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"INTERMEDIATE MATTER": CONJECTURES ON IMPONDEROUS MATTER AS INDUCED BY KEY CONCEPTS OF SYMMETRY; IMPACT OF MIND ON MATTER I

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Abstract: *Thezre are long time unanswered questions about the interference between matter and mind. How can we step over the "materialistic monism"? What can be the bridge between the impenetrable and heavy matter and the field of life and mind? The problems that arise for explaining the interference between matter and mind have something in common for both principal dogmas in ontology, the "monistic" (that postulates only matter as existing substance), and the "dualistic" (postulating that two different substances exist, matter and mind): both have to explain how the mind may influence matter, so that Man may "act" in the world, i.e. how to cause e.g. bold stupid atoms to follow merely imaginated motives and aims of action by making (some kind of) rational use of natural laws.*

1 IN SEARCH FOR A MATERIAL ESSENCE OF LIFE AND MIND

Speaking at a congress in Latin America, it appears as an adequate reverence to mention first the meritorious patron of the continent´s cultural identity, **Alexander von Humboldt!** (See details at the end of the next article.)

In fact, when Humboldt prepared for his famous journey to the "quinoctialgegenden des Neuen Kontinents", he focused attention, seemingly "by the way" and far from his "geographic" intentions, also on the phenomena of electricity in animals, a recent discovery that would cause a radical shift in the understanding of basical problems of the "materialistic monism" common in science and philosophy of the enlightenment area. For it immediately raised the expectation that electricity might be the long searched link between bold "normal" matter (defined as impenetrable (qua Descartes) and heavy (qua Newton)) and those sophisticated manifestations of "matter" (this assumption left valid!),

namely life and mind, that hitherto had resisted simple “mechanistic” explanation.

Humboldt’s friend Friedrich Schiller, well known as a poet, yet a physician by profession, had given a survey and some tentative categories of the problem some years before in his two dissertations about the “relations between the animalistic and mental nature of Man”. So in 1795 he published Humboldts programmatic article “Vom Rhodischen Genius” as fitting well into his periodical “die Horen” (reprinted in “Ansichten der Natur” from 2nd ed.). Here Humboldt declares electricity, at that time against common opinion and merely metaphorically, to be the very essence of “force of life”, valid for both, life and mind, the unity of which Herder had postulated ten years before (“Ideen”,1784).

However, when he prepared his journey in concreto, Humboldt turned his merely symbolic idea into hard science, and the multitude of empirical results, published 1797 as “Untersuchungen über die gereizte Muskelfaser”, plus the meanwhile detected relation of electricity to chemistry, made Humboldt withdraw his too universal thesis about the underlying principles: now he reserves electricity for explaining life only, whilst in contrast assigns the mind to a principially different category. Fifty years later, now based on the advanced categories and empirical findings of half a century, he reaffirms his distinction between the (supposed as) material bases of life and mind, respectively, in “Kosmos” (I (1845) 386), his famous and influential “sum of life”. As this book applied to a wide public, the distinction became something like a basical cultural axiom, that soon also boasted, in the dramatic style of the advanced “pompous age”, the categorical “Ignorabimus” proclaimed by Humboldts friend Emil DuBois-Reymond – an exclusive view, that quite surprisingly has regained reputation, even dignity in our times.

So it seems to fit well into the frame of this congress to scrutinize this stupefying (in my opinion: wrong) approach by tracing some of the various streams of guessing on intermediate matter from 18th through 19th to 20th ct., because they are widely based on key concepts of interdisciplinary symmetry studies, like e.g. unification, balance, polarity, (ir-)reversibility, complementarity, correspondence and equilibrium, of structure, order and self organisation.

2 IMPACT OF MIND ON MATTER: AN INTERMEDIATE MODERATOR?

The problems that arise for explaining the interference between matter and mind have something in common for both principal dogmas in ontology, the “monistic” (that postulates only matter as existing substance), and the “dualistic” (postulating that two different substances exist, matter and mind): both have to explain how the mind (if conceded to exist and revealing some definitory qualities like spontaneity and (more or less) free will power) may influence matter, so that Man may “act” in the world, i.e. how to cause e.g. bold stupid atoms to follow merely imaginated motives and aims of action by making (some kind of) rational use of natural laws.

Schiller had reviewed the three representative traditional arguments through a “dualistic” eye:

- the “materialistic”: that mind is just a more delicate, but equally simple kind of matter,

- Leibniz´ argument that there is a “pre-stabilized harmony” between them, and

- the “occasionalistic”, arguing that God himself coordinates them directly at suitable “occasions”.

He had demonstrated them all as insufficient, for various reasons; instead he postulated a substance of its own that was to possess just those qualities that were needed: it must exist, yet is not sensually conceivable, is imponderous and spurious, yet able to incent and direct matter: a real, material mediating force, called “Mittelkraft”, or, because it leads mental activities to matter by nerves, also “Nervengeist”.

The mechanistic approach at first glance does not suffer such problems, for there is only one singular substance, with mind conceived as a material manifestation of the same ontological status (if existence is conceded at all!). But it does not escape similar problems on an even simpler level: The materialistic Greek atomism, for instance, had explained the world of appearing objects as changing arrangements of atoms in empty space, with change caused by mechanical kicks between the atoms. This argument failed, however, with respect to mind, so Descartes introduced his theory of specific whirls, an idea, immediately refuted by Stensen for anatomical reasons (adequately estimated not earlier than in our time), and indirectly by Newtons theory of gravitation. For, whilst the simple kicks of atoms (without any attractive force) would have made the world of the atomic systems to fly asunder, the new gravitational force would have made it collapse. Consequently, Kant had postulated a repulsive force, that by interacting with gravity would hold the world in a stable equilibrium. However, for both forces remained undetermined how they mediate force to matter, since direct mechanical contact was no longer necessary, as the effects of gravitation at distance indicated. But whilst the idea of indirect, yet immediate impacts of gravitation at distance raised no explicite doubts, this was not the case for the others. For them some kind of material mediators were proclaimed, that however lacked the classical qualities of matter: to be massive, impenetrable, heavy. So they could not sensually be detected as such – as “imponderabilia” they were defined as invisible substances just exhibiting forces on matter.

Fortunately, in fact several effects were detected just in time, that could not be attributed to classical matter, but, if they had to do with matter at all, called for specification as “imponderous” matter as their origin – and there was hope that these could be identified with the mediators searched for!

3 ROMANTIC NATURPHILOSOPHIE

The described method: to postulate just what you are in need for (though cannot find it empirically) looks foolish; but it is in fact one (emphasis on “one”) of the wellfounded steps in the methodology of scientific progress: namely to set ad hoc-hypotheses meant to explain single experiences ad hoc and by incorporating them into a system of knowledge. These hypotheses afterwards of course must be tested again by experience whether they fit into the systematic context of science as a whole.

Now, the representative philosophy of the time, German "Absolute Idealism", and its scientific counterpart, "Romantic Naturphilosophie", were perfectly apt (or, as some people said: perfectly absurd) to fullfill the actual task of interpreting these new "forces". I will here just briefly review the main ideas I exposed in more detail at the ISIS-S Hiroshima meeting (S-CaS 3(1992)401).

Kants postulate of attractive and repulsive forces, whose equilibrium stabilizes the universe, had induced a "dynamical" view of nature, that gave to forces an at least equally ontological importance as matter had possessed before. But what for Kant was just a formal parameter needing experimental verification, gained systematic priority for the Idealistic philosophers and their romantic follower-scientists, who took these at first merely heuristic postulates as general metaphysical principles transcending mere empiricism. The facts and laws of nature were thought of as already hidden in the mind itself, as if they could be deduced from its structures, so that in the last consequence empirical verification seemed not necessary at all. The scientific style, and the sometimes purely phantastic results, can be easily imagined. Yet, on the other hand it was an important turn to focuse on the strategies of scientific labor and to emphasize the role of the underlying general principles. The great overarching principle was to understand nature as a great unity of a whole, with matter and each of the single forces seen as just components of a universal system of interactions (Schelling); thus, the task of science was to examine this "Zusammen- und Ineinanderweben der Naturkräfte"(A.v.Humboldt).

In fact, the set of methodical principles favored and elaborated by the romantic scientists became representative for modern science, e.g. as the search for unification of isolated facts, for conservative laws as balancing factors, of structural equivalence, of polar or complementary magnitudes asf.

Esp. the history of the unification of chemistry, electricity and magnetism in early 19th. ct., by Ritter (pursuing Humboldt), Oersted, Seebeck, Faraday and others clearly demonstrated the fruitfulness of this approach, if only it was accompanied by critical empirical control. The final key-stone as an overall balancing principle then was the law of energy conservation by Mayer, Joule and Helmholtz, published at quite the same time as Humboldt´s 1st vol. of his final holistic concept, "Kosmos".