

EPISTEMOLOGICAL SIGNIFICANCES OF SOME NEGLECTED NOTIONS: THE SHADOW AND THE TRACE

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Abstract. The paper discusses the specific situation of some hybrid notions related to the material world. Neither the shadow nor the trace and other entities mentioned here are philosophical categories or abstract notions. But they are general concepts that reflect the real material world, namely things, not bodies, or things with non-conventional bodies: forms and structures of the material bodies. Their significances arise from the analysis of their metaphorical and philosophical understanding.

Keywords: shadow, trace, knowledge, matter, metaphor, scientific and pre-scientific concepts, ontological objects.

INTRODUCTION

The present analysis has begun rather as a play in the epistemological field. The play itself has come from the observation that there are *scientific* concepts – as relativity, mechanical motion, molecule, measurement and experience, chemical reactions, ideal gas, genetics, artificial intelligence, laws and falsifiability, super-ego, development, and the like – and “*pre-scientific*” – or *common sense notions* that express the concrete experiences of knowing, but: 1) have not been objects of further inquiries and 2) have entered within the common language, obviously, being useful for the description and explanation of ideas. These “pre-scientific” notions could become scientific when the development of research has focused on them, giving them the content of a *scientific theory*. At this moment, they change their previous status (Cassirer, 2003, esp. pp. 3–9, 17–18, 112–115, 153–155, 187–234, 326–337) and become not classical ideal correspondents or definitions of the reality (Aristotle, 2009, esp. pp. 13–15), but instruments of recognition and creation of this reality (Carnap, 1971, pp. 133–145; Bachelard, 1984): they have transformed as a result of the cognitive experiences of scientists and, at the same time, they underlie these experiences through the significances they suppose (or through the “spiritual atmosphere” they give off), allowing and explaining the scientific learning.

Two examples of “pre-scientific” notions are *the shadow* and *the trace*. They are analysed here just from the standpoint of their possible transformation as scientific notions. But could they be taken together? Which are their common features and characteristics and why? And why is their distinction so important? This aspect is

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highlighted by the theory of knowledge and by phenomenology. More precisely, in fact, their approach cannot avoid the ontological assumptions, since the concepts we focus on describe parts of the existence. The strong interconnection between ontology and epistemology is thus the sign of the “judgement of relevance”¹ philosophy is able to make on itself.

Therefore and once more, the objects of the present analysis are *notions/concepts*, thus general syntheses of peculiarities the concrete and individual sensible objects have. But what type of concepts are we going to talk about?

STARTING FROM ETYMOLOGY – I

In the ancient Greek, the shadow – *σκιά* – was related, as the majority of words, to the ordinary human existence. The simple actions naming the shadowing – *ήσκιωμα, έπισκότησις, σκοτεινίασμα* – meant that people, fragile little beings wanting to last, thus regarding every phenomenon from the viewpoint of its usefulness for them, considered the shadow itself as a means of defence (from the burning sunbeams): *σκηνέω* – to be under the roof. From this, *σκηνή* or *σκηνίσιον* was every simple building serving as a temporary shelter (and only in these hubs people had a disposition and enough time to joke, to play, thus to make the others believe the stories, or to act on the stage or in a scene, *σκηνικεύομαι*: the stage, even in the open air, being the place of shadow characters, simulacra of real people).

More: *σκήνος* was the tent and, figuratively, even the body – the cover of the soul – a living one or a corpse. Therefore, a tent, a house, a dwelling was something that created and kept the comforting and safe shadow without which one cannot live with the others in sweet privacy and stable sociability, *σκήνωμα*.

Philosophy has developed against this background. If the shadow were the cover or wrapping of the soul (and if the essence of the soul is knowledge, the knowing spirit), the shadow could be another name for *inexperience* in the process of knowing (Plato, *Phaedo*, 101d). The shadow is not equal to darkness – *σκότος* –: this one symbolises the ignorance of what is specific to the human being: knowledge realised through the exercise of reason, and virtue as a result of this exercise. While the shadow is only a moment or step of estranging from darkness, as opinion or *δόξα* – between ignorance or *άγνοια*, and science or *έπιστήμη* (as in *The Republic*, 507b–513e) –: at this moment, people fall down in the sphere of delusive appearances (as the first, visible, immediate causes of movements and human behaviour), unreality, fraud and lie².

¹ Isabelle Peschard, “From fluid mechanics to philosophy of science: writing the “*Book of Nature*” – relevance judgments and epistemic responsibility”, Conference on *Actual Research Topics in Fluid Mechanics in Relation to History and Philosophy of Science*, Sinaia (Romania), June 5–8, 2012.

² And here and in order to continue my plausible inferences, would not the term of scheme (*σκέμα/σκέματα*) follow from the same root suggesting an appearance, a shadow? See (Plato, *Crito*, 107d): “an obscure and deceptive appearance”; (Plato, *Phaedo*, 101d). Or Plato, *Republic*, 354c: “appearance forces even the truth”.

The shadow is a vague thing, the “trace” of former living humans as of those from Hades: a vague thing as even the nothingness “sold” by the ignorant or by the sophist rhetoricians who persuade people to think in the wrong and false way by telling them that it would be the good and the right³ one. More precisely, all the things which are known by the perceptual experience are shadows and the lover of learning, the philosopher, has to surpass the inferences within this world of shadows and understand that the real, the good and the truth, as perfect Ideas or Forms, could be attained only at the level of reason. Why did Plato use this metaphor of the shadow?

Indeed, in the allegory of the cave (Plato, *Republic*, 514a–521e) Plato put the problem of knowledge through the agency of words: these ones are, on the one hand, the puppeteers, namely the signs/sounds signalling the things; it is obvious that the reactions generated by the words do not include the real understanding of the world, but only approximate abstractions and stimuli; on the other hand, the words are just shadows, generating only approximate impressions concerning the correspondence between the words and the things; in fact, the words are the significances the words as such “give off”. Are these significances anything else but metaphors, comparisons in order to manage the puzzle of different things? Certainly not, although their result could be very efficient.

If only the reason (or the sun/the light, as this one was the figure illustrative of reason) is what can infer and rule the words-tools, what results is that the material world signalled by words is as apparent and uncertain as words are. If only the reason knows, the Ideas or Forms are the prototypes, the essence of things, the world seen by ordinary people being constituted only by copies, or shadows. The metaphor of shadow is related to both words and material things.

Indeed, though mentioning⁴ what people generally knew – the strong connection between light and shadow, their interdependence as mutual revealers of things⁵, and all of these in front of the vision, thus only for the humans who look at the material things/who see them – Plato highlighted the *metaphorical* function of the shadow. Just because every material thing has a shadow, this one appears as the most/one of the most general characteristics of material objects. But man is a material

³ Plato, *Phaedrus*, 260c: “And when the orator instead of putting an ass in the place of a horse puts good for evil being himself as ignorant of their true nature as the city on which he imposes is ignorant; and having studied the notions of the multitude, falsely persuades them not about ‘the shadow of an ass,’ which he confounds with a horse, but about good which he confounds with evil—what will be the harvest which rhetoric will be likely to gather after the sowing of that seed?”

⁴ Plato, *Republic*, 516a (in the allegory of the cave): “Suppose further that the man was compelled to look at the fire: wouldn’t he be struck blind and try to turn his gaze back toward the shadows, as toward what he can see clearly and hold to be real? What if someone forcibly dragged such a man upward, out of the cave: wouldn’t the man be angry at the one doing this to him? And if dragged all the way out into the sunlight, wouldn’t he be distressed and unable to see “even one of the things now said to be true”.

⁵ See, for example the sundials (the ancient obelisks and shadow clocks).

object too, thus the shadow of people was considered by writers as Sophocles as their substitute⁶, a glorious metaphor many times used later on.

Even nowadays we use the metaphor of shadow in order to signal:

- the rest that emphasises what we all know and, at the same time, solves the problems;
- the modesty or a kind of prudence, which pushes us to stay in the background but, at the same time,
- another kind of prudence or conformism and servile efficient spirit, which consists in keeping those who profess this spirit in the shadow of an influential “very important person”;
- the disquiet or anxiety related to the complex, thus unknown puzzle of the conditions we live in but, at the same time,
- the fascination with the unclear that challenges us.

STARTING FROM ETYMOLOGY – II

The situation of the *trace* emphasises the above-mentioned observation. First of all, the trace was related to the human fellows without which the individual human being could not exist: ἵχνος was the foot-mark and the trace of the foot, obviously rather of the others: the man had to follow them, or to avoid them, for they were the landmark of his/her existence. Only in and from this connection, people had to watch the traces of beasts, to observe and follow them – ἵχνο-οκοπέω) and to catch up the signs of nature.

But what is a trace? It is a vestige, a remainder, a drop (something very little, rather insignificant for those who cannot see a sign. The trace is not ὑστέρησις, a “deficiency” or “lagging behind”. Though the trace is the object “lagging behind” – namely being an “un-realised” object –, it is not a deficiency: the lagging-behind is the sign of persistence, of persistent existence, therefore of plenitude.

On the one hand, the trace is nevertheless something *material*, ultimately a part of the Object one has in view. Only as a “material” sign, a visible one, can the trace be related to spiritual and invisible situations: “Again, if anyone had been a sturdy rogue, and bore traces of his stripes in scars on his body, either from the whip or from other wounds, while yet alive, then after death too his body has these marks visible upon it; or if anyone’s limbs were broken or distorted in life, these same effects are manifest in death. In a word, whatever sort of bodily appearance a man had acquired in life, that is manifest also after his death either wholly or in the main for some time. And so it seems to me that the same is the case with the soul too...” (Plato, *Gorgias*, 524c and d).

More: the uncertain, evanescent reality of the trace makes it to be kin to the efflorescence, the down, the foam, the dust and the ashes (χνόος). All of these are

⁶ Sophocles, *Ajax*, 126: “all we that live, mere fleeting shadows”.

only “traces” of the Objects: the plant, the bird or the chick or the cub, the sea, the earth and the trees. The trace is a *rest*, a *trail* (the smoke is something which may have a trail, but the light has a *streak* too). As a rest, the trace is *material*: as the Objects are. And if so, it is an ideal localisation: “after the Object and following its signs”.

And more again: if the trace is a print or succession of signs that are remanent (persisting and at the same time being residual), it is the passing from a being to another, a sign of intended continuity. Just as passing, it is a mark, a vestige.

Thus, again, what is a print? As the first one, the foot-print, it is the vestige of the foot passing over there. *Vestigia tenere*, said the Romans, meant to follow someone’s foot-prints.

But as a foot-print (or wake of ships or trails of the wheels of a wagon – but not as contrails of an airplane), therefore on the other hand, the trace is *no more material*: it is neither the ground – for example the sand where the foot is printing (the recipient of the print) – nor the foot (more precisely, the sole of the foot) imprinted. So what is it? It is a “form”, a configuration and position of the material parts of existence: not Plato’s form or Idea – the ideal things (objects and qualities) of the existence, transposed into logical/rational units, thus *abstract*, as models soaring, however, outside the human mind. The “form” is here rather Aristotle’s ontological concept joining the other one (the matter) in the construction of his crucial notion of *substance*.

As we know, in his dialogue with other philosophers inquiring into the basis of the world, Aristotle supplied a new and more sophisticated theory of matter. It is, certainly, a philosophical one, and not a cosmogony. The being/the existence were philosophical abstractions, requiring other abstractions. Thus, the being is the result of the unity of two realities: the matter (*ὑλη* – hyle⁷) and the form (*εἶδος* – thus the essence of things). But the form is not related to the original matter which is a *substrate* (*Physics*, 192a 31; *Metaphysics*, 999b5 etc.) and obviously lacked form, but to the *concrete manifestation* of the matter. This concrete manifestation of the matter is the substance⁸. In fact, the being is *beings*: there are only concrete forms of existence. That is the reason why Aristotle considers *ousia* as the substrate of the change, since the change has in view only concrete things, or as the nature of things, since they are only concrete.

Indeed, the essence of the substance (the essence, *ousia*, is just the existence, namely the fact that there are things: the essence of things is that they really exist, beyond any evolution and transformation) is just that the existence as such means any kind of appearances, any kind of forms, of substances, in fact individual things.

⁷ The origin of the name of matter – an abstraction – is concrete and material: *ὑλη* meant wood, forest, thus the most important material for the ancient human beings, a basis of their existence.

⁸ *Ὀυσία*. In *Metaphysics* (12.3), Aristotle seems to give three meanings to substance: 1) the matter, i.e. the substrate of the change; 2) the nature of thing, i.e. its form or essence – toward which the movement is directed; 3) the individual thing, formed by matter and form.

Therefore, there are two meanings of the concept of matter: that of eternal substrate, without attributes, not too interesting since it does not explain the movement and transformation, and that of the “relative” matter, the substance.

The substance is the unity of matter and form. The form is that which differentiates a thing from another, an (abstract, do not forget) model existing in principle, irrespective of the situation when the model is actualised, namely united with the matter. But this abstract model is something objective, only grasped by the human mind and inexistent as such: only the rational philosophical deduction, supposition – thus construction – separates it from the entangled existence. Aristotle was brilliant just for he introduced ontological concepts explaining the existence.

So, what happens when the *actualisation* takes place, i.e. when the concrete thing is put into existence/reality (this concrete thing not even existing without its specific form)? The thing would exist only as *potentiality*. Here Aristotle introduced a new concept, *σύνολον*, which is the archetype of the concrete thing as such, the basis which last every time and forever, and which does not change irrespective of the form that actualises it or of its change. The *synolon* is the concept of a certain thing, the unity in principle between a certain form and the matter (for example, giving always a stool, or the concept of stool). It is the model of the *concrete* thing, while the form is the *abstract model* of the same thing. For example, the form of a stool is the quality of an object to serve only to people to sit down (it has 3 or 4 legs and a small surface).

Concerning the print and other *non-material objects* of reality, they could be defined as forms in Aristotle’s sense. But it’s not sufficient: or rather this definition is a metaphorical one. We need, first of all, a scientific realistic definition, because only this allows, beyond all intuitions leading to metaphors, the understanding of concepts. Indeed, what is a form? It is, in our modern terms, *information* or configurations of information regarding the situation of objects. Or, the configuration resulted from the impact/relationships of objects. (But let us remember once more the ancient Greek philosophy: the form – according to which we perceive things – was at the same time *that which we see* and *that which we know; to see* (*ιδεῖν*) meant *to know* (*εἰδέναι*), and the result was the form and thus the idea: *εἶδος, ἰδέα*)⁹. In the course of time but still in the ancient era/philosophy, the form detached as a mentally grasped characteristic, since, although it is seen/somehow seen, it is mentally selected from reality. This selection conferred on the form the peculiarity of the essence of things, the simple sensibly perceived presence of things with all their forms being/becoming only a signal of their existence: the presence, *παρουσία*, only certifying the existence of things (this existence itself being the essence, *ουσία*).

⁹ Andrei Cornea, the translator of *The Republic* into Romanian, drew attention to this relationship (Cornea, in Plato, 1986, p. 498).

Metaphorically speaking again, the form is a sign. A sign the environment – both natural and social – sends us, or informs us about, forcing us to think (and not only to react, somehow instinctively). Indeed, if we imagine the footprint and “detach” the plans – of the sole of the foot and of the sand –, what “remains” is the “plan” of the print. Perhaps Aristotle made the same reasoning.

When it is material (as a trail), the trace has significances: it is the premise of interpretations (as the forensic experts and lawyers do) which arise whenever the trace occurs. The same happens when the trace is a “form”: it is a sign leading to significances. And the most important significance is that the existence is more complex than a coloured agglomeration of the presence; and that in the process of discriminating things, we can understand the non-material aspect of the natural existence: that of the impacts, relationships, configurations, positions.

The antecedents of the trace are real: even though they consist in *affects* or psychical states. All of these affects transform the mind – or rather the soul – of a person, they shape it, but the new states are not given once and for all and mono-coloured or indistinct: on the contrary, they are moving joints of traces (memories, thoughts, feelings, bits of information).

As a concept, the trace is a *general* one – *reflecting* the form of material particles following an object (or intended by people, as the crumbs scattered by Hansel and Gretel in order to remind them what way to follow in order to go back home), therefore corresponding to concrete *material* things. As concepts, other similar “objects” as the hole/hollow, the sky, the shadow are *general* too, but though they *reflect* existing objects, they do not correspond to concrete material things, but to *pseudo-material* ones: things without body, as material lack, as real un-corporeal entities. But again, these concepts – or at least some of them – could be also *abstract*, but only as *faculty* of the objects to have, for example, concaveness or shadow.

THE SHADOW AND THE TRACE AS METAPHORS

The aim of the present analysis is not the historical illustration of the metaphors of shadow and trace within literature, but their interpretation. They are constituents of a “naïve theory of space and causality”, of “common sense ontological intuitions” (Casati, 2001, 100–101).

Therefore, let us first interrogate the significances of the metaphor of *shadow*. Indeed, and leaving aside the proper meanings – that of neutral *protection* as under a closed shelter, or that of a separating screen between the object and the subject looking at it, or that of the revealing (as absence of light, it indicates the lighted object) –, it refers to the *exterior* appearance of things and of people and *is used rather related to these ones*. If the shadow is clear enough in such a way that it copies/reflects the outline of the object, we can deduce what it is about. Only in

this instance /only starting from this instance the metaphor or its use is plausible: one could equate the shadow to the entity it reflects and obviously only in its static form, even though the entity moves, because the shadow does tell only about the existence as such and because each moment of movement is static, as Zeno of Elea showed¹⁰.

But, as Ricoeur stated, by using metaphors people re-create the world (“the worlds 2 and 3”, of conceptualised mental objects, thus which may become objective facts (Popper, 1978)), thus also the manner to see man (Ricoeur, 2003). If people have shadows – and even a corpse has a shadow if it is posed in a certain position in relation to light, but either its shadow is vague, not sending to the living person, or the position the corpses are put in does not support the mental binding between shadows and corpses –, the shadow itself seems to no more appear as a simple sign of their existence or presence. Rather, it is conceived of either as an attribute of some concrete people, living in bad conditions – namely being thin and pale like phantoms or shadows – or as a compulsory general attribute of all.

What kind of a general attribute? When Adelbert von Chamisso wrote his tale, *Peter Schlemihl* in 1814, he conferred on the shadow only the peculiarity to mark the existence of a person: if this person has separated from his/her own shadow, he/she has lost the consideration of the others. The shadow signified the social consideration, thus the social bindings without which human beings cannot live and cannot be human at all. The shadow was the exterior mark of a structural characteristic of man: the continuity between human beings.

Nevertheless, the fact that a person may live well enough without many relations he/she is part of, may sound as an objection made from a Romanticist or individualist standpoint. And yes, we know the shortcomings of the methodological individualism (see the motif of Robinson as an explicatory unit), but the objection sends us to the question concerning the metaphors of the essence of man. So, once a person already exists as the sum of his/her social relationships (and, more generally, of the social relations constituting the social structure and atmosphere he/she benefits from), would the social consideration of the others be the main factor of his/her human existence and evolution?

The answer is negative. The social consideration could be fallacious and obviously depends on many contradictory interests and ideological *idola*. More: it could channel the person in a wrong direction (until one that could force him/her to become a deep alienated being (like *the shadow* of Hans Christian Andersen, 1847), alienated from the human aspirations to the good, the beautiful and the true. An alienated man is like a shadow: a human form with empty moral content.

The factor opposed to this alienation is the *human moral concerns*, named simply as “conscience”. Socrates and Plato warned that people should act based on

¹⁰ Presumably, the idea/image of movement was signified by the movement itself, i.e. by superposing different positions of limbs, legs and tails and by rapid movements of flickering flames in front of this painting, in the ancient caves. See Ancient cave paintings..., 2012).

their moral concerns, and not on the direct efficient causes (the material conditions, the occasions, the *idola*). It's very difficult for people to behave according to moral concerns. Sometimes, these concerns seem to be another person, manifesting as an extra-worldly entity: a judge, a species of god. Indeed, Socrates named his moral conscience, the *daimon*: "a kind of voice... it always forbids but never commands me to do anything which I am going to do" (Plato, *Apology*, 31d). The metaphor of the *daimon* is different from the one of the shadow: the first signals an inner constituent and determinant of man; the second is an exterior proof of his presence, depending – as inexistence au fond, as an evanescent mechanical reflection of the dark side of people when the light (the sun, "the steward of all things in the visible place" (Plato, *Republic*, 516b–c)) falls down on their opposite side – rather on the others. The power of these metaphors is different too: the first highlights the dynamics of man, his evolution and change from his own strain of his mind, from the control of his own conscience over his feelings and will; and though the conscience seems to be an exterior *daimon*, in fact it is interior and the metaphor suggests the power of man to control himself humanly, his victory; while the second emphasizes man's lack of power, since the shadow is an objective characteristic which cannot be controlled and moved: in reality, people do not lose their shadows.

Concerning the metaphor of *trace*, we may infer that it strongly suggests the continuity, and the tenacity in existence, or Spinoza's *conatus* (perseverance of things in their being) – thus even the slyness and boldness of those who sit tight – as well as the connectedness: of people, or even of things in the ordered existence (*kosmos*).

Briefly, the common significances of the metaphor of trace are:

- that of *the end*; the trace is the final part of a process or phenomenon, an extremity or margin or limit; it is its finalising moment, may be finished, realised and fulfilled; but the trace could signify also the stopping, the stagnation, the suppressing, the extinction, the death;
- that of the shortening, of the reduction, contraction, diminution, compression, disappearance, gradual loss and perishing;
- that of possibility, more, of probability, of latent and plausibility, of verisimilitude and hope;
- that of posteriority, of succession and continuation;
- that of coming late, of delay, of dallying with and persisting, of slowing down and extension;
- that of knowing and imagination (see the motif of the trace in Hansel and Grettel);
- that of immensity and infinity;
- that of distance, of removing and estranging from, of lagging-behind, detaching from, of wasting, spreading, disseminating and scattering;
- that of (noble or bad) intention: not to forget the things – which always leave traces – and to remember them, to never wipe them away.

THE ONTOLOGY OF HETEROGENEOUS OBJECTS

Reflecting on existence, philosophy has considered first of all the kaleidoscope of material things and their relationships and movement. The sign of existence and, at the same time, the criterion according to which the human reason could capture and understand reality was the material object. It was so because it was/is an obstacle – *obstaculum -i*, an impediment, something that stays in front of someone and does not let him pass, something which is opposed; and figuratively, which is opposing him, even damages him (*obsto-āre-īti-ātum*) – a body “placed in the path of another body” (Sloterdijk, 2004, 227).

Just because things were obstacles, they had to be understood in order to be mastered within a congruent and coherent rational representation. Therefore, the ground of the ontological development of arguments and categories consisted in material particulars, and their ontological analysis – though leading to and constructing specific philosophical objects as concepts avoiding any dependence on singular beings but referring to formal structures and features, thus to the general form of particulars – showed and was confronted with this “ontical dependence” that consisted in “the problem to derive (to construct in an analytical manner) the other types of existence and...to demonstrate their reducibility in principle to the minimal basis of the primal existence” (Pârvu, 2001, 94).

In fact, the common-sense ontology is correlated with the scientific ontology. A significant part of metaphors referring to human relationships and spiritual atmosphere, uses and departs from the material obstacles and marks of existence. Therefore, in this paper I refer only to concepts related to the matter of things. These concepts are approached as specific ontological objects: not arbitrary, not fictional, but existing and linked to the *matter of things*.

The material things are studied by special sciences and the concepts and criteria used by them could be (at least, some of them – as force, location, chemical reaction, chemical structure) considered as *first degree ontological topics* (while some of the real material objects have figured as primordial elements which au fond served as abstractions, as the water of Thales or the air of Anaximenes). Each special science such as physics or chemistry has a *regional ontology* (as Husserl showed it), that is, a study of the relationships between the concepts and the things they refer to, and relates to epistemology as a focus on the concepts.

But remaining at the level of materiality, the natural existence (as well as the human existence or, better, the ensemble of existence) involves also specific forms, situations, positions, configurations which are not simply material. Obviously, I do not refer here to spiritual facts or to the “mixture” of natural and cultural facts (for example, an organisation is such a “mixture”). I indicate only “the forms” under which the material world presents itself. For example, a *hole*, or a *magnetic field*, are such a “form”: and although they are named by the human being – as a result of the conscience of this “form”/the existence of this “form” – they are nevertheless objective.

The things of this appearance could be studied within special sciences and the concepts corresponding to them are *second degree ontological topics*, their philosophical inquiry being rather a philosophical novelty, at least for some: after the agglomeration of their presence in science (and art).

The above-mentioned distinction is somehow different from the *praedicamenta*, and even from categories, as Aristotle conceived them. A hole or a foot-print are not a substance, and though they are related to a space-time position, and they could be described as concave etc., they are not simple qualities and relations.

Both kinds of ontological topics exist in the common-sense intuitive ontology: namely, the ordinary understanding/the content of concepts is intuitive as a consequence of the human historical experience. While in the scientific ontology, the different sorts of ontological topics allow epistemology to emphasise the regional character of some ontologies.

According to Husserl, the material things/bodies (*Körper*) are perceived materially, giving the *res extensa*. It is not the place to describe Husserl's differences and similarities between inanimate and animate things, as well as their forms of perception and apprehension. The special things focused on here – the shadow, the trace, the *rainbow*, the *sky* (which is a background) etc. – are certainly perceived as existent, being in space and time and “natural”. But, at the same time, they are not “usual material” things and their extension does not qualify them as bodies. That is the reason why they need a special/regional material ontology where they are the topics of its reflection.

Ontology depends on human understanding and its evolution. It is this understanding and interpretation; the ontological objects – the abstract concepts and categories related to things and their qualities – have relevance only through the theory of knowledge. Epistemology interprets the intuitive and scientific concepts corresponding to ontology and emphasises the significances of their community and difference (see Aranyosi, 2007, 2009, 2010).

THE SHADOW AND THE TRACE IN THE THEORY OF KNOWLEDGE AND EPISTEMOLOGY

The development of the modern thinking has brought a change in the status of the shadow. Its role of *metaphor* (of a characteristic of the entities/meanings one has in view) was not substituted, but added with the one of *feature* in scientific observations, inquiries and theories.

Berkeley, with his *Theory of Vision*, is one of the writers using the feature shadow. Thus, the shadow and the light are exterior and *objective* elements (certified as such by the only and omnipotent perception of God) which are perceived in their interconnectedness by men through the faculty of perceiving. The perception is the result of this faculty and the objects depend on this perception (*esse est percipi*). Indeed, Berkeley was not the first (let us remember Descartes) concerned with,

but he tried to answer the old question and quarrel between the supporters of the externalist standpoint in our knowledge and the ones of the internalist standpoint. He legitimized the objective character of the world as I mentioned before, but he explained the content and limits of cognisance about the world, as well as our common or different views about the world, as being conditioned by the inner natural “tools” of man. These “tools” are not only physical (the eye, the skin for the faculty of touch), but somehow also intellectual, as visual, mediated and cultivated, “language” (correspondence between the tangible ideas which refer to the qualities that can be seen – as the space, the figure, the movement – and which are considered by people as *signs* suggesting the objects, and the terms they are represented by) of perception, induced by the divine Providence. But not the subjective idealism of Berkeley is what is important here. We have to remember his distinction between *pictures* as combination of light, shadow and colours, and *images* – the first projected on the retina. The first are visible and constitute the object of seeing. The images are grasped only by imagination, while we suppose they are effectively understood by the eyes (Berkeley, 1948, § 41, §44, § 52, pp. 268–73).

The fiction of a man born blind (Molyneux, Locke) who can imagine the objects with his sense of touch served to Berkeley to better explain his philosophy (and he discriminated philosophy, focusing on the very nature of seeing as faculty of the soul, from geometry, inquiring into the particles moving in accordance with some lines or the rays of light refracting, reflected and forming angles and crossing, and from anatomy and experiment related to the mechanism of the eye): the light, the shadows and colours seen for the first time by that man would not suggest anything to him about the real qualities of bodies and thus he would not give precise names to the new ensemble of sensations and ideas. Only after repeated experiences, he would consider the visual elements as related to tangible objects and would give them the same name as to those of the signified things (§46, §47).

In sum, the exterior field to the observer is formed by light, shadows and colours that receive meanings only within and at the subjective level of existence¹¹. At that historical moment, the shadow signalled the obscurity which is meaningless in the absence of light, but without which not even the light itself has significance.

But what is obscurity? It is “the external evidence” of the non-being, of the non-existence. Philosophy wrote long ago about non-being (Heraclitus, Xenophanes, Parmenides, Zeno of Elea, Melissos, Gorgias, Anthistenes, Leucippos, Democritus,

¹¹ At this level, modern writers have considered the principle of unity of the heterogeneous things of the existence manifests itself. Especially, “the function of unification continues to be recognized as the basic role of reason” (Cassirer, 1951, 23).

See also (Baumann, 2007).

But let us not forget that, from a sociological standpoint, “the shift in the appearance of images...was inseparable from a massive reorganization of knowledge and social practices” (Cracy, 1992, 3).

Plato, Socrates, Aristotle, Zeno of Citium, Chrysippus, Epicurus, etc.), though or pointing out that the non-being, as the being, has many significances¹².

These significances could be understood, philosophy insisted, and with the development of modern science (and art, see the chiaroscuro) the metaphor of shadow began to become a simple element of reality, decomposed as movements and positions of subatomic particles in the absence of photons, and used as signs of physical phenomena, while philosophy penetrates it through the power of thought¹³: its significance of a black hole is now related to other ones.

Indeed, even though the shadow has a precise outline – that of the object it “mirrors” – it is only a copy of inexistence, it is empty of content. The content belongs only to the *object*, with embodied being, which is compulsorily material and opaque: it is as if the power of materiality continued the object, certified its existence (while the shadow is only a pale reminder of this existence). Classical epistemology focuses just on the relations between the human and, preferentially, scientific knowing and this type of the existence. This type is the Object/Being/Entity considered in this epistemology and, generally, in philosophy.

Only the use of shadow in science and art, accumulated in time, sent to another standpoint. Anyway, in front of the Object, the shadow is a “secondary” *existential entity*, thus concept, and it should have a place as a topic within ontology. For the time being, it is rather specific to common-sense ontology, and the present epistemology is interested in inquiring into it, together with other “secondary” ontological topics, the “*immaterial*” ones – whose peculiarity is the absence or insufficiency of the matter, as *holes*, for example, (or *fillers*, *skin*, *hollows*, *cavities*, *depression*, *groove*, *cracks*, *fissures*, *tracks*): “superficialities” (Casati and Varzi, 1994) – as a very interesting metaphor coming from a material level¹⁴ suggests.

The analytical description of the shadow, for example, as a first part of the epistemology of shadow (relating to and resulting from the position of material objects in front of and toward light), allows a phenomenological inquiry and description – thus, according to Husserl, an ontology. In Husserl’s model (model or trail, to refer to a specific material thing, but not a body), the conscience of the object – through the reflection on abstract objects such as concepts and on abstract ontological features and criteria – “is obtained through the insertion of the variants of its scheme within the ‘real circumstances’ within which the perception of shadows

¹² Aristotle, *Metaphysics*, IX, 10, 1051b: “The terms ‘being’ and ‘non-being’ are employed firstly with reference to the categories, and secondly with reference to the potency or actuality of these or their non-potency or nonactuality, and thirdly in the sense of true and false”.

See also the Romanian analysis of the thesis of non-being in the ancient Greek philosophy (Cornea, 2010).

¹³ It is the power of reason and analysis: “no worse evil can happen to a man than to hate argument” (Plato, *Phaedo*, 89 d).

¹⁴ Namely, even though superficiality is rather a thin stratum – so that it could also suggest something evanescent or not important – the surface of things supposes their material existence.

takes place” (Guardiola, 2010, 7). This relationship with the real is possible because the intentionality of the thought (Husserl), thus directed toward a specific something, *has in view the “natural” object and not its concepts*. If so, the concept of shadow is understood following the experiences with different shadows, positions and movements of shadows: it appears as reflecting a “hybrid thing between the real/material and the non-real” but, at the same time, a specific form of being, that can be included into a general theory of the constitution of the world (*Ibid.* 9).

Another example is the notion of *horizon*: certainly a changing impression but, at the same time, a sign of the space, of an objective difference between the objects from the viewpoint of the distance they are at, including the viewpoint of the man who sees. At first glance, the horizon seems to shut the vision, to limit its power. But, because the ontological view depends on the conscience of cognition, people know that the horizon does not exist and it is in function of their power and dynamism. Therefore, the horizon signifies openness, the large possibility of man to manifest himself. Largeness is the characteristic of horizon: namely of the sign of how largely and far can he look at, how conscious he is of his dynamism and how dynamic he is.

The horizon is both limit for imagination and challenge: curiosity attains its real worth when it surpasses the interest in the near objects and fellows, it stretches itself and fences beyond the horizon.

In its turn, the trace is understood in its double hypostasis: as *material* trace – dust, particles, Hansel and Grettel’s crumbs – and as *form* (track, print). While both hypostases show the existence of material objects and depend on them¹⁵, the first is material too, though its appearance is not that of a material body (for example, with precise outline), while the second is not material at all. Both hypostases generate concrete concepts (or synthetic, or *a posteriori*), resulting from the experience of our senses: it is clear with material traces, and it’s the same with forms. We all can see the track of the wheels of a wagon on a dusty country side road, or the wake of a ship in the water of a lake. Both the track and the wake show the itinerary, the route of the movement of the above-mentioned vehicles, but the concepts of route or itinerary are not concrete, but abstract and anonymous.

Therefore, as the trace does, the shadow has this property to “prove” the existent objects – however, without too much emphasizing on them: it could be considered also a feature of non-conceptual perception or understanding (Todes, 2001). At the same time, though the shadow and the trace do not indicate much about the material objects determining them, they are, nevertheless, rich in suggestions: from this standpoint, they could be considered as important in the understanding of things, as bricks in a tacit knowledge.

¹⁵ However, there is a difference between traces as particles flowing and mapping the plane’s flight, for example, and Hansel and Grettel’s crumbs: the former are objective, permanent and necessary as long as the propulsion system of planes does not change, while the latter is accidental and the consequence of human acts.

Leaving aside this aspect, if the shadow reveals the very nature of the object, it – as absence of the rays of photons forming the light – could be assimilated with other phenomena, like the reverberations of sounds, the echoes which tell us something important about the objects around them. But the reverberations of sounds are *au fond* traces: indirect traces of the objects – and signs of their persistence/importance – and direct traces of the existing particle of sounds. Consequently, we may assert that the shadow and the trace are similar *contrastive entities* and, leaving out the contradictory nature of things they indicate, their common role is to make visible the “substance” of the objects, their concreteness and depth.

At this moment, both the shadow and the trace can be considered as tools in science (and art), revealing indeed the objects inquired into. While the content, the specific function of the tool as such is given by philosophy.

As scientific tools, the shadow and the trace lose their metaphoric mystery and are measured (for example, in astronomy, in physics and chemistry), revealing the objects. But the scientific inquiry and measurement of the shadow and the trace send to new scientific problems and technical problem-solving (see Titcomb, 2012). And one is *the visible* and *visibility* as such: if that which is visible for our eyes is better understood with the help of shadows, traces and specific elements like the sky – and this visible is measured – the new technological eyes like the new generation telescopes emphasise new objects never seen before through penetrating the electromagnetic spectrum outside the human vision. The light and shadow ordinarily seen become different and are attacking the *mysterious*: as both epistemological (Bazac, 2012) and ontological objects (*Mysterious...*, 2012).

A CONCRETE STOP: THE TRACE AND THE WAVE

The wave – emphasised by the modern theory of light (Descartes – 1637, Robert Hooke – 1665, Christian Huygens – 1678, and as scientifically demonstrated by Maxwell – 1865) and sounds (Hertz with the radio waves – 1888) – is an abstract concept, born within science. The wave is information, i.e. movement where material particles and relationships between them are interconnected, generative and significant for reality.

As already long ago the Romanian philosopher Constantin Noica observed (Noica, 1968) the *wave* (as abstract as the *number* and the *idea*) allows, together with the number and the idea, to better understand reality, since it/they: 1) distribute without dividing themselves, 2) occur in a reflexive manner, i.e. through re-turning/re-reflecting upon themselves (the wave – as the returning of the movement upon itself, the number – as the returning of the mathematical operation upon itself, the idea – as the returning of the thought upon itself), 3) it/they behave similarly concentrating and expanding themselves, 4) in all of them Being and Becoming are the same, 5) all of them are *field* (another abstract concept), 6) all of them are at the

same time manners of existence and non-existence, of genesis and extinction, 7) none of them binds and nevertheless unites, 8) none of them transmits but their own transmissions, for they are at the same time vehicles and ways, 9) they do not combine with anything but enter resonance with everything, and 10) try to reduce things to themselves, reproducing them according to their own image – as vibration, number, idea.

The wave is transmission between states, and thus it is multiple information: of the former state and states, and of the resulting state after a (transient) state considered by the researcher. As in-formation, the wave consists in elements resulting from structures and “forms” and which at the same time consists in these structures and ‘forms’.

The wave can be conceived of as a continuous play of (material and non-material) traces, of information succeeding continuously. On the other hand, these traces and this play are understood with and by scientific laws, concepts, formulas, which are, in their turn, traces of the *real* that is non-conceptualisable as “ultimate reality” and cannot be absolutely overcome (d’Espagnat, 2004 and 2006).

But as information, the wave and the trace may explain teleportation or quantum entanglement: though separated in space, two quantum objects (for the moment) could share the same existence through the information waving from one to another: traces taken over as stored information, at the basis of quantum coherence effects (*Quantum physics...*, 2012). The concept of trace is not superfluous: the teleportation of quantum objects is only a basis for a deeper understanding of circulation, resonance, transmission of information between different forms of existence, as the living and the non-living one, and between different forms of living matter. And though the research is only in the beginning, the teleportation of DNA molecules proves what was included in an old intuition: that “the propagation of life is able to make use of the quantum nature of reality to project itself in subtle ways” (Dunn, 2011).

CONCLUDING REMARKS

The notions discussed here are not strictly speaking scientific. They are useful as disclosers of the reality people and researchers have in view, as signs of a presence otherwise grasped with difficulty. Only their variants which make concrete their deep significances – as showed and suggested within their linguistic origin and ancient use – are scientific. That is, *a concept is scientific insofar as its concrete content reveals and concentrates a scientific theory*. Most of the variants of a former common sense concept are from the beginning scientific notions, and not only indirect scientific tools, as the shadow and the trace are.

Both the shadow and the trace refer to the material world/the material aspects of the world. Only from this level they have a metaphorical significance for the spiritual aspects.

Both of them are elusive entities, though localised in space and time and depend on the materiality of objects. They are not properties or attributes of objects, not interpretations, but rather – *mimesis* of them and signs of the constitutive contradictory character of reality.

From an epistemological standpoint, we may assert that the notions of shadow and trace lie *between* the general concepts and the abstract ones. Indeed, the perception of the world allows *generalisation* – namely and as Aristotle showed, the symbolisation of different individual and concrete things that are not present at the moment of discussion: the creation of possible models of the individual objects. But there are also the *abstract* concepts that refer to simplified properties and relations, disconnected from the real objects and that allow and at the same time consist in *ideas* concerning reality. For example, the concaveness – which is different from the hole, which in its turn is the generalisation of many concrete holes. If every abstract concept is a (true) theory about the world, the general notions only participate in the constitution of ideas.

If the difference between abstract and general concepts is nevertheless ambiguous, we should remember that an important criterion of difference would be the existence at any particular place and time: abstract things do not occupy any particular place and time, while general concepts correspond to physical things occupying space and time.

If so, the shadow and the trace are not abstractions, but general notions. However, these notions could be *un-problematic copies* of the material, objective world – as horse, stone – and *problematic copies* that reflect and depend on materiality but not on objects in their ordinary meaning (for example, the print/foot-print). Just the significances of shadow and trace make them to be problematic copies: they are “copies” – thus are not abstractions, they reproduce material configurations – but at the same time they abstract some aspects (concaveness, irregular trails of the wheels of a wagon, fractalic patterns), sending to/suggesting ideas. As metaphors, they are ideas, thus theories about the world, bricks of intuitive ontology.

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