Power and Bearers of Powers

During this paper I would like bring some precisions that seem to me to be important for the theory of powers. As is well-known theory of powers has been conceived of as anti-Humean and, on the contrary, as neo-Lockean, in the case of John Heil for instance, or as neo-Aristotelian, in the cases of Oderberg, of Alexander Pruss and of Barbara Vetter, for instance. I have not very much to say about the Lockean version of power theory. On the contrary I am concerned with the neo-Aristotelian side of this theory*.*

That is not to say that powers theory is not fundamentally a neo-Aristotelian theory. It seems to me difficult not to see that the idea that some beings, objects, have powers and act following what they are is an idea of Aristotle. Following Aristotle substances have powers to act and to be acted, they have potentialities. Following him these potentialities, passive or active, are parts of what these things are. All this is not dubious. But what seems to be more puzzling is that Aristotle claims clearly that despite the fact that potentiality and powers are a part of the reality he holds strongly that actuality, (or activity), act, and is first according not only to understanding but also according to being. According to him act has an ontological priority over potentiality.

During his examination of the problem of categorical/dispositional properties, Oderberg says only that there is always a mixture of actuality and potentiality.

From another point of view Vetter sees actuality as a complete manifestations of powers, and also as the meeting of all the conditions for a thing to be. Probably this second idea is not false but it seems to have some Humean flavour. She also simply says that powers have bearers. I do not disagree but it seems to me that there is something insufficient here. Perhaps it is sufficient to give an answer to Humean philosophy and to get a more consistent idea of modalities, but I am dubious that it is enough to get a complete ontological analysis of a bearer of powers in terms of powers.

That is exactly my point. I would like to get a more precise view of how a bearer of powers is also an actual reality determined by a form. Aristotle seems to bring the solution by the idea that form is also an act and that potentiality is contained in a matter that offers more possibilities that the present actualized reality.

I assume that the world is furnished by objects or things .It is more suitable to speak here of substances. Substances are not only basic substances, neither simple, *pace* John Heil. Substances are basic autonomous beings on which depends others beings or ways of being. For instance a colour depends on the things coloured. If the thing coloured disappears, the colour disappears also.

I also assume clearly the criticisms of Humean laws, causality and properties. Substances act on other substances. Then laws are the description of how they act for the most of the cases (N. Cartwright).

The problem we have to examine in these conditions is that we can predicate of thing or substance what it is, or what it can do by its powers. Here is the problem of relation between categorical properties and modal properties. If we agree with the idea that substances not only have powers but are powers or disposition we are obliged to reduce our predication to modal predication and if we say that substances are so and so we are obliged to reduce our predication to categorical predication. That is not to say that I take predication or logical modality to be an ontological analysis but it is surely an indication, a symptom. Following a realist point of view, for predication to be true it must correspond to ontology. Then if modal predication of possibility corresponds to something in the thing, and if categorical predication corresponds also to something we must make precise the relation between these two ways of being in the thing, in the substances.

Some indications of vocabulary are necessary here. So far we have spoken indifferently of powers or of dispositions. The preferable term would be “potentiality”, passive or passivity, and powers for actual active powers. In fact when someone analyses a classical instance of dispositions like the fragility of glass, it is easy to distinguish between the fragility of the glass and the power of the stone breaking the glass. This distinction overlaps, in this case, an energetic asymmetry. The stone is breaking the glass in virtue of its energetic charge. The energetic dissymmetry shows the active power of the stone and the passive disposition of the glass. Hence we can see a two-faced phenomenon: the breaking stone and the broken glass. It is even possible to see that the glass is being broken exactly when the stone is also doing breaking. One can speak of dispositions of the glass as potentiality and of disposition of the stone as power. Potentiality means also a possibility to be, in this case a possibility to be broken. That is why Vetter, and also Alexander Pruss, show that potentiality is an ontological basis for the logical modality of possibility.

The disposition to be broken, the fragility of the glass, and the disposition of the stone to break are brought respectively by the glass and by the stone. Then the question is to know whether the glass is the same as the disposition to be broken, and if the stone is the disposition to break. To this question it not possible to answer without knowing what the stone is or what the glass is.

One can yet remark, at the linguistic level, that to say that glass is fragility is not a very well formulated expression.

From these preliminaries I will try now to examine three points:

1. What it means for the bearers of dispositions to be substances
2. What the link is between dispositions and substances
3. At the end I will bring the support of some texts of Aristotle to my analysis

I have suggested that the world is made of particular objects with a particular way of being different to other beings. For instance this blue doesn’t have the same way of being as this blue object. The horse has not the same way of being as the gallop of the horse. The green colour of this apple has not the same way of being as the apple.

Why is it possible to make this distinction? Because the horse may cease to gallop and nevertheless continuing to be the horse it is. Because the apple can become ripe and red without ceasing to be the apple it is. On the contrary if you eat the apple its colour, red or green, disappears also. If the poor horse comes to die his gallop dies also. It is then possible to conclude that there is a different way of being the colour and being the apple, between the horse and his gallop. This difference shows a difference between objects that are substances and other realities that are not substances but accidents. Substances are necessarily the substances they are, because if the horse is no more a horse he simply is no more. On the contrary the apple is possibly green or red, its colour can change without it ceaseing to be the apple that it is.

That is not to say that necessity is the reason why a substance is a substance or that possibility is the reason why accidents are accidents. The modalities in these cases are consequences and signs but not the reason and the definition.

Our previous instances put in light the dependency of accidents on substances. Accidents disappear with substances and this is not the case for substances. Hence there is an ontological asymmetry between substances and non-substances. This asymmetry can be featured as ground. Substances are grounds for accidents.

Substances are also bearers of determinations. A horse is a horse and partakes in this determination with all the other horses. There is something like a universality present in substances (Armstrong). Nevertheless as substances are also individuals this universality is numerically divided. This means that different substances of the same species are of the same kind, but that what makes of individual substances parts of the kind is not numerically the same for the substances of the same kind. In more concrete terms, if we consider two substances of the same kind, say two cats, they both possesses felinity ( or “cat –ity”, if I may) nevertheless each possesses its own proper felinity. The felinity of Tibble is not numerically the same as the felinity of Felix, but they are both felinity and felinity is the universal determination of being cat present in each cat. Felinity is numerically divided because it is joined to different bodies of cat. However the two cats are equally cats.

About substances Hume left us with the choice between properties or a “something we do not know what”. Substances are not properties because a collection of properties lacks unity and because properties are universals and substances are concrete particulars. Nor are substances an indeterminate substratum because substances are the most determinate beings. As we see them acting they show us a special independence. What substances are must then be what makes them the most and independent determinate things.

Another feature of substances is unity. They are the most unified beings. Heil has noted this point, and even Hume in his way. It is a fact that a collection of properties is thought to be a unity. Nevertheless there are several sorts of unity. Unity of a country is not the same as unity of an individual man. Heil understands unity as simplicity. He is probably right. But he is also probably wrong when he sees unity in the simple elements. Simplicity, or better unity, of substance does not consist in reduction to the indivisible elements. Unity of substance means unity of something that is more than the addition of elements, a unity given to elements by form.

For instance is the substance of a horse his cells? If they are cells they are not horses. Cells of a horse are not very different of cells of a man: they are compounds of proteins. They are divided following the same functional divisions: cells of blood, cells of bones, of skin, and so on. Nevertheless cells of horses are different by the information they bring. Genetic information is not the same. In chemistry we can also have the same elements only different by their proportions, a kind of information. I conclude that what gives to the substances the unity and the autonomy they have is a radical information. A more radical information than the information of the accidents. Accidents like the green of this apple is less radical than the information of this apple, because an apple may be green or red. What makes substances to be as we find them is substantial form, substantial determination.

Now that we hold this conception of substances, we are able to examine the problem of dispositions and categorical properties.

2) Substances as bearers of dispositions

Dispositions are parts of reality. It is not necessary to appeal to possible worlds to justify modalities. What supports modal as well as categorical predication is reality. But reality as we have seen during the distinction between substance and accident is not always the same. Potentiality is a part of reality as well as actuality. That is to say that before its manifestation a potentiality is also a part of reality. Before the stone breaks the glass fragility is here in the glass. If it would be not the case it would be difficult to understand why it corresponds to the stimulus by its manifestation: breaking.

This realist view of potentiality entails that reduction of potentiality to conditionals or to the heavy apparatus of possible worlds are not the good solution to an ontological understanding of dispositions.

I still remark that the term categorical can refer to real actual determinations, even if according to the mainstream language it refers to properties only. If you say that a horse is an animal you refer to a real horse and your affirmative sentence means that he is actually an animal. It seems to be obvious that to be a horse is also to have some activities like respiration, blood circulation, a beating heart etc. … Other activities are possible but not necessary: a horse can gallop, or trot, or march. But a horse can also gallop because its heart is beating.

If one wants to go deeper it will be necessary to deepen the ontological, internal structure of the horse. Sure horses, like many others animals, are made of bones, blood, flesh etc.… but they do not differ very much from others mammals on this basis. They are made of the same basic elements, proteins. It is possible to deepen until proteins common to all living beings. That is why proteins are called proteins, without other specification. In this line of decomposition of which elements something is made of, it is very probable that an infinite regress is possible. For the moment we seem to be stopped by the Higgs boson, but no one knows if there is not another particle deeper. That is the truth of the regress argument that in this line we are damned to discover that bones are possible because of some type of cells, these types of cells are possible because of some type of proteins, these proteins because of some chemical elements, and so on …probably until the possibility of all possibilities, that is to say until infinity. That kind of infinite regress entails that is it in fact impossible. By definition and by hypothesis this possibility of all possibilities is only possibility, potentiality, and nothing actual in the world.

But you have surely remarked that proteins cannot only by themselves be a horse, because there are a lot of others animals built of proteins, of blood cells, of muscular tissues. In each of these levels, elements, proteins, cells, these realities offer their determinate possibilities. However to be a determinate animal of certain kind they must still be determinate. This determination is a contrary of the relative in determinate possibilities of the low level. What is determining the low level to become higher level is form. I call form an information determining the low level. Sure the low level must be able to be determined, but informational form is necessary to determinate it.

That is not to say that form is an autonomous, separated being. Form is always subsistent in and by the means of a bearer, itself a united compound of matter and form.

The maker is a bearer of art, and the generator is a bearer of specific form being as it is a living mature form (zoologists use often the term “living form” to designate a concrete animal). The necessity and the reality of information appears clearly in the biology of reproduction, or in embryology. Which is absolutely necessary is a transmission of information. And this information is clearly also active. In embryology this activity is very quick and strong from the beginning of the cellular division of the first embryonic cell.

This analysis is not limited to biology. It is also valuable for artificial things. The maker introduces a form into some matter. The carpenter determines by a form a piece of wood to be a table or a chair. Wood offers its strength. The issue is an object or a living being where form is an active ground. The activity of form consists in its active power to manifest the potentiality brought by the matter. Wood is strong, so it can be used to make a table. But the manifestation of the strength of the wood as table does not exhaust all the potentialities of the wood. Wood can be used to make a boat, a sculpture, to be used to make fire etc.… Wood offers its strength, its buoyancy, its potentiality to be burnt. All these possibilities are dependent on the fact that it is a piece of wood. That allows us to conclude that to be wood is to have a formal active determination of elements, like carbon and others, as wood, and at the same time to be able to become a table or a boat: to be wood entails these potentialities.

For instance wood is table, stones are house, cells are horse. In the same way proteins are determined by the form horse to be a horse, their potentialities are manifested by the equinity. The power of the form “horse” (equinity) actives proteins to be a horse. It is then clear that potentialities of matter are acted upon by form.

Form, acted upon by efficient external cause, exercises now an active power on the matter of which objects are made. Form determines and orients matter to be conformed to the substantial form. That entails that form is activity and power. Hence form is categorical as a determination and dispositional as it has the power of determining. But form is not itself an autonomous part of substance. Matter and form because the same concrete substance following two ways, one being an active determining cause and the other a passive determinate cause. This double causality entails the unity of substance.

There is an ontological order in substance. Once the table has been built, once the new animal is born it is possible to analyse the internal ontological order. Here form is a cause and a principle by which matter is oriented towards being the concrete substance.

Form is ontologically prior to matter in the sense that matter cannot give itself its proper determination; matter receives it (and hence offers its potentialities). It receives form from external efficient cause. That is to say that efficient cause is also an active form. The maker is bearer of its art, and the genitor is bearer of specific form because it is a mature living form. Here temporal priority of activity joins ontological priority of act. Once matter is conformed, according to this order matter is activated and determinate by form, when matter does not determinate form on the same level. Matter, once being integrated in substance by form, determinates only individual dimensions. Form exercises its active priority inside the concrete substance. This order between determining activity and receiving determinate makes the unity of substance. Matter and form are the same concrete substance according to two different causalities.

I would like stress that from this point of view, all the potentialities are contained in determinate objects or substances. Hence all the reality is constituted by limited and definite things. That why it is possible to say that they act according to what they are. There is no place for a “one does not know what”, except as a metaphysical hypothesis of a pure potentiality which is nothing in the world.

To sum up:

-There are substances

- According to the ontological order of substance, form is prior by its activity determining and manifesting potentialities of matter in the concrete substance.

- Then form is simultaneously a determinative and active disposition, in other words form is an active power

- However there is place for potentialities because of the determination is also a disposition to be acted upon; this point seems to be what John Heil means when he says that a property is both a quality and a disposition

- Potentialities may be manifested and acted upon by an internal ground (in living beings: for instance powers of acquiring powers: the power to learn cello and the power (ability) to play cello) or by an external agent (inanimate beings).

- My central point: that organisation of substances entails a first act as ground

From this point of view substances are active by their active cause that means that they have an internal activity as well as an external one.

According to this view substances are an active cause of knowledge. They inform senses and intellect because they are active bearers of information. Senses receive for instance the actual colours of objects because coloured substances cause the eyes to be moved by some active information. This information may be measured by the length of the wave emitted by the colour. As Aristotle claims the substance is a mover of senses, in this case of the sight. That is why it is possible to categorically say: “this horse is grey”. In fact it is also possible to translate this sentence in a modal predication: “I necessarily see, actually, a grey horse “. When one opens his eyes in front of a grey horse he cannot not to see it, if he has a good sight clearly. To be a visible colour, grey, is a two-faced property: acting on sight and determining the thing to be grey coloured. Grey colour then is categorical and dispositional: the horse is grey and it is informing your sight that it is a bearer of this colour.

The informative active power of substances is only a case of causality. Substances act upon other substances. On one side they are active causes, on another side they are in return affected by the substances on which they exercises their causality. The glass is broken but the stone loses a part of its energy. The saw cuts the wood but the saw is worn by the wood. Hence the substances are interacting because of their two faces: powers and potentialities. This interaction has been well described by Charles Martin. Substances are what they are and they act following what they are, nevertheless they are not reduced to be interrelations. Substances are what they are before to be interrelated because of the primacy of their substantial form. That is to say that this form acts as an internal ground of substances before the relation occurs. That entails that a relation can move and that the substance can stay the same substance. Substances are ground for relations and not the contrary. We find ourselves back to our ontological asymmetry between substances and accidents.

3) The support of some texts of Aristotle

As I have suggested in my introduction, the claims I have proposed seem to be a development of neo-Aristotelianism. I think that they can be related to some texts from the best pupil of Plato. He is best pupil by defending a non-separated form and hence being a realist without materialism.

Aristotle begins his study of potentiality by offering a definition. He tells us that potentiality is “a principle (a ground) of change by another thing or by the thing itself as another “. (Book Thêta, line 1046 a 11).

That means that according to him either there is a thing that may be changed, or that there is a thing that may change another thing. In other words there is a passive potentiality, a thing changed, or an active potentiality when a reality has a power to change another reality. The potentiality to be changed may be in a thing and the power to change may be in another thing. For instance the sculptor is changing the stone into a statue. But the principle of being changed and the power to change may be in the same object. For instance an animal has the power to change its place. According to Aristotle, in this case the soul moves the body of the animal and the animal moves itself. Its soul has the active power to move the legs and the legs to move the animal. Legs have the passive potentiality to be moved by the soul which has the active power of moving legs. Soul, that is to say form, is here clearly understood by Aristotle as a power and a ground of activity. Historically speaking, Aristotle is probably remembering the passage of the Parmenides of Plato where The Stranger of Elea explains that being and power goes both together. To be is to be acting.

Then in Metaphysics Thêta seven Aristotle explains that there are different degrees of matter, matter means here that which things are made of. He then comes to claim that:

 “Earth is not yet potentially a statue for it must change in order to become a statue”. (Lines 1049 a 17-18).

That is to say that for a thing to be potentially something else means to be able to support new information without being changed first into an intermediary thing. Earth is not potentially a statue because earth must be first transformed in bronze before being a statue of bronze. In other words the potential material must be determined to be immediately able to support a new information. The actual quality of bronze, its strength, made the bronze able to be a statue. This quality is both a qualitative determination given to earth by fire and a potentiality to become a statue. It is a categorical property, i.e. a property that may be predicated without modality, of the bronze and a dispositional one to become a statue. The analysis of Aristotle points here to the idea that if matter is a potentiality, this matter is always yet determined by some form: to become a statue bronze must be actually there with all of its qualities which allow it to become a statue.

During the chapter eight of the same book Thêta, Aristotle claims that act is prior to potentiality in several senses. One of these senses is that everything that moves is moved for some end. According to Aristotle this end is a form and a ground (or better a principle). Matter is moved for the sake of attaining its form. Following Aristotle this form exists before the new information is received by the matter. Where does it exists then? The Aristotelian answer is that it exists either in the male in the case of living beings or in the bronze maker in the case of bronze, or in the artist in the case of the statue. In philosophical language form exists in the efficient cause:

“The matter “, he says, “exists in a potential state just because it may attain to its form; and when it exists actually, then it is in its form”. (Lines 1050 a 15-16).

Then Aristotle can conclude that:

“Obviously, therefore, the substance or form is actuality. From this argument it is obvious that actuality is prior in substance to potentiality”. (Line 1050 b 2)

Substances are actually the substance they are by their actual form and the form gives them the potentiality to be transformed into another substance; nevertheless they are first what they are. This double function of form is still what seems to be expressed by the idea of union of categorical and dispositional properties.

That seems also to be well accorded to Metaphysics, Z 17, where Aristotle writes:

“Plainly we are seeking the cause. And this is the essence (to speak abstractly), which in some cases is that for the sake of which, e.g. perhaps in the case of a house or a bed, and in some cases is the first mover; for this also is an efficient cause. But while the efficient cause is sought in the case of genesis and destruction, the case of the final cause is sought in the case of being also….

…But it would seem that this is something, and not an element, and that is the cause which makes this thing flesh and that a syllable. And similarly an in all other cases. And this is the substance of each thing; for this is the primary cause of its being; and since, while some things are not substances, as many as are substances formed naturally and by nature, their substance would seem to be that nature, which is not an element but a principle. An element is that into which a thing is divided and which is present in it as matter, e.g. *a* and *b* are the elements of the syllable.”

Clearly this text would need a long commentary, but if one thinks about what has been written above it seems confirm that, more than deny it.

To conclude:

It seems to me that I have achieved my aim and my point: the claim of priority of actuality without reduction to categorical properties, and the conception of a form as an active power as well as a categorical determination.

Somebody could claim that I have only spoken of ordinary meso-dimensional world. My answer is that I am brought to think that this ordinary world is that which is prior to us. Particles, cells and other micro realities may be considered to be the result of a destruction of meso-dimensionnal things.

However it seems that it is possible to understand particles as determinate realities. According to Lowe, particles are substances and forms. Oderbeg holds a very close thesis and maintains that substantial determination is prior to others properties of particles. This idea does not forbid us from conceiving that particles have also potentialities, for instance to evolve from somewhere to somewhere, or to become other particles, or to change from wave to particle.

What is only forbidden according to the hypothesis of particles as substances is that there is a fundamental indeterminate object, in Aristotelian terms: a first matter, understood as an actual reality separated from the determinate substances whose it is a matter. That is impossible because of the priority of act and form. First matter is always yet actualized in some substance by a substantial form. Actual active form is the ground for qualities and properties and for powers as well as for potentialities.