

THREE CONCEPTS IN THE HISTORY OF THE KNOWLEDGE OF THE WORLD (CAUSE, CONSEQUENCE, *TELOS*) AND A CONCLUSION

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ABSTRACT. *The present paper provides an epistemological analysis that is related and refers to an ontological perspective because ontology depends on the human being, and on praxis or the human action.*

By discussing the three concepts mentioned in the title, a relevant review of the history of knowledge is sketched: the history of the understanding of the world, people's manner of approaching the world, and integrating this manner within as part that contributes to its equilibrium and persistence. To be aware of the efforts and vicissitudes of this phenomenon in history means to learn from it.

KEYWORDS: *philosophy, science, cause, consequence, telos, concept, Aristotle, biological determinism, modernity, sociological determinism, anticipation*

Contents

Introduction: Warning about philosophy and its treatment of concepts

1. Causality as a way of Knowing

- 1.1. From the mythical abstract causality to the philosophical one
- 1.2. Aristotle's new paradigmatic way of tackling causality
- 1.3. The new bricks of the existence
- 1.4. The four causes

2. The consequence

- 2.1. Common sense and the Aristotelian interdependence
- 2.2. Linear consequences
- 2.3. The "post-modern" science: the multi, inter and trans-disciplinary studies of causes and consequences

3. The *telos*

- 3.1. What it is and is not
- 3.2. The *telos* and science
- 3.3. *Telos* and anticipation
- 3.4. The universal *telos* and teleological drive of entities does not annul the freedom and responsibility of man

Instead of conclusions

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Introduction: Warning about philosophy and its treatment of concepts

One cannot underestimate the role of philosophy, particularly in view of the growing strong tendency of the present science tackling the complexity of the world in a coherent, unitary way. It is illustrated by the multiple growing expressive inter, multi and trans-disciplinary studies which reveal the complexity of the world and at the same time its principles and laws referring to the common and the distinct, continuity and discontinuity, similarity and difference, in a more and more fascinating manner. Obviously, modern science demonstrates, measures, substantiates its hypotheses: this is the reason of its persuasive force. But, in fact, philosophy has always and long ago envisaged and “foreknown” many findings of the present science. This is the reason they appear to us as being obvious, “commonsensical”, quite intuitive – and not counter-intuitive –. See, for example, the general characteristics of the all sorts of material objects (from mega to micro, from inanimate to animate) as they are demonstrated by the up-to-date research: between them *The capacity for development, self-preservation and self-organization; the laws of the age stages/phases of object’s life; the rule of ‘block assemblage’ in evolution; the unevenness and catastrophes (gradualism and catastrophism); the coexistence and logic of the typical and the unique objects; the recombination, or the circulation of matter of similar class in nature* [Grinin and Korotayev, 2015, pp. 7-11]; at least the first were anticipated already by the ancient philosophers. The development of the philosophical ideas, their continuity or neglecting (as the Hellenistic *conatus*, that was, however, implicit in Aristotle’s philosophy of organism) is, thus, important not only for the professional history of philosophy, but also for the progress of sciences and, actually, of the present world.

The philosophical concepts – as invention of the *universal* (and even of the *universalizable*, if we do not forget Aristotle’s ethics) – unify the variety and differences, and the world does no longer appear as a farrago, but as ordered and coherent. And this image of the external world is not (only) a question of learned ontological knowledge, even less interesting for the everyday life, but just the argument of the human optimism: people *can know* the world and by knowing, they can *make* it pleasant for *all of them*, and for *nature* as well.

Philosophically, every concept should be questioned. But ordinarily people are taught to not question the concepts and worldviews they bring. In fact, to question is difficult: not only because the concepts are parts of the language-jacket that seems to not allow to see the content; but to understand the history of concepts and reality – as they both show and hide it – needs a holistic experience (that is not transmitted in the mainstream education); and epistemologically, because the concepts are not only objects of inquiry but also stakes and criteria of analysis, and thus a kind of logical circularity makes people feel uncomfortable.

The philosophical analysis may be done on the basis of different assumptions: the same concepts may, eventually, be used as veils of the reality they pretend to disclose, for the bearer of such analysis deduces the reality from the hidden standing through these concepts. On the other hand, the non-speculative way of thinking uses the concepts just for understanding how had they been constructed, what reality did

they “represent”, and what increment had been brought by their use for the knowledge and actions of the human beings. Actually, every concept should be treated in this “pragmatic” manner that questions and emphasises its *telos*.

This means that philosophy discloses and attacks the *reductionism* professed in the mainstream education where the concepts are used as promoters of simple alternatives /disjunctions which would be the only comparable situations considered by the decision-makers in the present domination-submission based world society. In turn, by questioning the concepts as such, philosophy shows their potential to light that there are not only two alternatives, the bad and the worse. But for behaving in such a manner, philosophy must no longer be the *ancilla* of power relations: not even in an unconscious manner.

Seeing the present state of the world, we all are horrified and at the same time amazed at how the *Homo sapiens* could torture and destroy himself and his environment. On the one hand, he is the only possessor of logical intelligence on the earth, arriving to create artificial objects and the marvellous world of culture, as well as to project and act in accordance with values of love and generosity beyond the individual’s circle; on the other hand, the overall results of this premise are more than ‘contradictory’ – as some ones like to turn away from the intolerable face of the humans’ deeds –: they are malignant to annihilation, since the moments of joy – as *joy of life* as, ultimately, *joy of creation*, in Bergson’s terms – are overwhelmed by incommensurable suffering and unnecessary and untimely deaths [Polya] and devastation: where the nuclear winter is only the model [Mills, Toon, Lee-Taylor, Robock, 2014; Starr, 2016] of the condition of definitive disappearance of the *germ* plasma, thus of the *immortality* of man and living beings [Wald 1970].

Obviously, philosophy may emphasise the paradoxes of this state of things, and may describe the various aspects of the dialectic of life and society, but – since it aims at grasping the significances of all of these aspects – it does tackle their *whole*, developing the *concrete* universal/concept (let’s remember Hegel), and especially the relations between their *knowledge* and the human *practice*: the different and reciprocal transitions between *knowledge* and *action*.

In this regard, the present paper provides an epistemological analysis that is related and refers to an ontological perspective, because ontology depends on the human being, and to praxis /the human action.

By discussing around the three concepts, mentioned in the title, a review of the history of knowledge is sketched: the history of the understanding of the world, of people’s manner of approaching the world, in order to integrate this history within as a part that contributes to its equilibrium and persistence. And to be aware of the efforts and vicissitudes of such interpreted history means to learn from it.

1. Causality as a Way of Knowing

1.1. *From the Mythical Abstract Causality to the Philosophical One*

According to Aristotle, to know is to *apply* the cognizance – actually, as the ancient Greek epistemological optimism praising the human *logos* resounded, if one arrives to know (this, again, meaning to know the truth, otherwise we cannot speak

about knowledge) one will act accordingly –: otherwise knowledge is barren, ineffective, even inexistent, or existing only *potentially*. Or things, between them knowledge, exist only in *actuality*, their essence is manifesting only as *actuality*: only in this actual/realized form are things – and certainly cognizance, the ideas – describable, approachable.

As we know, the first idea about the surrounding environment was that of its existence: it was, that's all. For the humanisable animals/humans the problem was to fit to this environment and to survive within it: namely, to use the gifts it offered and to put the different natural *things* (stones, branches, animal skin) to do what the humans could not do/not in due time/not as easily and quickly they needed: thus, to transform them into *objects* (having human ends) [Canguilhem, 1952, p. 105]. All of these (the idea, the contemplation of nature, the effort to live, the manufacturing of tools) have occurred within the human society, through the *relations* between humans [Marx, Engels; but also Soete and Dobbelaere, 2016]. Indeed, the fabrication and use of tools is highly intertwined with/even depends on the “communication to others, particularly in the succeeding generation, of the know-how” [Medawar, 1973]. In this process has the *logos* developed, because to *communicate* means at the same time to *learn*, and for learning humans have developed all the signs, including the articulated ones. By transmitting words, the humans have increased the *cultural* world they had created, including with the specific “world 3” (of concepts, ideas, logic), as Popper has named it, and this specific world, the intellectual instruments, have progressed geometrically until to the level they seemed to be *autonomous* towards humans. And, in fact, they are, determining the physical existence since everything significant for man exists through the medium of ideas – and their expressions – about it: but the autonomy is relative, as it's easy to understand, because no idea has a transformative power without being promoted – directly and indirectly, through artefacts and artificial intelligence – by humans. Consequently, no harmful (and logically harmful, even purposively harmful) facts might be imputed to other beings than the humans, or to entities without (the existence of) human beings.

By answering to the external conditions in a more and more *human* way – i. e. social and spoken, by communicating, memorizing, creating objects, being empathic and collaborating, thus developing the social *logos* that gave the *discontinuity* of man [Silk et al., 2005; Vonk et al., 2008; Henrich, 2008; Brosnan et al., 2009; Riedl, Jensen, Call, Tomasello, 2012; but especially House, Henrich, Brosnan, Silk, 2012] towards the *continuity* of emotional/emphatic behaviour in mammals and anyway in primates [McGrew, 2004; Mirabella et al., 2007; de Waal, 2008, 2010; Frey, Störmer, Willführ, 2010] – the humans have behaved as a *collective brain* and have developed their ideas about the world [Muthukrishna and Henrich, 2016]. These ideas reflected particular, specific relations with specific things and objects in their environment and have emphasized *concrete particular* causal links. But at the same time and in the process of cultural evolution, humans have arrived to *abstract* concepts, generalizing the particular causal networks. And because they did not know but direct and visible phenomena, and because the most intuitive pattern of thinking was that of the human relationships, firstly, they constructed a *mythical* view where the unknown *causes*

were *animated* forces – as they, humans, were – and the need to be protected and cared as well as the power of protecting and caring were transfigured as omnipotent spirits/ later gods.

Therefore, what we are to understand here is just the idea of *Cause* and its development.

1.2. Aristotle's new paradigmatic way of tackling causality

The *mythical* causality was the first type of general, abstract causes. But, if on the one hand, the mythical causality stems the questions (the theoretical solution being given), on the other hand, it is insufficient: if people wield their reason.

Thus, the second type of general, abstract causality was the *rational, philosophical* one. Yes, gods had generated the world of humans and their whole environment, but once existent, this world had to be explained with mundane causes, since the humans have logic, intentions, unforeseeable reactions but also values and conformist penchant [Henrich and Boyd, 1998; Muthukrishna, Morgan, Henrich, 2016]. Thus, the humans as such construct their world, once it is given.

The philosophers wanted to understand the actions of the humans but also their natural environment only through the exercise of reason, or only “within the bounds of bare reason”/ “within the limits of reason alone” as later on has Kant expressed this will of philosophers.

Consequently, they did not stop at the mythical solution of gods as creators of the world, but have imagined: 1) some last concrete *material* bricks/causes (as Thales, Empedocles, Parmenides, Heraclitus), or *matter* as an abstract concept (Anaximander, Antiphon, Zeno of Citium, Zeno of Elea), or *matter* as substance (Aristotle), or *matter* as atoms (Leucippus, Democritus, Epicurus), 2) as well as the original transformative *forces* (love and strife, Empedocles). So, on the one hand, the philosophers as people who went further than the appearances grasped with the sense organs, have put the problem of the *origin* other than the gods; as a result, they have gradually constructed the above-mentioned tableaux where, since they were interested in the *origin / principle* (ἀρχή)/ roots (Empedocles) / seeds (Anaxagoras), they logically or normally had arrived to the *material substrate / cause* of the visible things. On the other hand, the philosophers felt that only the material substrate was not enough: the problem was to move and transform this substrate. The old mythical theism solved the problem by claiming that the gods had this power, and the entire primitive animism, considering the existence of a spirit in every material thing, was the basis of this ancient religion.

But the logical construction erected by the philosophers has annulled the religious view, rather “returning” to animism: as explaining factor, the material principle was prior than a mover since, in order to move something, just this something was needed, was it not?, but *the moving force was not separated from the material principle*. Neither water nor fire, nor the other elements, including the atoms, are motionless and inert, but just on the contrary. Hence, from an *absolute* ontological standpoint, one could have thought, as Thales, that “the world is animate and full of divinities” [Diogenes Laertius, Book I, 1, [27]]: but here ‘divinities’ were

no longer objects of adoration, but *principles within the material one/the material world*.

From another, *soft* ontological standpoint, the original elements – fire and earth, as the creator and the matter (Parmenides) – are but elementary/rudimentary components within people’s simple deductive imagination. In reality, the human *thinking* is capable to understand the *principle* of the world, beyond every immediate or sophisticated principle: the fact that this is *one*, the *existence* or *being*. Even though people think that it would be about two opposite states/substances [Parmenides, a. VIII, 50, 55, and IX], in fact the existence is *one*, and it is so just because it is *thought* (since what cannot be thought does not exist [Parmenides, b. 6. 1-2, 8.3-10]): *not-created*, *indivisible* as a principle, and *stable* [Parmenides, b. 8. 29-30]. The same is in Heraclitus who spoke about the *logos* (reason, order) inherent to matter (fire)/inside it/the world. The same is in Anaximander who gave us the first philosophical concept of matter, *the unlimited/ άπειρον* as abstract principle.

And so on and so forth.

1.3. *The new bricks of the existence*

On the other hand, the problem of origin as *model of thinking the world* was not only to arrive to the last material substrate and the force driving it – something too unrelated to the real world, is it? – but to give a more concrete emphasis to *what is in every thing and behaviour/action*: i.e. to pass from the first bricks – the substrate and its mover – to the model of *the concrete*. Here, Aristotle was the founding genius:

- yes, there are the five elements (fire, earth, water, air, ether) which may move themselves without an external force when they are in a different place than their initial one; but these are only original manifestations of the substrate matter (that is an abstraction, don’t forget) – *ύλη /hyle* – and do not explain what the concrete things are; these things – all the things/phenomena/actions, a quite revolutionary standpoint since it unifies the inanimate and the animate – are always concrete, then they cannot be explained only with the abstract principle of matter, even if or even more it is reduced to a concrete appearance as water etc.;

- therefore, the new concepts introduced are the *form* that gives the concreteness of every thing and – pay attention – not the substrate matter, but the concrete matter of every thing, the *substance*; the essence of the substance – *ουσία* – is just that the concrete things exist (so it’s no longer enough to speak about the substrate matter) / that the existence has different appearances; therefore, every thing is the unity of a certain form and the substance. A bed is its matter, the wood, *and* its form. Not the concept of substrate matter is interesting – since it does not lead to the understanding of concrete things – but the concept of substance; while the form is the general model/scheme/quality of every thing; and because things even in the same class are different from one another, there is also a “form of the form”, the concrete form (*σύνολον*)/ the archetype of that thing, that gives its specific;

- it is obvious that not this archetype (for instance, a certain style of beds) explains the essence of a concrete thing, but its form that is the *specific functionality /quality* of the thing (that people are lying and sleeping on the bed). Nevertheless,

σύνολον / the concrete transposition of the form is almost as important as the form: because only the general functionality is not enough for explaining the essence of things: for example, “if we intend to construct a bridge, we cannot design the structure of the bridge without cognisance about the environment, conditions, specific tasks, material possibilities and alternatives: thus without designing *ab initio* the bridge according to all of these which require and generate a *specific* set of qualities (‘form’) of the bridge”, “or that of adequacy of medical protocols (the form) to patients (matter) – adequacy manifested through matching the protocols to the concrete patient (resulting personalised treatments/ σύνολον)” [Bazac, 2014 and 2015a].

Substance, form, σύνολον are (abstract) *concepts* explaining the concrete things, and they are helped by other concepts about movement: *actuality* and *potentiality* (δύναμις), the movement/transformation/actualization (ένεργεία) of concrete states/objects being just the transition from potentiality to actuality; the movement itself is έντελέχεια because it has in itself the finality of that movement, and the result of movement /actualization is the complete and stable state/έντελέχεια, also.

Therefore, there is an order/reason of things that may be understood with, ultimately, an abstract logical causality. This causality – determining, in fact, making intelligible the movement – is showed by the *logical force/reason* that, though born by the human mind, can be logically separated from it, as it can be separated from the things thought by it: in this sense the Reason appears as *primum movens immobile/suprema causa*, as a “divine” substance deriving “its *excellence* from the act of thinking” [Aristotle, 1989, Book 12, 9, 1074b24; my italics] and being (somehow preceding the Kantian epistemological turn) as a “thinking of thinking” [ibidem, 41-42] or identity between the thought objects and the thinking as such [ibidem, 1075a5-7]. Just and only the reason can grasp and, at the same time, create the reason/logic/order of things and its principles and “laws” (form, matter, concrete matter, σύνολον, transition from potentiality to actuality) /the necessity that govern the whole existence. The creation supposes also the emphasising of abstract philosophical causes as origin/tools of the general understanding of things, or as their general framework.

1.4. The four causes

However, only the above-mentioned principles are not enough to explain the concrete things/substances, as well as their constitution and transformation. Therefore, the general principles were only the one of Aristotle’s preoccupations: because philosophy cannot remain science – έπιστήμη, scientific/reasonable emphasising of the causes of things, thus covering a specific domain of knowledge, presenting this domain (of reality and its knowledge) in an ordered, coherent manner – if it stands on only within a heaven distant from reality. Consequently, the Stagirite has developed the well-known theory of four causes: the material, the formal, the efficient and the *telos*.

Obviously, it's not necessary here to elaborate them. What is important is that their development was realised in the process of scientific research: of many domains (the inanimate and the animate, the human relationships in various frames).

From a standpoint, this was the inherent evolution of philosophy: from abstract sketches to concrete researches, and in this respect Aristotle was the great personified standard of this process. The scientific knowledge was not only philosophy but sciences too, both opposing to the mythical comprehension, irrespective of how interesting are its intuitions and how significant its metaphors.

On the other hand, philosophy was/is an intelligible construction, not a counterintuitive one. To remain in the heaven of abstractions meant to get away from the requirement of intelligibility and necessity for the real life of people. And sciences too have evolved from observations and intuitive explanations to even counterintuitive ones but – as Aristotle has pointed out – which represent new and more appropriate deciphers of things, new viewpoints illuminating the *complexity* showing itself as the unity of or the unified “strata”/domains/”levels” of reality. Actually, there is about new aspects and significances of the visible and intuitively intelligible “strata”. What is important is to not remain within abstract disputes and obscure jargons which are not intuitive or intentionally remain non-intuitive: Aristotle's lesson should not be forgotten nowadays.

All the four causes were demonstrated by Aristotle in his scientific fathoming of the inanimate physical things as well as the animate beings. The first two causes were the main goals of the modern sciences, together with the third one that has put man as creator of objects as the only demiurge on Earth. Only the *telos* delayed from the philosophical and scientific images of the world.

2. The consequence

2.1. *Common Sense and the Aristotelian Interdependence*

The second concept is the effect or consequence. Obviously, it is related to the cause – as Hill [1965] has reminded us again from the standpoint of medical statistics, then of scientific research: that the effect size of causes does not annul their existence. When the size is small, the proof of effects is dependent on the reproducibility of experiments, and the association between factors and effects must be specific. Also the temporal succession between phenomena puts the problem of causation of the latter from the first ones when the succession is repeated (and may be measured). And the concrete relationships between phenomena may emphasise the causation, and the causation mechanism must be plausible (but certainly it is related to the level of cognisance), and the controlled experiments must be coherent with the empirical findings. And “in some circumstances, it would be fair to judge by analogy”, and sometimes the tests of significance “are totally unnecessary – because the difference is grotesquely obvious, or negligible, or because, whether formally significant or not, it is too small to be of any practical importance”. This last idea was suggested by Durkheim in reference to the sociological explanations where the empirical research is not useful when it supplies new examples that add nothing to the theory [1967, p. 77] – but, as we know, regarding the order/succession of

empirical research and theory to each other, there is a difference between their both common and first scientific grasping and, on the other hand, their logical position both in philosophy and science.

People have begun understand how things are, from effects to causes: the first visible data were the rustle of leaves and the waving of grass, and only after the causes, the wind or the movement of animals. Aristotle observed the parts of animals and then, on this basis, their intertwining and presumable reasons of this fact. Actually, the old popular tradition of 1) beginning with the effects, 2) mastering the causes and 3) relating causes and effects in a *unitary* view, was assumed by the ancient thinkers.

The outlining of the four causes has demonstrated that Aristotle knew [Aristotle, Book V, 2, 1013b, 1014a] that: 1) all causes are not only inter-related but also they are different aspects of the *same* thing/phenomenon; 2) then, the causes are coexistent, because they are different aspects through which we approach things and they are presenting to us; 3) more, each type of cause is somehow the cause – and this means, the *effect* – of another/of the other types of causes; 4) consequently, from each cause derives an *effect* that is only one face of the thing; 5) the causes may be mutual, but not in the same sense; 6) the causes may determine contrary effects, as well as the presence or the lack of causes; 7) there are simultaneously immediate, intermediary and distant causes, or – from the standpoint of their importance in the constitution of the phenomenon – particular and more general causes towards which the first are subordinated; 8) there are necessary and accidental causes, but 9) all this kinds of causes overlap, 10) and they may be potential and actual.

2.2. *Linear consequences*

The modern sciences have developed the succession cause-effect in the *inherent* linear way because they were at the (modern) beginning of scientific research. Thus, they *fragmented* reality and, while scientists as such never forgot the surrounding environment of the considered fragment, the general *Zeitgeist* was that only the results of the fragmented views were “The science” and mattered. Every research has put in parentheses everything was outside the object of the research, and consequently a *reductionism* has evolved: just opposite to Aristotle.

In this framework, the *precautionary principle* that is indestructibly related to the scientific spirit – since knowledge aims first at not harming and thus, at improving people’s understanding and actions in the world – was *neglected*, and sometimes in an absolute manner.

There are, obviously, *epistemological* and *sociological* causes – they themselves interrelated – of this fact. By being a tool of power within the domination-submission social relations and organisation, thus by being appropriated by the leading strata, science became firstly the tool of *private* power: so, the effects of things were considered through the lens of their usefulness for the private interests. This is the reason of incessant scientific search for more, more, more private profit.

By being subordinated to the precautionary principle, science considers the *whole* well-being of the system taken into account, and certainly of man, but the

private instrumentalization of science means to look at the private interest as much more valuable than the system. After witnessing the tragedy of thalidomide, Hill [ibidem] could warn that “on relatively slight evidence we might decide to restrict the use of a drug for early-morning sickness in pregnant women. If we are wrong in deducing causation from association no great harm will be done”, i.e., the results of the scientific discoveries must be parsimoniously applied before their reverse being gainsaid, as the true experiments ascertain their truth according to Popper: what is more important than to apply, is to not harm.

And that does not mean to stop the scientific research and the spring of technology: the good is not in the past, but in our capability to fit the discoveries to the requirement of harmonious development of the whole.

But as we know – and with all the warnings of some scientists –, the precautionary principle of knowledge collides with the private control of science. There is, obviously, an anti-precautionary tendency in the scientific research – one is interested to see and to arrive at the last consequences of the theory submitted to experiments – but this tendency could be harmful rather to researchers than to the general public, since not only the theories about causes, but also the effects are experimented (as in medicine and pharmacology). The hurrying of scientific procedures, the neglecting of counter-evidence [Novotny, 2015] (till to making vulnerable the theories [Arabatzis, 2012]), the fake scientific research [Ioannidis, 2005], and the promotion of insufficiently tested/non-tested products [Benson, 2015] are not at all the ‘inherent’ consequences of the present scientific era/of the ‘omnipotent technology’, but of the private control over science and technology, including over the logic of academic world: more precisely, of the subordination of the logic of scientific research to the logic of quest and war for profit.

Therefore, in the modern science the effects were treated in an *isolated* and narrow manner (as effects of reactions and processes, direct, rather immediate, and anyway out of context), as the causes were. The multiplication of causes, i.e. the analysis of phenomena from different and more and more points of view, has enriched the tableau of consequences, but they were treated separately, because the main purpose of scientific research was to construct scientific disciplines with their own tenets, measurements, serious verification, theories and autonomy of each other.

2.3. The “post-modern” science: the multi, inter and trans-disciplinary studies of causes and consequences

The agglomeration of the results of the modern science has led to its crisis, i.e. the evidence of contradictions between different results. Consequently, a paradigm shift has occurred: from the absolute separation between the subject and the object (see the difference between natural sciences and humanities [Bazac, 2015b]) to their Kantian tradition Einsteinian intertwining; and from this a more and more holistic approach has evolved (faster [Khroutski, 2014] or slower). In the trail of the *suggestion of holism*, many new fields/disciplines have appeared: actually, the majority were/are only “studies”, because, first, they do not have specific laws, methods, even objects, since they are only new standpoints about existing

objects/domains, and secondly, they are in the phase of accumulation. At any rate, and although some studies treat a wider range of causes and consequences than before but nevertheless isolated from other ones outside the given multi and interdisciplinary area of research, the most fruitful results of the present science are just those of inter, multi and trans-disciplinary view. The modesty of their own self-denomination – as “studies”/relations between different fields of reality and research (as biophysics etc.) – only hides the big results that reveal new *laws/deterministic regularities* [Vogel, 1996; Bejan, 2016], just opposed to the superficial understanding of post-modern science as statement of indeterminism.

And what is equally important is that only through these studies can we understand that the consequences should be treated in an *integral* way: just because the real phenomena are integral, forming the *holos*. In this perspective, it appeared that only now, as a result of this manner to treat phenomena and consequences, have we understood what before would have been unimaginable: for instance, that good things/signs of progress, like (too much) lighting, cause harmful effects too (light pollution [Bogard, 2014]), or that the air pollution produce harmful effects not only on the respiratory tract, but also on brain and behaviour [Fonken et al., 2011], or that the modern development produces harmful effects in the natural environment [Van Damme and Banfield, 2011].

We arrive to understand only now, but at the same time the exogenous conditions of science hinder us to apply this knowledge, and even distort it: see the use of psychic enhancement in warfare contexts [Nelson et al., 2016].

The warnings, the *holistic* view, the awareness of harmful feedbacks of apparently good phenomena were developed already in the second half of the 19th century (Marx) and in consonance with the latter Einsteinian overthrowing of the naively optimistic image about the modern transformations [Lankester, 1920]. And since in the first half of the 20th century the traditional separation of disciplines and the overconfidence in the progress of capitalism as the only system accommodating to the human nature were dominant, different scientific views about causes and consequences were accidental and, as a result, their lack, including the lack of the holistic view in science, was substituted with philosophy. But there was a good philosophy – as Whitehead’s *Process and Reality* in 1929, and Hartmann’s ontology of levels of reality – and a bad one that considered that metaphors about the deep mystery of the world in front of which the human being is an absolute vulnerable entity would be the solution to criticise the state of sciences and social relations, and to offer “the truth”.

At all events, the delay of holistic approach of consequences has led to their aggravation: as the world looks today.

3. The *TELOS*

3.1. *What it is and is not*

The less focused on problem in the history of scholarly knowledge was – and still is – the *telos*. This is the *reason to be* of things: the question put in order to emphasise it is not “why”, and less “with what result”, but “what for”. This question

implicitly includes the causes and results of things or phenomena, but overtakes them because it unites them *and* the final states of things or phenomena. The *telos* has an explicit holistic sense.

Consequently, though the *telos* may be simplified as *function* – since the function as such sends to holism, because the function of a thing does not consist only in its preservation (taken isolated), but in its preservation *within* the whole/system it is part of, so in the preservation of that whole – actually, it is more than function: for the function is only *a means* for the realisation of the *final state within the whole*, therefore supposing internal harmony of this whole. To ask “what for” means to understand (or question) “for the sake of what”, as Aristotle said, is the thing, or is the existence as such.

The “what” from the above question (“for the sake of what”) signals just the reason or *logos* or order of things: in accordance with the human reason. So: for the sake of the accordance with the human reason. Yes, on the one hand, the objective *logos* of the world is anterior to us and may be understood if we are logical persons. But on the other hand, since without being reasonable, thus without treating the existence in a rational manner, we do not understand it (or the things do not exist *for us* without focusing on them, being aware of them and trying to understand them), it results in that, for Aristotle, the correspondence between the *logos* of the world and the human *logos* may be tackled from any standpoint assumed, the above-mentioned objectivist one or the “Kantian”/constructivist one. The human *telos* is just reason, has Aristotle showed, i.e. since every thing have a specific (a “function” as *specific activity* of the living beings [see Aristotle, 2000, VI, 2, 1139a 18]) and in fact without this specific there is no reason the thing to exist, then the human specific is reason. And reason means to do every deed reasonably, i.e. *as good as one can do*. Simply put, to do one’s best, and thus, reason means both virtue/excellence and to think and to make the good.

Consequently, the *telos* can be reduced neither to the fragmented and isolated causes nor to the subjective motivations of fragmented actions. And obviously, it does not exist only in the virtual intentions: since the good is manifesting only in the actuality of things and actions.

3.2. *Telos and Science*

As already mentioned, the *telos* was rather exterior to the preoccupations of both philosophy and the modern science. Forgetting the forefather’s creation of the concept, both science and philosophy were interested in the “why” and, to a lesser extent, in the “with what result”. The few exceptions (as for example, Spinoza) have suggested a holistic approach (see Spinoza’s *multitudo*/community that was not a grey uniform mass but “a *plurality which persists as such in the public scene*, in collective action, in the handling of communal affairs, without converging into a One, without evaporating within a centripetal form of motion. Multitude is the form of social and political existence for the many, seen as being many: a permanent form, not an episodic or interstitial form” [Virno, 2004, p. 21]).

Indeed, why does the thing exist? What is its reason or *telos*? It is not the immediate individual end of man considering that thing – that is, the thing does not exist because it is an individual instrument, but as a part in the world over which the whole world and the whole human community had and have an approach governed by the *Good* of both the whole and its parts: all are related to all and are for the sake of the *whole* [Aristotle, 1989, Book I, 982b 1-5, 7-8; Book XI, 10, 1075a 17-27]. If so, the *telos* – as the other two concepts, moreover – requires and professes “pluralism”: to consider and recognize other individual standpoints, other approaches.

The research of things is thus the research of the Good: i.e., one cannot research without being aware of the Good of things. However, as we know, a big part of researches has neglected this. A “quantitative” aspect in the research of things according to their *telos* (and not according to their causes) is important: the equilibrium, the “mean” in Aristotle, shows the harmful character of the *too much* and the *too little*. As the equilibrium, the excesses, too, were and are historically determined, but epistemologically they have appeared because the research has not considered and related the things within the whole, but according to fragmentary, isolated and many times individualistic interests. The delay of the consideration of *telos* has generated the bad plight the world is.

3.3. *Telos and anticipation*

To consider the causes and consequences only in the habitual fragmented view about fragmented objects means to have no ability to anticipate. Anticipation – that is a perspective in which one goes from the future to the present – is not tantamount to the projects and projections of objects / prefiguring the future states, as this venturing was and is traditional in any engineering (Nadin, 2015). The projecting / designing, as bio-physiological human ability within the process of knowing, is related to *every* human beginning of effort to know and act: thus, it is naturally focused on *individual / fragmented* things. However, because of the social character of man, the projecting is not only fragmented, and in the process of communicating, knowing, acting (and fabricating tools) and relating to each other in empathy, the general concepts and views have evolved: man is not (only) a selfish animal, it is – as Aristotle has demonstrated: the only animal who “has perception of good and bad and right and wrong and the other moral qualities” [Aristotle, 1944, I, 1253a 18-19] and thus, although “Men think that it is in their power to act unjustly... really this is not so... to do them as a result of a certain disposition of mind is not easy, and is not in one's power” [Aristotle, 2000, V, 13, 1137a 6-7, 10-11] – a social rational being/rational social being. The *telos* of man is to behave in both a rational and social manner.

The concrete manifestation of the *telos* of man is to construct ideas and transpose them in such a way as they fit to and realise a world lasting, coherent and pleasant to *every* human being. The concrete manifestation of the human *telos* is not at all to simply project objects. Not in this enterprise consists the human *telos*. Consequently, the anticipative power of man goes *beyond the simple projects* – which transpose the individual will, fantasy and knowledge into a desired, ideal model, thus which go from the present to the future – and its development challenges the

egotistic, fragmented view that equates anticipation and projection: anticipations suggests and needs *holism*, and arrives to be holistic.

As we know, according to Aristotle, action/activity (as transition from potentiality to actuality) was considered as decisive for the human being, its internal harmony as well as its harmony with the world. And this harmony needed a clear image of and search for the harmony of society as such, as an environment conducive to the exercise of excellence of all men. Obviously, the human activity means to humanly know, and if possible – as the model of philosopher shows – to know the causes and *teloi* of things. The crisis of the ancient world led to the idea of bracketing this requirement of necessity and possibility of deep knowledge and consistent activity for the sake of society: the only salvation of man was the individual, fragmentary, isolated reasonable projecting and deeds.

The birth of Western modernity was related and led to the celebration of the *individual* projection of welfare. But Adam Smith has warned against the reductionism of this view and emphasised the necessity to compensate the harshness of private property with virtuous sentiments regarding the whole community [Smith, 2010-2015]. The warning was, obviously, not considered, and the egotistic view has prevailed and, inherently, criticised from different standpoints (see Kierkegaard and Nietzsche). However, the maturity of criticism is acquired when there are also (theoretically substantiated) solutions (as in Marx who did not work within the frame of the speculative philosophy that relates only concepts; he paid attention to the existential conditions of the human action, knowledge and morality, and thus he solved the concepts through *practice*): and this means, at the level of our discussion, to search for and understand the causes, the consequences and the *teloi* in a *unitary* and *dialectic* perspective.

Anticipation means to be aware of the *mediation* of concepts (and, generally, representations about the world) between the world as such and our conscience that arrives to the conclusion that things exists and they are only in the way described by concepts: as Marx pointed out the *ideology* in both its meanings as false conscience and conscience according to the concrete complex social positions of people, and three decades later Nietzsche the *mechanistic* and at the same time *idealistic science* [Nietzsche, 2001, § 112, p. 113]. Actually, the interface of concepts which are constructed – as not simple mirrors of the objective world – imposes our *fatalistic* representation: “this is life”, “the world is as it is given to us through the stories/concepts automatically assumed by us”. However, “life is not an argument” [Nietzsche, 2001, § 121, p. 117], so not all our reactions to the world are “natural”.

Therefore, only by understanding and realising the *telos* of things can people anticipate in a both rational and realistic way. Although only when the bad consequences are agglomerating, do people begin to think to the reason of things – thus, until this moment they made projects without caring about their global consequences (or even ‘externalising’ some consequences/costs – and this is the logic of private enterprise) – actually, only by thinking *first* to the *telos*, and so to the general consequences, and not only to the individual and immediate, may people

have a coherent and anticipative view about their presence in the world. And obviously, the anticipative view is good only when it is suitable for the human *telos*.

3.4. The universal telos and teleological drive of entities does not annul the freedom and responsibility of man

As it is already demonstrated, the teleological impulse in the existence and movement of entities – from quanta (see the Romanian S. Comorosan’s researches), atoms, molecules and cells to the social structures of living beings and humans – is not an absurd anthropological reduction, because the reality of entities is composed not only of *matter* and *energy*, but also of *information* [Goodwin, 1978; Kováč, 2006; Suteanu, 2013; Klimek, 2014). And since information means relation and reaction, it means also “learning”: and “learning” means to adapt to the conditions of existence, i.e., to being in-formed again through this “learning” and to in-form the milieu as a result of this “learning”.

The manifestation of information in the micro-world (quanta-cells) generates, on the one hand, the impression that “matter” is living (thus, the transition from an-organic to organic matter would be denied)/matter is conscious/the spirit is before matter; and on the other hand, the successive understanding of “interaction” of these (only?) three modes of the existence (matter-energy-information) at the level of micro-world is of cardinal importance for the explanation of behaviour of the living macro-world. (For instance, today we got to know that molecules have memory generated just by the flux of information and its feedbacks at the sub-cellular level, and that this memory transposes as memory of cells and organelles, that there are areas and networks of cells (neurons), as well as connections, responsible for/projecting at the surface/visible level of consciousness different types of memories, representations (as mirrors of reality), conduct. But what amazing was before this knowledge to contemplate that dogs and cats playing with little children who sometimes took them in a painful manner knew very well that the intention of children was not bad. Today we begin to know how is this possible [Schmelz, Call, Tomasello, 2010; de Waal, Ferrari, 2010].

We thus arrive to understand the *basis* of what is common in the behaviour of animals (mammals) and man. We arrive to understand that at the surface, the behaviour – that is complex – would be only the reflection of the deep processes. The design of these processes, though they are multi-levels and a cobweb of relations, is nevertheless simple: because the aim of every entities and complex of entities at this micro-world is to persist (*conatus*), the development is always thrifty/economical, i.e. follows the minimum effort. This model of design is transmitting in the entire natural world: we could formulate even the law that *the natural construction is always minimalist, except the cases minimalism doesn’t work or is harmful for the entities*.

But if many deep processes are similar in the animal and human world, we might assume a certain mechanistic theory of the fundamental determinism that governs us, humans, too. However, this assumption is false: because as the level of complexity increases through the new and new interactions (and “learning”/adaptation) of the forming macro-world (organs, organisms, structures of

living organism) with the environment, as the superior commandments prevail over the inferior ones. One does not explain the human behaviour through the information processing at the level of molecules and cells – nor at the level of matter processing in the chemical interactions and the constitution and function of some specific molecules as the proteins –, but at the level of complex social relationships. And though the molecular biology is more and more explaining consciousness – even, again, the objective teleological phenomenon at the level of biomolecules [Spassov, 1998] – the *human behaviour* is determined by the superior level of reality, the “world 3”, as Pooper has said. Namely: even though the explanation of the biology of living beings has to integrate the physico-chemical explanations (thus, the epistemological pattern is here from the lower to the superior levels of organization) and the teleological ones which proceed from the intrinsic superior/teleological commandment of molecules and cells to the lower level of physico-chemical relations [Spassov, 1998], this teleological commandment involving information, the explanation of human behaviour, viz. language, meanings, the entire world 3, affects, attitudes, action cannot and must not be reduced to the lower basic bio-physico-chemical and informational level.

The human *telos* may well reflect the fundamental *telos*/the “good” of every material entity/even every energetic circuit at the most basic level, but it is not at all reducible to it. Even the human *conatus* is determined by the human conscience/*meanings* created within the human conscience which supply to man the reasons to live. And as the human *telos* cannot be reduced to the other causes – or, for example, to the subjective motivations/intentions of individuals – as it cannot be reduced to the *teloi* of the hierarchy of elements (from quanta to organism) which constitutes man.

Consequently, information at the basic micro-world level is not tantamount to the human meanings created in the historical and social development of cultures and societies. Just these meanings – and the struggle between so many meanings – are forming the different human *teloi*/beliefs concerning the *raison d'être* of creations, policies, relationships, behaviours which explain, ultimately, the limits and *freedom* of man; and its *responsibility*.

Nowadays, freedom and responsibility do no longer reside in fragmented “decent” viewpoints about the world: the present information already warns against the *geocide* committed not “by man” (so not by all human beings, as in the speculative modern philosophy that has criticised the inherent fall of man under the power of objects/technology), but by *concrete* “people in charge of world affairs”. And if so: a counter human force is needed [George, 2016]. Nowadays, this obvious conclusion – in the trail of Marx and Lenin – is more on the fore than even before. As well as the momentary function of the countering human force: that of being first a “destituent power” that deactivates the present governance and law [Agamben, 2013]. But if this function does not transform *in due time* in a “constituent power” able to construct a better and human law, and even though the objective conditions of a radical transformation in order to institute the human *telos* are ripe, “society decays, and this process of decay sometimes drags on for very many years” [Lenin, 1905].

Instead of conclusions

The concepts are not “isms”, covering the things and being objects only of TV chats in the model of Hermann Hesse’s Feuilletonistic Age (*The Glass Bead Game*, 1943). If the concepts are used as veils of the real – and not as instruments of disclosing it – they hide the complexity of causes and consequences of facts, as well as the main cause of this hiding and of the disintegration of intelligibility of the world with the tools of reason: the private property and the domination-submission power relations. In the present sketch, this cause transfigures in the *inexistence* of the *respect* and *ensuring* of the human *telos*.

Though the epistemological causes of the neglecting of interdependent causes, consequences and *teloi* cannot be denied, the social ones (the capitalist way of modernization and progress, the destruction of the social whole by the private interest) are more striking. But their result is the *present* refuse – by the out-of-date style of thinking that egotistically instrumentalises the objects of studies – of interdependence of causes, consequences and the human *telos*. Actually, what does this refuse mean? It means the reduction of knowledge to *information*, subjected to manipulation engineering. But knowledge is *value*, too, the meanings of information – involving causes, consequences and the *telos* – and their neglecting /the reduction of knowledge to information directly contribute to rendering humankind more vulnerable.

By opposing the popular culture where holism and prudence/anticipation were constitutive, the modern science has developed mostly isolated solutions and remedies to fragmented and isolated parts of the existence. This type of consequences of science has substituted the holistic and rational understanding of things. But do not forget: the modern science has developed in capitalism/ with the development of capitalism.

However, the accumulation of scientific and technological results has led to the epistemological feeling that the fragmented manner is no longer sufficient, and that it is even harmful. Therefore, only now we begin to (re)understand the logic of things, but the application of this process is still very slow.

Seemingly, the present scientific age emphasises a multitude of causes, analysed from different viewpoints. However, because of the power relations framework, their consequences are still isolated to each other. And not because their verification needs more and more experiments and measurements, since this verification does not bring anything new to the fact that the human *telos* is infringed.

Geocide is, as Susan George has shown, an absolutely new phenomenon on Earth: that a species – and I add, the only one with consciousness – transforms its habitat (that is, the whole Earth) in a non-habitable place, destroying the life of both all other living species and its own. There are, obviously, social, economic causes which we should not afraid to summarize as the structural capitalist relations and their inexorable logic; there are, obviously, concrete cultural and historical causes. But there is also the *logic of thinking* we have to decompose in order not only to understand genocide, but also to fight against it. This logic comes from the traditional modern/induced by capitalism *fragmentary* view that assumes that the whole may

absorb/counterbalance/even annul the evils made by humans in different fragments of reality. Or, as we experience, it is not the case: the whole does have limits, as the fragments do.

However, only by understanding the “phenomenology” – which is not superposing to the psychology, as we know from Husserl and Merleau-Ponty – of phenomena is not enough; only to understand the ideas and concepts people share, and thus the images of the world they have and share, is not enough. One must arrive to the *causes* (whose complexity must not annul the necessity to treat them from the standpoint of their interdependence, consequences and *teloi*). The neglecting of this requirement is, in fact, the weakness of phenomenology or rather of its isolation from other philosophical schools.

Anyway, the present world is characterised by the *exponential change* induced by the activity of humans organised within the private profit driven and domination-submission relationships. And though the mainstream ideologies try to induce the idea that the change would be natural or only because of the technology that shapes us ordering the entire life, and that *only* by technology can we transform the “natural” malign change into a beneficial one, actually, they are denied just by the dominant private profit driven technology. The alternative solution is not the disdain of technology and its reduction: technology is necessary – its hypothetical extinction would lead to an apocalyptic return to the Stone Age – but not as overplus, as excessive agglomeration of man’s environments with gadgets whose *telos* is subordinated to the private profit.

Many intellectuals are confused: and between them not only those from humanities, who inflate the minorities identity studies in a mainstream, liberal manner, but also those from technology: actually, all able to understand and manipulate epistemologically/in engineering manner the causes, if not the consequences and the *telos* of things, too. They think that their technical expertise – as neutrally expressed as they can – would compensate the ignoring of the human *telos*. They hide behind metaphors (as, for instance, the ‘knowledge/informational society’) and are blind in front of the fact that metaphors and sophisticated representations do no substitute the real knowledge and cannot veil the instrumentalized and fragmented knowledge opposed to the human *telos* and the *telos* of things. Therefore, humans have science – so, they have power, we must not forget the old Bacon’s inference – but the use of science is privately confiscated. This is the main reason of the *absurdity* (in Camus’ understanding) of *wasted* human science.

However, the inherent logic of science that leads to its convergence with philosophy, and the ancient wisdom promoted by Aristotle are denying this course of absurdity. Aristotle’s complex of *excellence* in thinking (*creativity*) and *virtuous action* is the optimistic substantiation of the surmounting of the historical crises we are overwhelmed. Without action to apply this model, we only float in the realm of potentiality.

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