of choice indicates a coherent personal path of life

The choosen path

One of the major questions of philosophy is the question 'who am I?'. We take for granted we have an individual consciousness, because this is how we experience life. On the other hand we experience connectivity with our environment and in general with the universe and God.

This feeling of unity of the mind, of the world and God are postulated by reason, said Kant. In mathematics the postulation of the mind (Kant used the concept psyche) is found in the axiom of choice.

An axiom or postulate is a statement that is taken to be true, to serve as a starting point for further reasoning and arguments.

The axiom of choice says that given any collection of bins, each containing at least one object, it is possible to construct a set by arbitrarily choosing one object from each bin, even if the collection is infinite.

What does this say about the pattern of thinking of the mind?

Apparently our mind works in a way that we are always able to choose a path in a infinite or finite set, and we are able to choose arbitrarily. This is

recognizable for we choose sometimes by logic but often by what we call intuition.

The property of choosing arbitrarily might give us the feeling of faith or luck, because if we do not choose by logic or a function, we still are able to choose.

The possibility of a finite or infinite collection is interesting, and will further discussed in the paragraph about the Riemann sphere. Relevant for now is we are able to choose in finite and infinite collections and always capable to choose.

Avoiding emptiness

Furthermore the axiom of choice is based upon the fact that a collection of non-empty sets is not empty.

And to zoom in upon this statement we are able to compare this axiom with the axiom of the set theory.

The axiom of choice is similar to the axiom of set theory, in the way that a collection of non-empty sets is not empty. This are still mathematical theories, postulates, we apply in analogy to reveal the thinking patterns of the mind.

From the starting point we look for or, stronger, gather, lets say in terms of daily use, objects.

This indicates the mind is focused on selection of objects, and our mind is programmed to choose. This further indicates our consciousness tries to avoid empty sets, because the mind searches connection with objects, selects and chooses logically or intuitive.

If we choose we might try to avoid empty connections or experiences too. We choose and try to hold by this path to remain perspective of the possibility of choosing. If we have more assets, better looks, we are able to choose (more products respectively partnerchoice).

Thinking patterns lead to excessive behavior by axiom of choice and fear for emptiness

Based upon the indication of the axiom of choice, we are focused to choose objects, we should take notice what this means to the regular and accepted biological theory of survival of the fittest. Could it be that in addition to

biology, the focus of the mind leads man to excess, not always to use what he possesses but theoretically avoids emptiness, what he judges as the end of his existence (for there is no longer a horizon for the postulated 'I am')? The biological tendency to survive might be strengthened by the axiom of choice, and in relation to the axiom, the avoidance of emptiness, the lack of a reasonable horizon.

Thereby the postulated self tends to infinite excess. If someone has a lot of money, he wants more. There seems to be no limit. One percent of man seems to possess ninety percent of assets. This kind of wealth in possession of few man has less to do with biological behavior, because these few man cannot spend all the possessions in a lifetime. So this behavior is embedded in a context which goes beyond the physical dimension alone.

The axiom of choice presents an indication. If the postulation of the psyche is not able to choose forms and filled bins, the axiom is under pressure. It fears emptiness for a lack of a reasonable horizon.

Choice selects and discriminates

Lets assume the set is not empty, and man is able to choose. Then the question is whether the postulated psyche is part of the set or is not. This case is known as the Barber of Sevilla paradox. (The paradox is discussed in the article Resonance).

The mathematical theory indicates a next complex problem for man. Does he identify himself with the set or does he discriminate himself? It is interesting this paradox could have significant meaning in a social context. Sometimes man does not choose to be a part of a group and visa versa and furthermore the acceptance and choice from the group on the other hand. In general, youngsters are eager to identify themselves with a group, but acceptance by a group might be difficult. This indicates a discriminating process. The mind tends to choose, to select and connect with the world.

Selection and discrimination by choice leads to descending from the perspective of the starting point. If we choose we think we have a certain logical argumentation. But if we talk about it and discuss the argumentation with another human being, differences of so called logical approach appear. As earlier mentioned, we decide often intuitive. Somehow we think our judgements are afterwards often logical, but not always in the eyes of other man. Choosing means not only discrimination of objects, excess but might also a loss of universal understanding.

This looks like a logical statement, because we often ask ourselves why someone makes a certain choice. This is an important to mention, for we will see in the second section, the thinking pattern is focused upon local and temporary conditions and leads to different points of view by projection.

In short, the axiom of choice gives as an analogy of the mind, an indication for a pattern of the mind and the way it interacts in reality.

Because of the axiom we are able to select, discriminate and choose contents in a non empty collection. Thereby we are focused upon things and is the postulated self capable of choosing a path in life.

But there is more going on than the postulated self and the possibility to choose logical or intuitive. There are several conditions that makes it possible to think and act this way. We have seen there are several characteristics that are relevant in the analogy of the axiom of choice. The mind is focused on choice, navigates the postulated self to things or objects, tends to infinite excess, connects with objects. Two conditions that are necessary are time and space. These categories present us a horizon for which the mind is receptive and match. In mathematics, the Riemann sphere is an accepted theory to describe these conditions for this purpose. So lets take a look.

Section two: the local projection of the mind

Analogy of the Riemann sphere

The Riemann sphere is a model of the extended complex plane.

The plane suffices the condition of space to detect further patterns of the mind.

If we look at the condition of the plane, we search for the postulated self in this mathematical theory. In the Riemann sphere, we call further sphere, there is a starting point formulated. This starting point is $P(0)$. But what about the statement above, man seems to tend to infinite excess? In the sphere we have to add a point at infinity $P(\infty)$ in order to explain behavior of expressions in space.

Is this not what we do in daily life? We want to be the man with power to control not only our life, but also the whole universe? Because we are not able

to determine the universe exactly, because it is infinite, we mark a point. For example, we want to rule a company or country or be a hero for our direct environment. We mark for ourselves a horizon.

Lets take a closer look at the sphere. If we apply the sphere, in other words make it visual, we use stereographic projection. To visualize a sphere, we need to draw the plane from, in my own words, the postulated point. Then, because we are not able to draw this point itself, determine a second point and second plane to fulfill the projection.

The axiom of choice presents a pattern of thinking to select non empty sets, we are focused upon to adapt to. The mind activates two planes in projecting a sphere in visual reality. This is in analogy of stereographic projection, based upon the sphere, what happens. Of course we might say this is a result of mathematical theory, applied as model upon certain complexes. The analogy is based upon the starting point, mathematical axioms indicate thinking patterns we assume to be true.

The mind indicates a thinking pattern not only to draw a sphere with points from the starting point, as we do by stereographic projection, but also in a dynamic way draw a part from another point of view, as if we think reverse. The mathematical theory prescribes the assumption of a second point to complete the picture and translate the reasonable horizon.

Interesting is that this indicates humans are not only thinking in one way, but also are able to think backwards, judging and remembering their starting point.

But it looks like we are not able to reach the starting point. It is a point that is compared with the point of singularity. We have discussed the starting point in previous articles, in 'unit circle' for example.

According to the mathematical sphere, we think back from another plane to construct and finalize the visualization. This point is $P(\infty)$. We give attention to this point, as mentioned in the section about the axiom of choice.

The point $P(\infty)$ involves more information about thinking patterns. Based upon this point we construct a second plane. This plane is dynamic in perspective, because we are able to select a point on the axis, which begins in the starting point $P(0)$. But some lines, as we are able to see in the picture beneath, never reach the plane which was constructed from the starting point. The tangent point $P(\infty)$, plane x, never crosses plane y.

The planes are partly not connected. We have to connect them and we call this a meromorphic function. The poles of a meromorphic function are isolated. Meros means translated from Greek part. The mind splits universal conditions to understand reality. And furthermore, by doing so man is able to understand local condition, but estranges the whole or universal condition. Furthermore, he estranges from the starting point and chooses (possibly arbitrarily) one pole out of infinite choice of poles. He chooses a pole to eliminate removable singularities.

In stereographic projection, the mind presents the following pattern. The starting point has the property of an axiom. The mind thinks non empty mathematical images like an atlas and projects them in space. The mind chooses a pole out of an infinite range of poles. This is mathematical the z-axis of three dimensional space.

The assumption of the second pole in stereographic projection unfolds the way we think. By doing so man splits the drawing from the point of view of the starting point and the drawing from the point of view of the (second) pole and avoids singularity.

This second pole he needs to finish the map or drawing, will in reverse be important to understand the whole picture. So to understand the whole picture, we have to split it in two parts.

Differences in approach of reality

By projection, we are able to approach the complete picture from different points of view. We are in different positions to judge the complex. And then we have a different view upon the forms, for example a torus, dependent of the time space of the projection, torus of revolution or horn torus, et cetera. The mathematical theory explains differences.

This indicates the way we approach reality, make a judgement about reality, what we call truth, is in time and space at least ambigüe. By using an analogy, the Riemann sphere, which is mathematical an important theory, explains why human beings judge things different by the way they project (from the initial starting point in active reason) and choose a point of view (after projection).

Is this a practical issue or only theoretical? If we judge the way we think of positions we take in mind in the nearby future, and past memories of what happened in certain circumstances, this is a very practical issue. We imagine how other man react upon certain behavior or good looking in relations, work,

business, et cetera. We imagine how we might improve life to take another position or find another house or place to live.

Local projection and need for affirmation of judgement of reality

Thinking ignates in the starting point and interprets the local dimension we call the visible world. To understand this dimension we assume another point nearby the starting point. It looks like that in analogy the starting point is the sun whereby the moon is needed to see the whole picture (earth).

The starting point is a focal point. We search for affirmation from another point of view to complete interpretation and understanding before we are able to complete the picture or to confirm if we are right. Apparently we search for support from another point of view to choose and make decisions.

In analogy to this theory, abducted from a mathematical theory, a thinking pattern reveals man is not able to direct his mind from one point of view. He has to reflect on the approach of the focal point to understand and interpret the visual dimension.

Besides, he judges a local dimension. The starting point unfolds a small horizon of the infinite possibilities. Existence is a local and bounded occurrence and never stands on itself, because it is dependent on its surrounding to reflect upon his point of view.

Because of the projection nearby, we focus upon thinking local and visible phenomena. The question why man is not able to avoid (global) greenhouse-effect and war, could be explained by a local and temporary approach, and differences of points of view we mentioned above.

Moreover, it is not only in a thinking pattern of the mind itself, he has to connect and interpret to understand, but in analogy to the thinking pattern and stereographic projection, man interacts with other human beings to determine his position and interpretation. In general man thinks his judgement is right, but in relation to other human being he might be influenced, using another ones opinion to reflect upon his own. Apparently he is able to overrule this opinion but is able to conform to other opinions too. We need to interact about points of views in the physical dimension.

Thinking in reverse: consciousness overflows the local focus of the visible world

Consciousness reaches further than local application by reason. We will explain in this paragraph.

We are able to think the second pole as infinite. We are not focused upon this possibility, because we stick to the visible dimension and non empty collections. If our mind loses itself in infinite (emptiness), we do not reasonably understand our condition.

One step further shows the local space we define, is focused upon and has the property of a sort of glue by the projection of two planes, that marks the 'working field' of the mind in the spatial visible world. The dimensions we do not mark by mind, where the glue we work is not defined, and so not seen and beyond reason, is ignored. We create a horizon by the way we think, the same way our eyes are not able to see what happens after the horizon. Reason induces a comparable and analogous horizon of the mind. The world is far more greater than our eye is able to see. The universe is far more greater than reason is able to reveal.

Above we have stated that the determination of the second pole is limited, because we hold it 'next door' from the starting point, to be able to understand the world in a local condition. We are conscious of the possibility we determine the point in an infinite position. But this extends to a whole universum and is not an infinite position from the starting point. Therefore we imagine the next possibility. We choose one pole out of infinite poles. The possibility of infinite poles, have infinite points on the plane from which the lines are a tangent in perspective of the starting point. Consciousness reaches far more than the patterns of the mind express.

In analogy to the mathematical theory of stereographic projection, thinking patterns focus upon local application of the mind, in addition of our existence. The mind in the property of what we call consciousness is far more reaching and reveals extended dimensions beyond the visible world. In addition to the axiom of choice, the mind focusses or forces us to look at non empty collections, and visible objects are therefore an attractive example. And we belong to the world, because the thinking patterns do press us to focus upon it, choosing, projecting.

A philosophical question then is what we get (in return) if we unfold the local focus? Above we mentioned the postulation of a second pole has the property of seeing in reverse, to complete the picture that was initiated in the starting

point to focus on objects in the visible world. So what happens if we do not project on objects, but on the subject?

The possibility of introspection: the empty horizon to reason

Furthermore, what happens if we approach the starting point itself by reflection, without searching for a judgement in the visible dimension? We call this process of direct reflection upon the focal point, introspection. This way of thinking is far more solitary, because we do not longer reach out for the common visible world.

This is a peculiar approach of the mind, that leads to possibilities to philosophize about the question of the relation of the psyche with infinity and God.

Beyond the starting point of existence, we meet infinity, for we are not directed by thinking patterns towards local projection. This is not a regular way of thinking, because this asks for an approach of reflection which is metaphysical and rare, and not a part of the thinking patterns of axiom of choice and stereographic projection. An approach like this bounces off because the focus upon the starting point is problematic. As we have seen the starting point is in analogy to mathematics a point of singularity. The starting point is unreachable. The knowledge we gather is directed towards an infinite direction and dimension. What does this mean? Maybe the self we postulate, an axiom, is not as important as the direction the thinking patterns press us to think. The bounce off has to do with the non local direction and interpretation of emptiness we actually mentioned in the section about the axiom of choice. We meet a broader consciousness than the local platform our thinking pattern is focused upon. We experience emptiness, because there is an empty horizon we are able to create by projection by active reason, like in the visible dimension. The postulation and reflection upon the starting point and the consequence of meeting infinity are areas of religion and metamathematics. It indicates belief in God is reachable but not an ordinary object in the visible dimension.