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On The Hardness of Perceptions Changing
- An analysis through the example of the counter-inductive approach to the magnetic field

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Abstract: In this essay the problem of perceptions changing is raised, as a complex related to sensations, experiences and theoretical aspects.It is usually the senses that give rise to perceptions, and these as a reference to them are given different concepts through which they become familiar to people in the field and, to some extent, to everyone else.Through various examples it is argued that these concepts based on perceptions, on the one hand, help clear understanding and on the other hand they impede new perceptions in some way, making them extremely difficult, sometimes even traumatic.The main contribution that is intended to be made with this essay is that the counter-inductive approach helps us to break free from this obstacle, enabling us to facilitate perception change, which is illustrated by the magnetic and antimagnetic field.
Keywords:perception, sensation, traumatic experiences, magnetic and antimagnetic field, counter-inductive approach, definition

Introduction: Sensations and the change of their perception

The issue raised in this paper is the problem of changing perceptions towards sensations. Sensations come from the physical world, and perceptions are how we see and understand the sensations, namely those entities we know through the physical world. It is well known that perceptions of what we experience through sensations vary, and as a well-known general argument could be brought about by the increase in the number of real-world entities that man has known throughout history.

When talking about perception, it is impossible to not recall the great philosopher Georg Berkeley, and his famous saying "esseest percipi" (Berkeley, 2002, §3-§4). To be is to be perceived. Yet this, in its semantics, is something familiar and, from a human perspective, it is. Of course, not in an absolute manner as Berkeley believed it. However, much of the knowledge cannot be achieved without being perceived because only then, in some way, does it become existing, as one becomes aware of it, and can discern or identify it.

There are no pure perceptions, that is, pure reality in a sense, by example, as logical positivists believed (Ayer, 1959, pp. 18-19). Many philosophers, such as Hans Hahn with his essay "Logic, Mathematics and Knowledge of Nature, published in 1933 (Ayer, 1959, p. 147), and Moritz Schlick in his essay" On the Foundation of Knowledge "(in Hanfling, 1981, p. 178) claimed that facts, empirical data, exist there, somewhere in nature and are independent since they, as Alfred Ayer wrote in the essay "Verification and Experience" published in 1936-1937, are "sense-data" (Ayer, 1959, p. 229). Many other philosophers have argued against such viewpoint, such as Karl Popper since its publication in 1935*The Logic of Scientific Discovery* (Popper, 2003, p. 21-37), then deepened Thomas S. Kuhn (1970) in his *The Structure of Scientific Revolutions* published in 1962, and extensively discussed Paul Feyerabendi (1993) in *Against Method* published in 1975. From all of them it follows that in order for something to be obviously perceived, it must be theoretically elaborated, converted to a concept, and only then does it create its own identity, so to speak gets the label, its name by which it identifies.

With these in mind, the point here is to ask why it is hard to change perceptions, especially those that have long been known in a certain way and that we are familiar with. It refers to the fact that perceptions are psychosocial events of people to understand and explain the real world, certainly as a means by which the mind then operates intellectually.

This hardness of changing perceptions has been expressed by Thomas S. Kuhn (1970), who takes it as something that with little exercise can be understood, or is conceptually incommensurable, and can be absorbed through everyday practice, but not rationally. The consequences of such change are both psychological and social because they directly affect our beliefs, the way we reflect, and our behaviors that are modified, altered, or complemented, but which do not remain the same.

Thus, it can be said perceptions change the world. In fact, they change our understanding, and we experience this as a change of reality, for which Kuhn said that, after such changes, the scientistslive in another world (Kuhn, 1979, pp. 134-135).

As a consequence, and not to experience this change as traumatic, but to turn it into a normal process, both for the individual, the scientific community, and for society at large, Feyerabend echoed his learning derived from scientific practice termed the counter-inductive approach, convincingly arguing for it as a legitimate and scientific approach, even considering it a cure against dogmatism and inhibiting the progress of science (Abazi, 2019). According to him, the application of counter-induction encourages everyone to look from another perspective, to remove fear of change and to be open to change. Can this be achieved? The answer will be sought through a case: *in changing the perception of magnetic field and its structure*. Magnetic field is well known field and well-established fact, exactly such as Feyerabend suggested to be contested and to see if there could be anything different, any acquaintance other than what we know and perceive today.

1. The magnetic field and their perception

The magnets with opposite poles are attracted, and the region where this attraction occurs is called the magnetic field (NASA, # 2., 2001), whereas the lines of the magnetic field indicate the structure of the magnetic field (NASA, # 5H., 2001).

Such perception of the magnetic field seems obviously to us today, but behind its constitution is a centuries-long history.

Proper research on the magnetic field, as far as written history is concerned, begins in 1269 by the scientist Petrus Peregrinus de Maricourt who also identified it and created an image of the magnetic field (Whittaker, 1910, pp. 7-8). William Gilbert of Colchester, a physicist from London, first discovered and claimed, in a work published in 1600, that the earth is a magnet (Gilbert, 1893, pp. 313-314: Blundell, 2012, pp. 13-21). John Michell, in 1750, discovered that magnetic poles attract and repel (Whittaker, 1910, pp. 54-55), which, 35 years later, experimentally verified Charles-Augustin de Coulumb (Whittaker, 1910, p. 56), in which he added that the north and south poles in the magnets cannot be separated (Whittaker, 1910, p. 59).

Understanding of the magnetic field has been changing, getting closer to reality. Simeon Denis Poisson succeeded in creating the first model of the magnetic field, a model which he presented in a paper delivered at the French Academy in 1824 (Whittaker, 1910, pp. 62-65). André-Marie Ampère explained the attraction due to the current's same directios, and the repel due to the current's opposite direction (Blundell, 2012, p. 31). Franz Ernst Neumann ascertained the magnet vector potential; Lord Kelvin, in 1850, disintegrated the magnetic field even further, distinguishing between two magnetic fields known today as H (the magnetic field strength) and B (the magnet density flux) (Whittaker, 1910, pp. 222-244). James Clerk Maxwell (1861, 1865) went further, explaining but also unifying classical electricity and magnetism in electromagnetism (Maxwell, 1865), which, more than 20 years later, in 1887, experimentally confirmed Heinrich Hertz. Albert Einstein (1920, pp. 74-76) held that the electric fields and magnetic fields are part of the same phenomenon seen from different reference points of view.

From the above summarized exposition, can be seen that from the thirteenth century to the present, the perception has changed along with the increase and expansion of knowledge of the magnet. This long time proves that it is slow and not easy to change perceptions, which goes along with understanding, constituting and confirming concepts in general, as well as magnetic field. For example, Michell's finding in 1750 on the effects of attraction and repelling of the magnet took over three decades (1785) to experimentally verify this phenomenon by de Coulumb, thereby altering the perception of the properties of the magnet. It took eight decades until Poisson first modeled the magnetic field in 1824.

in other words, science has established the knowledge and perception of the magnetic dipole and the magnetic field, which have been experimentally found to flow from the north pole to the south pole, that is, the magnetic field have the direction from N to S and have a certain intensity. B represents the magnetic field while H represents its density.

Since the magnetic field is not static but dynamic, in the sense that it contains motion, modern science presents this through magnetic field lines, in the form of arrows, to indicate the direction of the magnetic field.

2. Visualization of the magnetic field and some questions from the counter-inductive approach

The magnetic field is, in the simplest way, represented by lines, which indicate the movement of the magnetic field in the direction from north to south.

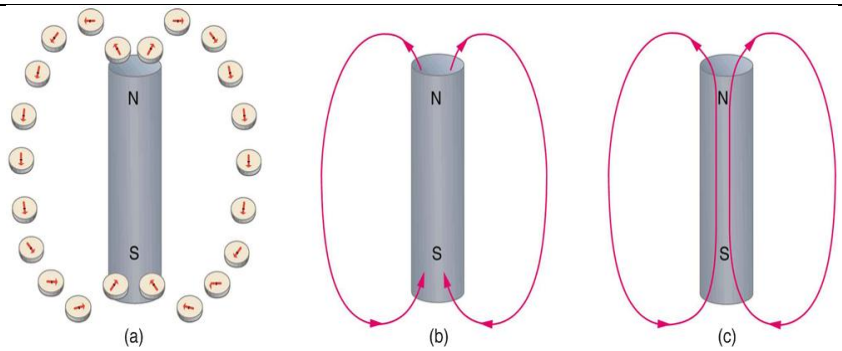

Fig. 1. The line indicates the direction of the magnetic field.

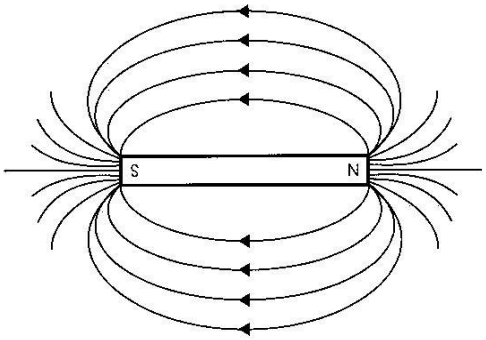

Fig. 2. The lines show the direction of the magnetic field.

From the above illustrations it can be deduced that the magnetic lines, since at their source from the poles, go swelling.

To this perception, considered as a well-established fact by science, the counter-inductive approach would encourage everyone to ask contentious questions that touched on the essence. And that's considered healthy for science because - looking for the answer may be understood something different, more broadly, and perhaps in some other way, from a different prism, in which case science would benefit because it would enrich knowledge. If nothing new is learned, then our conviction is reinforced and its compliance with reality is re-argued.

Therefore, starting with the counter-inductive approach, anyone who would like to know something more, would ask why the magnetic field lines are appeared*exactly* as in the examples above, also why they go swelling?

The implication of the above question is why do those lines not flow from one pole to another in a straight, non-swollen manner? Namely, what makes them behave that way? Is our perception correct, well-matched with the reality of the magnetic field?

If yes, why do the magnetic field on all sides of the magnet appear swollen, taking on a loopshape? What drives it to do that behavior, to be like that?

Such a portray, according to the above illustrations and which,in almost all visualizations,appear in that form, expresses the belief of how the magnetic field look like, how it is in reality, alsoit look so,and it is so. This is the scientific perception today.

Philosophically, the answer can fluctuate between the two views. The older view is that of Parmenides, who had the courage to go against everyone saying "the world we perceive through the senses is unreal" because reality is, and should be, in strict unity and change is impossible (Guthrie, 1965, pp. 4-5), since being is one, that is, there is no space, no vacuum. The other alternative view, that of the ancient Greek atomists (Aristotle, 1984, pp. 1163-1170), accepted even by modern science, is that there is space, that is, the vacuum, that is, space without any body or type of matter within it (for example, the belief in the expansion of the universe, the movement of galaxies as well as that of the sun and the bodies of the solar system).

In the theoretical plane, each of above answers can find supporting arguments. But no one of them deprives the right to reflect and ask questions, however they may seem to deviate from philosophical as well as scientific concepts.

Portraying the magnetic field as swollen, somehow makes you think that something must exist inside the magnetic fields, something that causes it to swell. What causeor action it can be that make the magnetic field to look swollenso as we perceive it and express it visually?

One such question I asked to a physics teacher when I was in the eighth grade of elementary school when he drew a magnet on a blackboard and the magnetic field arrows. The teacher asked me why I thought there must be something more to what science says? I simply answered, as far as we have learned that there is a cause ofeverything, it made me wonder why the magnetic field appear swollen. I used to say that the magnetic field reminded me of a balloon, which takes a round shape when we blow it, so it takes that swollen shape from the pressure of our breath. (I would also like to mention the stomach swelling of a pregnant woman we had just learned from biology, to saythat as the embryo grows, the belly swellsand the cause of its swelling was embryo growth - but I was ashamed, and I didn't mention this argument at all.) I was expecting the teacher to give me some explanation (such as because of density, intensity, or certain strength etc.), instead he looked at me with disdain saying that science does not deal with such banal questions. I shut my mouth, constrained by the obligation of teacher authority and my ignorance, but in myself I was unhappy because I did not receive anyanswer. Maybe, and certainly, I didn't know how to articulate myselfat that time, and I might not even know exactly what I wanted to know; it was simply a teenager's curiosity, perhaps even expressed in a confused and ambiguous way.

I believed that I had thrown that case out of my memory, and for years it had remained trapped in some folder of my consciousness, as a silent but not forgotten curiosity. One day, unexpectedly, out of a curiosity-driven reading, I came across something that immediately made sense to me, prompting me to read it and not to believe my eyes. It was the answer to the question I had asked my physics teacher many years ago, but it came from a completely different person, one I had never contact with (before reading his postulation in the newspaper that made me astonished).

3. The shock and trauma of the sensation of an unknown reality

Changing perceptions is usually a complex process, on the one hand for the fear of being a wraith, and on the other hand, if something is claimed that others cannot grasp, it can lead to crazy, bonkers etiquette.

Beyond that, there are sensations, when they are new and unfamiliar, that give rise to perceptions that arouse self-doubt, even to a well-trained person like a field scientist. “What am I seeing? Is it illusion or true? May or may not be what I'm seeing?”these and similar questions point to the psychological warfare within the scientist, a war related to the concepts he operates on, who do not recognize the sensation experienced or rule out such a possibility. Karl Popper (in Lakatos & Musgrave, 1979, p. 56) has termed this limitation as being "imprisoned within the framework of our theories", that is, a kind of conceptual prison.

These dilemmas and difficulties of different perception have been investigated since Plato who has described them very meaningfully in what is known as the cave metaphor (Plato, 1997, pp. 1132-1135). His description clearly expresses the psychosocial trauma of perceiving an unknown reality. For the cavemen, the inhabitants who hypothetically lived only inside the cave, whom all the time weer chained and could only look at the cave wall where they saw their shadows from the light of a fire behind them. To them, the reality was what they saw - their shadows by the light of fire behind them. Plato, through Socrates, says: they "in every way believe that truth is nothing but shadows" (Plato, 1997, p. 1133) that they have seen repeatedly. How narrow and deficient such a reality is, though people believe it as a single reality, is expressed by the event when one of them sees a different reality. One of the cavemencomes out of the cave and sees the light of day, the true light, but he feels no fun at all, on the contrary, he has unpleasant experiences, pain in his eyes, that takes time to adapt to the new reality. However, it turns out that one has the capacity to learn and see reality in a different way, creating new concepts compatible with the new sensation and related perceptions. But what about the others who continue to be in the reality of the cave? They are intellectually captives of that limited reality. And they will not realize that there is another reality. Even if caveman who saw the different reality returned to the other cavemen and told them his discovery, the new reality not only would they not believe, but he would be misunderstood in its entirely, considered flawed and misleading, so that if they could –they would deprive him of life.

While this is a very old example of how hard it is to change perceptions (based on believe and sesations), there are also many examples from science itself that show the same thing. Wasn't Giordano Bruno burned in a tree stump for claiming that the earth revolves around the sun, when the science of the day claimed otherwise? This extremely case seems to prove Plato's assertion about the people of the cave.

One other example is that of Röntgen (Waters, 2011) Wilhelm Conrad Röntgen accidentally discovered the X-rays, now known by his name. But it took him weeks of lab work to convince himself that he had realized something new, unknown, that he had not been bullied, and to establish his discovery as fact.

An such example is pointed about by Feyerabend (1993, pp. 88-89) to an interesting case for the Galilean telescope. Galilei invited dozens of eminent personalities of science to demonstrate to them how through the telescope one could see the moon, many times larger, and even discern its configuration. Some scientists refused to look through the telescope because of prejudice and fear:not only did they not believe, but they did not even have the courage to see something different, a different reality. For, the shaking of the concepts through which they operated would cause a psychological instability, a confrontation with a different and completely otherwise reality, alluded to overturning the existing vision of geocentrism. It was the fear of new reality that changed the world itself and the pervasive perception of humanity.

4. Psychological refusal and social non-acceptance of the new perception

The following is an illustrative case: the experience of physicist NaimKrasniqi with above both objections.

In a correspondence (September 2019), he tells his tremendous dismay when he first experienced the sensation of the phenomenon unknown to him and everyone other until the day, he saw it. In his workshop, he accidentally threw, or it accidentally dropped from the plank to the wall where it hung, a key No 22 on one magnetic pole and had seen the iron dust moving away from the magnet, something physics science does not know. Afraid that he was tired or out of wits, he quits the workshop and for a few days did not get the courage to return because of the psychological unwillingness to face the "visual slip". However, after a few days he get the courage and goes, but not alone - goes with the most faithful person who would not in any way talk about if it was the worst, i.e. a crazy case. When the same reaction of iron dust that went awayfrom the magnet happens again, he asks the person present to look if the dust is going away. After receiving the decisive confirmation with "yes", that it happens exactly so, then the physicist gains the certainty that he really did see the iron dust pushed awayfrom the magnet and it was not his wits. So traumatic for the physicist Krasniqi was his sensation, since it was a perception unrecognized by science and in some way contrary to all that physics taught that the magnet attracts iron dust, which he embodied in his scientific consciousness.

Next, it was just as hard. When, by experimenting dozens of times, ascertained the repeated reaction, i.e. the existence of the unknown phenomenon, he formulated it theoretically and told how everyone could test it. Surprisingly, no one understood it. Nobody trusted him. And the publication was denied until recently. As he puts it, the doors were locked everywhere, and in vain he was exhausted and almost raised the white flag – although he has strong empirical support, convincing him that he has discovered a reality still unknown and that he is able to demonstrate it experimentally.

5. Antimagnetic field – a new realityand a new perception

The different reality that physicist NaimKrasniqi perceived is related to the magnetic field. This is where his scientific discovery lies: in a field that science believes to know well enough, but has yet to learn more, exactly where knowledge seems to be stable.

This is reminiscent of the Socratic approach to Plato's early works. What distinguished Socrates was the fact that he did not take anything for granted, because he wanted acquaintance to be achieved through analysis. So, even for the simplest of cases, when anyone would say that something is so and so, he would say: Maybe it is, but let us investigate it. Socrates hold the same path of thinking even in the last moments of his life in the *Crito* dialogue (Plato, 1997, p. 41): talking about the death if it is good or bad, he said let us investigate it. And the investigation, even if it did not come to any new knowledge, such as, say, the *Gorgias* dialogue (Plato, 1997, pp. 791-869), meaning any new discovery or anything that had stayed hidden, it at least revealed that there is something different than what it seems and is believed.What the interlocutor often experiences is a shock, a traumatic state, when one no longer knows what he knows or does not know, such as in the *Meno* dialogue (Plato, 1997, pp. 870-897), since often that he has known and believed he knows turns out not to be so, that there are deficiencies or even it is not at all so.

New knowledge, in addition to be a difficult process to achieve, is challenging first for the connoisseur himself and then for others because, unintentionally, it conflicts with a part of reality, with concepts and with certain structures of the scientific community.

As stated above, through modern science we are taught to perceive magnetic field by a certain standard. Specifically, by conceptualizing magnetic field as unique, in the sense that it is a whole and that there is nothing else unknown within it. This is exactly what NaimKrasniqi has seen differently,that this (magnetic) field is neither unique nor it is the same as it isperceived and explained today.

His discovery, though by accidental observation, is about penetrating the inside of the magnetic field. And right here, he sees something that no one before him has seen; something that changes the structure of the magnetic field and the scientific perceptions for it.

But what, the physicists NaimKrasniqi, has seen inside the magnetic field?

He distinguished afield within a field. Something that exists and manifests itself. (I remembered the metaphor of a pregnant woman: on the outside nothing is seen, but on the inside is a growing embryo, and the more it grows the belly grows swollen. The balloon example is analogue.)

This perception and the corresponding concept should help perceive one field within another field, though this may seem illogical and impossible. But the arguments brought by the physicist NaimKrasniqi are compelling. Let's take a quick look at them.

The field that is created within the magnetic field is not created by chance nor by itself. It must be fulfilled some conditions that it can be created, exist and manifest itself.

Specifically, physicist NaimKrasniqi claims that if an iron piece is placed above the magnetic poles (which is laid on the other iron piece), then and only then within the magnetic field is createdanother field that is opposite to it. As the magnetic field has the capacity to attract e.g. iron dust to the magnet, the field inside it has the opposite tendency - to push awayiron dust from the magnet. The difference between the new unknown field until nowadays and the well-known magnetic field lies in the fact that, although the direction of the magnet is the same, the direction of both fieldsis opposite and the intensity varies, and it is precisely this inner field that causes the magnetic field to swell, hindering the pulling effect and making things stay in certain distance. Precisely because of this adverse effect, physicist NaimKrasniqi (2019) has called it *the antimagnetic field*. Characteristic of the antimagnetic field is that it only appearsinside of the magnetic field, and this is its necessary condition.

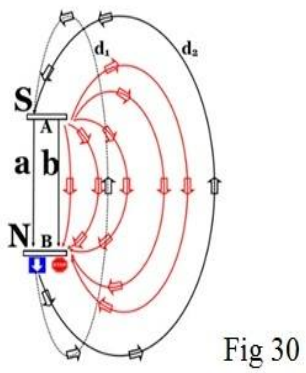

Fig. 3 Black lines indicate direction of the magnetic field, while red lines indicate opposite direction of the antimagnetic field.

How, then, can this antimagnetic field be defined, so that it can be semantically and empirically distinguished from the magnetic field, and so we can learn to perceive it as a new and existing reality?

6. Definition of the antimagnetic field

The physicist NaimKrasniqi have discovered a field completely unknown nowadays to science, a field within another field: a field within magnetic field, which cannot be the same as the magnetic field because then it would be the same field and not the separate field.

That is where the essence of the difference lies. Speaking of the magnetic field and the antimagnetic field, we are talking about two opposing magnetic fields that are in the same specific space. The antimagnetic field isa field inside the magnetic field pushing the magnetic field as far as it can (by capacity), blowing it inward, swelling it.

The meaning of the latter, that is, of the antimagnetic field, in fact, is that it is a field counter to the magnet field, but not in the front of, up, sideways or down this field: it isinside it. This means that the magnetic field contain within itselfthe field opposite to itself. Since it has an opposite effect to that of the magnetic field, then the term "antimagnetic field" traces the opposite nature of the magnetic field: as long as the magnetic field isthe attractive field, pushing or pulling away are the action of the antimagnetic field.

In other words, there are, respectively, created another field within the magnetic field, afield which iscounter to the magnetic field, that resists it and makes it has a deterrent effect on what the magnetic field draw close toitself. It does not do this from the outside, from the bottom, from the top or from the side, but from

inside the magnetic field. And being counter to the magnetic character, it is antimagnetic one. Thus, this new field, semantically, may be defined as follows:
1) The new field is created, then and only then when it is created, within the existing magnetic field.
2) This new field, though created inside another field, isa separated field.
3) This new field is not the same as the field inside which it is created.
4) The new field, created inside the magnetic field, is different from the magnetic field.
5) Otherwise, if it wasn't a separate and a different field - it wouldn't be a field at all.
6) In this sense, the new field created within the existing magnetic field has the features of the field counter to the field inside which it is created.
7) The new field created inside the magnetic field counteracts the existing magnetic field within which it is created.
8) The character of this new field follows to be twofold: it is both a separate field although it is created insidethe otherexisting magnetic field, and itiscounter to it and counteracts with it.
9) More precisely, the new field has properties counter to the magnetic field inside which it is created.
10) Specifically, since the magnetic field has attractive properties to the magnet, the field created within the magnetic field has opposite properties, that is, it has removal properties from the magnet.
11) It follows that, being the existing field known the magnetic field, the new field created inside it, having the opposite property - isthe antimagnetic field.
12) In order to be such, the antimagnetic field, which is created inside the magnetic field, have field lines onthe opposite directionand different intensities to the magnetic field.
13) Therefore, this new field inside the magnetic field is, and is defined by physicist NaimKrasniqi, *the antimagnetic field*.
14) The antimagnetic field can only be created insidethe magnetic field.
15) Without the magnetic field, there is not and cannot be the antimagnetic field.
By this definition, and its semantics, we mustlearn to perceive the antimagnetic field as a new phenomenon. Acknowledging this phenomenon will help us to get to know the reality better, and it will also make us understand other things different from what we have done to date.

Ending

From all that has been written up until now it can be affirm that the example of the magnetic field, taken to contest the current perception of science, is a challenge both to believe and to know, which reveals a dimension of the hardness of change of the perceptions.The example of this elaboration only confirms the above-mentionedKarl Popper's assertion that scientists are always imprisoned in a conceptual framework, which I would call a kind of intellectual blindness that prevents from seeing a different reality, perceiving what can be demonstrated. Overcoming this intellectual blindness can be done by calibrating diopter, including the new experienced in the perception.

All this only proves that being derived from the sensation, perceptions, though changeable, are not at all easy but very hard to be changed. They can often bring their experiencer to a degree of madness, or at least of such an experience. Psychologists need to pay more attention to this hardness in order to understand the mechanism of action so that the new perceptions, after going through the phases of examination and observation, to be taken as a normal experience, indicating the conditions and circumstances of how to provide new perceptions, to supply or equip new concepts, to become an integral part of changed reality.Research in this area, deepening understanding and explaining new phenomena, would also create a social tolerance and kindness towards alternative approaches to what Paul Feyerabend (1993; 1978)strongly advocated, so as to be taken as an intellectual asset to acquaintance the reality differently and to show understanding, but in any case, in the end, it must be decided on the basis of empirical data.

In this context, the assumption of the existence of the antimagnetic field insidethe magnetic field should not be rejected a priori, but it should be taken into account, because this perception, if it is supported and insofar as it is supported, could change our understanding of reality, perhaps penetrating into depths and natures that are not yet known. If this turns out to be true, which is convincingly postulated by physicist NaimKrasniqi, science benefits greatly because it knows a deeper and better part of reality that it has not known to date.

In the end, I would like to underline that before saying the last word, it should be given opportunities for experiments to have their say on the existence of the antimagnetic field, and thus to ascertain whether the sensation was compatible with reality, and the perception is its proper reflection.

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Sources of illustrations

[26]. Fig 1 is taken fromhttps://courses.lumenlearning.com/physics/chapter/22-3-magnetic-fields-and-magnetic-field-lines/
[27]. Fig 2 is taken fromhttp://ffden-2.phys.uaf.edu/webproj/212_spring_2017/Ross_Boling/boling_ross/Magnetic%20Fields.html
[28]. Fig 3 is taken from Krasniqi, N. 2019. "Clarification of the antimagnetic field". Published in "Epoka e re" (New epoch), daily newspaper. July 24, 2019, Pristine, Kosovo.

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