

Identity and change of scales.

Or

On the problem of unity and diversity

abstract: In this paper we will use the concept of identity as an opportunity to attempt to create a philosophical system in which atoms (etymologically speaking) do not exist without all the inconsistency that it could imply. In that process we will show that the concept of unity is a category of the understanding and we will explain its origins. Giving at the same time a way to solve the problem of unity and diversity. Doing that we will start to draw the limits of human understanding, an approximation of it that is.

In some cities of Asia, there is so much pollution that the inhabitants have to wear anti-pollution masks like those of a surgeon.

That anecdote highlights at the same time the impact of Man on nature and the impact of nature on Man, in short the indirect and unintended impact of Man on Man possible through the progress of technology and hard science.

If we are only at the beginning of this kind of progress this doesn't give us a good omen for the future.

The relationship between Man and Non-Man is similar to the one of a hand and a body, without the body the hand starts to decompose.

We can say that the hand is part of the identity of the body.

In the same way Man is part of the identity of something that is beyond him.

And if prevention is better than cure, it is better to think identity at a scale that is beyond than to have to cure the injury that we do to ourselves.

So shall we think on the subject « Identity and change of scales ».

Identity comes from the Latin *Identitas*, from *idem* that means « the same », so we will define identity as what makes it that two or more things are actually one same thing.

It relates to a relationship of interdependence and to substance, therefore if we change our hair color our identity from before and after the color change stays the same and if a part of our identity is destroyed it will necessarily affect us.

The identical in the other hand is not the same thing, it relates itself to a relationship that is not necessarily interdependent, and is to be related to accident.

And so destroying the copy of the Mona Lisa won't necessarily affect the original, and a chicken and that chicken imagined are identical even if the substance of the two are different one being from the thing substance the other being from

matter substance.

The word « scale » refer to a convention that allow the representation of a measurement for example one square equal five minutes, or one centimeter equal one kilometer.

Therefor a change in scale correspond to a modification of the convention and following that to a change of the size of what is represent or the change of what is represent itself.

In the case of identity the change of scale means to go from a set of concept that form an identity to another set of concept that form a bigger identity, an identity at a bigger scale.

So we go from personal identity to national identity to human identity and so on. In that process there are two movements that occur, from one side the more we accept concept in the identity formation the more the nature of those concept differ from one another, there is more things that distinguish the furniture from one another than things that distinguish the tables from one another.

The second movement is in the center of the process the more concept that form an identity and the less there are things that link them together and make it so that they are « the same » thing, there are more things in common between all the tables than things in common between all the furnitures.

So we have two words that oppose one another. « the same » and « distinct » after the observation of the process of formation of identity at bigger scales we can ask ourselves: « How can a plurality that admit so much elements that differ from one another form one? ».

To this new scale a distinction have to be done, we can not solve this problem as we usefully do in smaller scales.

It's not about thinking a man, a group of men or Man it's about thinking at supra-Man scales.

We can't therefor go with our usual solutions that more or so consist of giving to Man the place of linker, since we're outside of Man.

We could here take for exemple Locke using the consciousness of an individual in a try to delimitate the personal identity, he so wrote in "**Essay Concerning Human Understanding** » Book 2 chapter 27 called «of identity and diversity » paragraph 9:

« The sameness of a rational being: and as far as this consciousness can be extended backwards to any past action or thought, so far reaches the identity of that person; it is the same self now it was then; and it is by the same self with this present one that now reflects on it, that that action was done. ».

Or another, the exemple of the people that in order to form an identity always have to at least see themselves as the same population.

To go back to the problematic its implication are political since it's about defining the national identity.

Legal since it would be unfair to condemn a man if that man is not the same man that committed the crime.

Ontological since it s about things as they are what they are.

Metaphysical since it s about a positive ontology that is to say ontology that claim to study and get knowledges about objects as they are in themselves contrarily

for example to the ontology of Kant and so going beyond phenomenon, beyond what we're used to call nature in the everyday language.

And physical since the answer will determine our conception of unity and plurality which then will orientate our physical search field about the infinitely small and the infinitely big and so on.

To answer this problematic we will firstly see in what the conception of unity is not applicable to the physical world as such, secondly we will see how the concepts (or categories) of unity and other concept at the same occasion have another « vocation » that searching for Truth.

And we will then proceed to answer our problematic.

The unity is a concept that comes from the mind, nothing that is in the pure physical world is indivisible, the unity is always divisible in the context of the physical world, dividable into a plurality.

By unity and plurality we here mean those words in their daily use, meaning we might make precision on later if absolutely necessary.

In order to demonstrate this, we will start from the idea that the physical world, that we also call nature is understandable and knowable by the bias of mathematics and geometry.

This presupposition is the same one that Galileo does, quoting:

«Philosophy [i.e. natural philosophy] is written in this grand book — I mean the Universe — which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometrical figures, without which it is humanly impossible to understand a single word of it » from « **The assayer** » as translated by Stillman Drake (1957), Discoveries and Opinions of Galileo pp. 237-8.

In that quote Galileo makes a metaphor, and so nature is comparable to a book and to understand this book we need to learn the language by which it is written, mathematics and geometry constitute the only way humanly viable to understand nature.

By nature Galileo here means that that is in space and time same as our definition, synonymous for us at least of physical world hence precisely the fact that he talks of the universe.

So, that that is inside of space and time is comprehensible by the means of geometry and mathematics, to hear by that that fundamentally what is inside of space and time is translatable in the superpositions of geometrical figure in a three dimensional plan.

However in mathematics and in geometry it is possible to divide a number or a line/line segment an infinite number of times while at the same time make it so

that they stay what they are that is to say numbers, line, line segment. So what is in the physical world is also dividable an infinite number of time, following that all that is inside the physical world and is said to constitute an unity is constitute from a plurality of the same thing or of something else, in this circumstance the unity is always a plurality.

To this, we could object that in geometry exist the point which is indivisible and following that there exist its equivalent in the physical world that from a etymological point of view we can call atom which shall not be confused with atoms in physics.

We could also object with the fact that we can for exemple take a glass of water and throw it on the ground, it will destroy and there won't be the glass of water anymore as such and consequently to that we can say that it was not infinitely dividable and in nature since inside of space and time.

Finally we could object that if nature had no beginning and that there is not in nature anything such as an element that is indestructible and on the same occasion indivisible then « by the time » there would be no more matter. Regarding the first objection, the point that we usually define in geometry as the smalls element that constitute a geometrical space have in that regard no surface, and by extension a line, a line segment and a curve allegedly no thickness.

It is clear that we can not imagine them without surface or thickness, if it go beyond the power of our imagination it follow that their existence as such is not demonstrable from a geometrical point of view.

the point's existence is therefor only a supposition with a practical goal and the coordinate are there as a way to locate it precisely in an abstract way that is to say without drawing it and so without giving a surface.

As for the second objection, the glass of water objection, that is to say the fact that it is not infinitely dividable in the sense that if we divide it it will cease to exist as such.

What we usually call glass or tree or table is in reality a certain disposition of matter that we separate from other dispositions, this disposition of matter we call it table, and if matter doesn't have this disposition we categorize it as non-table and don't we need the act of thought and reflexion in order to establish those separation of disposition?

When we break a glass of water we only change the disposition of its matter its not the same disposition anymore.

To sum it up a disposition isn't on the same order as the physical world that is to say something in space and time, a disposition designate here a certain layout of things that we associate to what is inside of space and time and not something in space and time.

Another way to say what a layout is is a way something is putted in space or oriented in space.

To go more into details, the way something is oriented in space depends on the point of view, of what we could call the frame of reference.

For exemple let's take an empty space in which there is a hammer, let's not put two man in it.

The first man view the hammer upside down, the second man view it upright. But the hammer in itself independently of those two viewer doesn't have an orientation in space.

So orientation in space is always depending on a frame of reference, and our own body because it is always with us can always serve as a frame of reference. Which is the reason why the orientation of an object in space seem to be something that exist only because of space, while it's actually not.

The orientation in space is therefor a relationship that a frame of reference have with an object in space.

A relationship in itself isn't something inside of space, since it depend on the frame of reference.

We need some mental operation in order to calculate the orientation of an object according to the frame of reference.

As for how something is putted in space which gives it its form in space (the form of a cross or a stick etc), mental operations are also required.

Because the way how something is putted in space is just the set of positions its parts have in space.

Position which can never be absolutely determined here because matter is always dividable as we claim it.

In order to have a position in an empty space we need a frame of reference.

We need one since an object in order to be in front, or behind etc need an object which it is in front of, behind etc to refer to.

Without it the concepts we use to situate the object, to give its position would just have no meaning.

Even if we try imagining ourself inside that empty space, all we will do is use the position we're imagining ourself into as the frame of reference, to give to the object a position.

This position we're imagining ourself into is completely arbitrary so would be the position of the object in relationship with the position we chosen.

We might also try to imagine some limits to that empty space, and use it to give a position to the object.

But it is still using a frame of reference in order to give the object a position, the frame of reference would then be the limits of that space.

If we consider that the empty space had no limits and thus was infinite.

Then since we can say that the center is everywhere, and also say that it is nowhere.

The concept of position would be meaningless.

If someone said that an object is center in the of that space there would be on information regarding the location of that object.

While still not imagining ourself in that infinite empty space and viewing the object from the « point » of view of our body, since it's getting ourself as a frame of reference.

This is something that is very hard to conceive.

We can not use our imagination to help us, and we have to go beyond our habit of always having an object that can be used as a frame of reference, whether it is our body or something else.

Which is something we automatically do, we do not do it willingly when we use something as frame of reference.

When we see an object we assume it have one objective position because we always have something as frame of reference, we do not assume it is because of the frame of reference.

Therefor a disposition is not directly linked to space, it is also a relationship between the frame of reference and that object.

Which so also need a mental operation in order to exist, it is not something spatial.

The glass of water and all those other objects are therefor in the field of ideas, in other words it is in our head.

The stakes of this thesis here are epistemological, metaphysical and ontological like the problematic and presuppose the same thing as what was written up that is to say the link between mathematics geometry and nature.

As a corollaire to this we can add that the concept or category of plurality as we consider it as a set of indivisible unity is also coming from the mind.

We will say coming from the mind because if they can not be from the physical world as demonstrated it follow that they come from elsewhere and the mind seems to be the less expensive hypothesis in terms of epistemology.

It is necessary to specify what we here mean by mind, by mind we here mean that thing that produce thoughts.

As such we can not doubt it's existence, the brain in the other hand if we do not include « that that produce thoughts » into it's definition and if the fact it is a physical object is necessarily included directly or indirectly in it's definition, then it's existence is subject to doubt.

Following that all we can say is that considering Aristotle's principle of non-contradiction which was: « It is impossible for the same thing to belong and not to belong at the same time to the same thing and in the same respect" (with the appropriate qualifications) (**Metaphysics** IV 3 1005b19–20).

The mind being undoubtable and the brain being doubtable they can not be the same thing but at best two distinguish aspects of the same thing whether one of the aspect is the thing in itself or not.

For the last objection, the one about matter being fully destroyed « by then » if there was no beginning to nature.

We could say that if we define destruction by the fact that something (here matter) becomes nothing then we shall deny actual destruction.

Because if matter is dividable, then for it to be destroyed it need all the parts which it can divide into to be destroyed.

Or else it would not become literally nothing, that is to say it would not be destroyed.

However, if those divided parts are also dividable and so on then destruction would be impossible.

Destruction is only possible if and only if there is indivisible parts, atoms etymologically speaking.

This objection claiming the existence of atoms presuppose the existence of atoms in order for the objection to be valid, more specifically in order for

destruction to be possible.

Therefore this objection can not be taken into account from a logical perspective, we can not object using something that presuppose the negation of what we are objecting against.

If by experience there is destruction it is only in appearance.

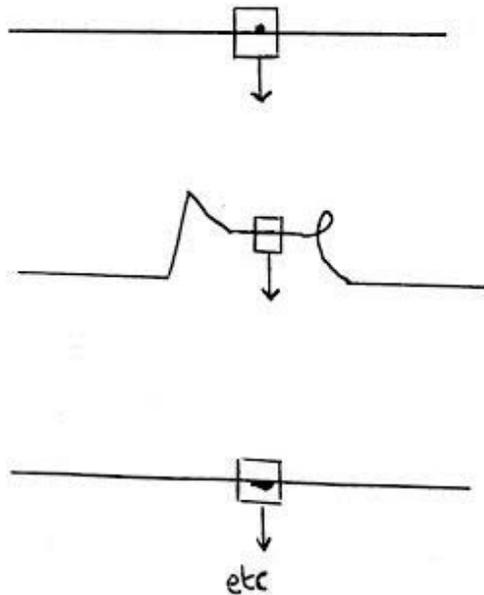
The change of disposition of matter sometime can occur.

In such a way that the new disposition is not visible with our human eyes, and even with instruments that allow us to view matter more closely.

Because it was divided in pieces that were so small that we can not see them with bare eyes or with those instruments.

One question is then to be asked, how did those categories come into our mind? they allow us to experience the physical objects as we see them naturally, the fact that we see a table or chairs but those categories or concepts as we saw it can not come from nature, and so we ask this question.

The effects of division on matter



Legend:

□ ↓ Zoom and division

- (A) one known disposition of matter
- ~ (B) one newly discovered disposition of matter
- (C) one possibly unknown disposition of matter

- The line represent matter, it's direction and form represent it's disposition in space.

- After division A becomes B, and B becomes C.

- A line can be divided an infinite amount of time.

The categories of unity and plurality have a practical « vocation » and do not have pertinency at the physical field strictly speaking.

We will start with two presuppositions, firstly in the world of living things the organism that have predisposition to survive, tend to survive in long term, secondly when organism reproduce themselves they transmit to their « production » a certain number of their capacity and physical characteristic. The first presupposition justify itself by the use of logic, a predisposition that exist a priori allow in principle what it predispose to, except special cases those who do not have predisposition to survive are « without protection » and in long term they end up perishing.

The second presupposition justify itself by observation itself, we rarely saw a dog giving birth to cats, and on humans this presupposition is as visible, people with a certain phenotype rarely have kids with completely different phenotype.

If some of those predisposition to survive are transmitted to future generations it follows that in long terms what at the start were only predispositions to survive with a low presence rate on organisms will be more and more present on the future generations.

However our capacity to identify things by the categories of unity and plurality is without doubt very practical.

Without it we would be unable to survive, those categories allow a primitive measure of the qualities of things, how to determine things as simple as the quantities of food we need to survive and so on?

Going in that way we can read in Bergson's philosophy for exemple:

«Intelligence, in its natural state, aims at a practically useful end. When it substitutes for movement immobilizes put together, it does not pretend to reconstitute the movement such as it actually is ; it merely replaces it with a practical equivalent. » from « **creative evolution** », Part 2, the function of the intellect page 163-164, Macmillan and co, translated by Arthur Mitchell.

In that quote, Bergson explain that intelligence was maintain in the living world and more precisely on us human not because of its precision as a tool that allow us to access truth but because it allowed us a simplification, an approximation of things, here of the movement making surviving easier.

Truth and reality in all of their complexity are most certainly less useful for survival that an approximation of them would be, or at least an approximation would be less hard to obtain and as much useful, therefor it is the tools allowing us this approximation that had a tendency to stay in time.

Intelligence that we can define here as set of mental capacity to make and do things, include the capacity to use the category of unity and of plurality and so those one stayed in us thanks to their capacity to simplify reality it's from there that they come from.

To this we could object that if this capacity was as useful as this then time would "have made it appear » in all the living things however it seem that the simplest organism do not have them and so this theory can't hold itself.

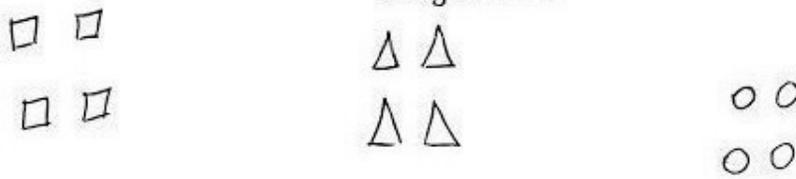
To this we can reply that firstly we can not judge of the work of time as this, since the absence of the work of time doesn't necessarily mean that time isn't doing it's work, we are « in time » also always in time's process ,time could as well not have finished nor started it's work.

Secondly, due to the difference between organism themselves it is in fact possible that some capacities aren't useful for some organism for survival, a dog rarely have the need of a fish fin.

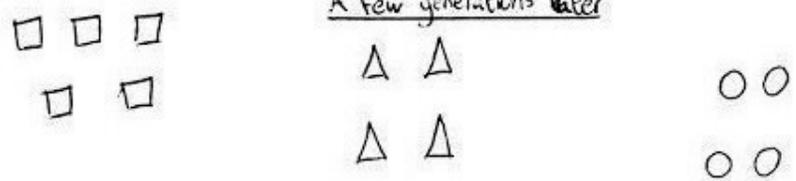
The stakes of this thesis are methodological since it's about determining the tools that aren't of use for the search of truth.

Development on several generations of the predisposition to survive of organisms

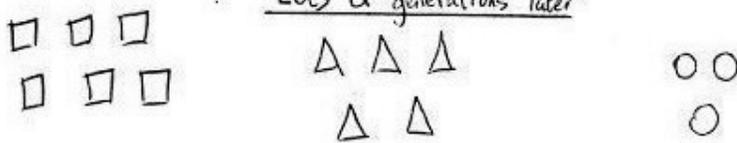
1st generation



A few generations later



Lots of generations later



Legend:

- Organisms with capacities and physical characteristics giving them predispositions to survive
- △ Organisms with capacities and physical characteristics giving them some predispositions to survive
- Organisms without predispositions to survive

- The environment might change what is considered a predisposition to survive

- Organisms intelligence and ways of perceiving reality are also capacities.

- This is not representative

One could notice that we are doing a logical fallacy since we're using the categories of unity and probably some other too, stating or presupposing the existence of for example « one » organism to justify the foundation of those categories in the mind.

That is in fact true however those categories are deeply implanted in us and as so it is very hard to think and reflect without sooner or later using those categories.

Explaining the choice of not using biological knowledge in our path to explain the origins of those categories/concepts, using it would just mean using more of that category/concept of unity.

Because, specially nowadays one scientific theory is always implying some other theories in order for them to even be considered as possible, making them use even more of the category/concept of unity.

Thus would just make the explanation even more non-sense that it is.

Non-sense not viewed pejoratively here since we're rubbing ourselves on some humans limit while being ourself human, the limit of our understanding and so to get into non-sense just a little bit is actually prove of some achievement.

Drawing our own limit without ever going beyond them sure is a difficult task for imperfect being like us.

Drawing them perfectly would be amazing for sure but going beyond them and into non-sense just a bit is already a good step to it.

Also using the mind as a way to explain the origin of nature as we conceive it, that is to say with objects is giving relevance to the mind and so putting more importance to the mind-body problems.

Mind-body problem which we transformed into the Mind-matter problem since the body is also a certain disposition of matter.

That problem is not our concern here so we won't go into it.

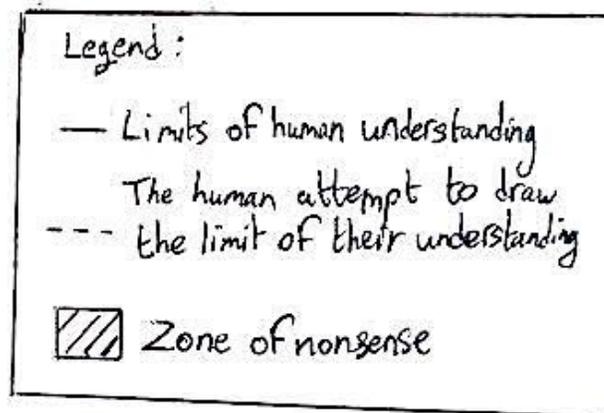
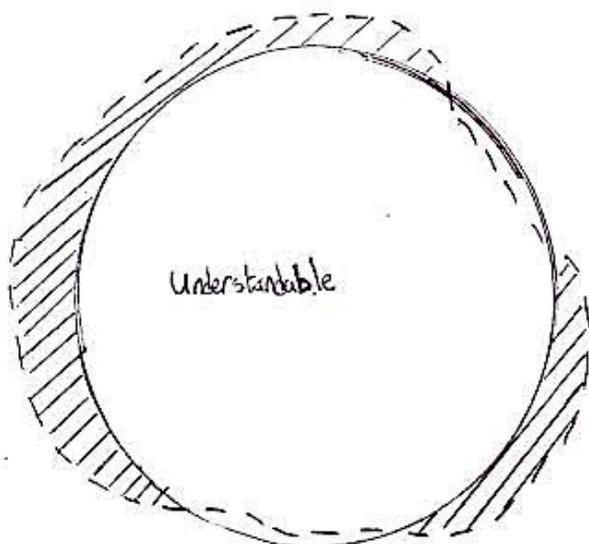
All we could suggest is that continuing to draw the limits of our understanding might solve, or help to solve the problems.

By changing our ideas of what is nature without us.

Therefor we have putted limits on what we can use those two categories on with relevance, now with that amount of information we shall make a synthesis.

The human attempt to draw the limit of their understanding

nonsense



So as a conclusion, to answer our problematic: « How can a plurality that admit so much element that differ from one another form one? » to answer this we presupposed that the world of nature was fundamentally studiable by mathematics and geometry using that we conclude in the inexistence of any unity in nature because we can always divide a line/line segment or number, secondly we shown that those categories are useful on the field of ideas, have a vocation of practicality and were useful by the fact it helped to survive which was the reason why it stayed with the living things.

So those categories are useful on the field of ideas, have a vocation for practicality and so when we speak of identity in that regard have relevance, unity exist, can be constitute plurality or be « simple » on the field of ideas, on the field of nature as such they are irrelevant.

It is only in those cases in which we are in the field of ideas that we can think of supra-humans identities.

The question of unity and its relation with plurality is a metaphysical question of ancient time.

In which a lot of response were given and a lot of ways to dissolve the question. Which can be by using transcendental philosophies, including the one of Kant or even the one of the philosophy of language.

The one we used seem to place itself in the a try of negative metaphysics. That is to say a metaphysics that doesn't go beyond appearances and our senses, but puts limits to those appearances.

As such we are oppose to the existence of a real indivisible substance, substance is a help for the though process.

The question of supra-human identity is to be asked on the field of ideas, because it is only there that substance be be find relevant.

The question then take a more meta-ethics turn rather than an ontological one.

For any questions, remarks, comments or if you simply want to discuss about this article feel free to contact the author at the following email address:

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