

**EPISTEMOLOGICAL AND ONTOLOGICAL TOOLS
FOR AN EXTENDED VIEW OF A HUMAN PERSON
AS A SOCIAL BEING AND ITS ENVIRONMENT**

**PART 2:
THE INCREASING INHOMOGENEITY OF THE POWER OF SCIENCE
AND AN “ARISTOTELIAN” PROPOSAL TO COPE WITH**

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**ВОЗРАСТАЮЩАЯ НЕОДНОРОДНОСТЬ ВЛАСТИ НАУКИ
И «АРИСТОТЕЛЕВСКОЕ» ПРЕДЛОЖЕНИЕ КАК СПРАВИТЬСЯ С ЭТИМ –
ВТОРАЯ ЧАСТЬ «ЭПИСТЕМОЛОГИЧЕСКИХ И ОНТОЛОГИЧЕСКИХ
ИНСТРУМЕНТОВ ДЛЯ РАСШИРЕННОГО ВЗГЛЯДА НА ЧЕЛОВЕКА КАК
СОЦИАЛЬНОЕ СУЩЕСТВО И ЕГО СРЕДУ»²**

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Abstract. Fundamental changings have taken place in the last 2-3 decades and are taking further on – with relevant influences for the eco-socio-cultural living conditions: For instance, the climate change is taken as reality and the discussions are reduced; while curative medicine is as powerful as never before, although is not sufficient enough in relevant cases. The situation in medicine can be used as indicator in which fields we can and in which we should not expect the needed scientific support: The analysis demonstrates that health related aspects caused by physical interactions can be predicted even in the single case. This is relevant: Applications of science are related any time on special single cases – not only in medicine. But the power of sciences is reducing up to the deprivation of any causal fundament e.g. for Alzheimer. Therefore cluster method remains actually as the only related tool. Pfizer – the world biggest pharmaceutical company – skipped its research program to develop a drug against Alzheimer this year – not because of the lack of money but because of the lack of power of the used scientific theoretical frames. This should be accepted as an alarm clock for the scientific community that the borders of the power of the used paradigms are reached and a discussion about the extension of our scientific frames should be started.

Therefore an additional frame is needed. Relevant support can be expected from Aristotelian positions. One key aspect is demonstrated for the needed “Extended View”: How to integrate the single case more appropriate into a frame which is compatible with the powerful state of knowledge in the different related scientific disciplines.

Keywords: power of science, lack of power, Alzheimer, information, “Extended View”, Aristotle, single case and predictability, inhibition-enforcement, the Aristotelian aetiology, potentia, discrimination ability, WINWIN model for evolution, comprehensive simplicity

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² See the article: Kofler, W. (2012). “Epistemological and ontological tools for an Extended View of a human person as a social being and its environments – Part 1: Considerations about ontological and epistemological options and restrictions,” *Biocosmology – neo-Aristotelism* Vol.2, No.4 (Autumn 2012). Pp. 279–298.

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Резюме. Фундаментальные изменения произошли за последние 2-3 десятилетия, которые имеют значение для современности и влияют на условия эко-социо-культурной жизни: например, изменение климата принимается как данность, и дискуссии на этот счет сокращаются; в то время как лечебная медицина стала сильной как никогда прежде, хотя в определенных случаях ее возможностей оказывается недостаточно. Ситуацию в медицине можно использовать в качестве индикатора – в каких областях мы можем, и где не должны ожидать необходимой научной поддержки: Анализ показывает, что развитие человеческого потенциала (здоровья человека), в отношении к аспектам физического воздействия, могут быть предсказаны даже в единичном случае. Это актуально: применение научных достижений, и не только в медицине – всегда связано с особыми случаями. Но сила науки всегда убывает, если отсутствует причинное обоснование данного феномена, например как в случае болезни Альцгеймера. В этой связи, кластерный метод остается фактически единственным подходящим инструментом. Например «Пфайзер» – крупнейшая в мире фармацевтическая компания – закрыла свою исследовательскую программу по разработке препарата против болезни Альцгеймера в этом году, причем сделала это не из-за нехватки денег, но по причине отсутствия необходимых научных теоретических оснований и конструкций для успешных разработок. Это следует воспринять в качестве пробуждающего сигнала будильника для научного сообщества – что границы возможностей используемых парадигм достигнуты, и необходимо обсудить вопрос о расширении наших научных теоретических конструкций.

Следовательно, требуются дополнительные понятийные структуры и концептуальные схемы. Соответствующую поддержку здесь можно ожидать и от аристотелевских научных позиций. Ключевым аспектом выступает демонстрация необходимого «Расширенного Взгляда» на научные возможности: Как интегрировать отдельный случай более подходящим образом в соответствующую концептуальную конструкцию, которая является совместимой с мощным состоянием знаний в разных смежных научных дисциплинах.

Ключевые слова: сила науки, недостаток силы, болезнь Альцгеймера, информация, «Расширенный Взгляд», Аристотель, единичный случай и предсказуемость, подавление-принуждение, Аристотелевская этиология, потенциал, дискриминационная способность, беспроигрышная (win-win) модель для развития, всеобъемлющая простота

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1. THE PROBLEM

In part 1 different considerations were presented about ontological and epistemological options and restrictions³. They allow to deal more adequate with the fundamental changings which have taken place in the last 2-3 decades and are taking further on – with relevant influences for the eco-socio-cultural living conditions: Now there are no more discussions (e.g.) about the climate change. It is reality. And nobody will contradict: The curative medicine is as powerful as never before. Look only on the progresses in accident surgery or the applications of biochemical offers.

But the progress cannot be observed in all future relevant diseases. Remember Alzheimer: Dementia dominates actually for more and more victims and their families the daily life. Nevertheless, we do not use a scientific model to understand this disease. So the actually applied scientific frame enables as to predictions in an extreme wide range: from causal predictions in any single case to a lack of any causal based prediction even in the average. And any applier of sciences has to deal with

³ Kofler W: Epistemological and ontological tools for an Extended View of a human person as a social being and its environments, part 1: Considerations about ontological and epistemological options and restrictions, *Biocosmology – Neo-Aristotelism*, 2(4): 273–292.

single cases. So we have to focus also on the predictability for the single case. All the following arguments are integrated in the so called “Extended View”. This model should extend but not substitute the given “normal sciences (according to Th. Kuhn⁴). Such an extension is possible thanks to integration of additional paradigmatic positions into dynamic understood given paradigms.

1.1. Analysis: The metaphor of the perforated barrel

The situation in medicine can be used as indicator in which fields we can and in which we should not expect the needed scientific support: I compare this with the metaphor of a perforated barrel⁵: Assume the power of science in a comparison of a barrel to collect the lifesaving water. The bottom and the next part of the staves are totally tight. As higher the staves are as more perforated they are. The highest barrel hoop is linked with the whole barrel just with few staves. Therefore as more water will flow out as higher the level of water is rising. Nearly the whole additional water will flow away if the water level has come to the area with only few staves.

Now we attribute health problems and their evolutionary relationship to the height of the barrel: Health problems based just on classic physical reasons are on the bottom. We can calculate in every single case e.g. if a bone will break or not because of a fall, if we have just the physical characteristics. Gravitation influences the movement even of the so called “Dark matter” in the very ancient universe. Its effect on any bone is not different as to any solid body of “Light matter” with the same physical characteristics. So we can neglect that the bone is produced by a living being.

Our prediction for the individual reaction will be a little less exact for the single case of a classic chemical interaction even on a morphological living structure, e.g. of a trop of acid on the skin of any single human person. The special nature of living beings can never be neglected in case of poisoning. You can predict that about 500 rats will die on the poison, if you expose 1000 rats to the *dosis letalis* 50. But you cannot predict the future of a single rat. We have to consider biological variability. Without living beings no poisoning! Life started about 4 billion years ago.

A principle change takes place on the next level. It deals e.g. with high blood pressure and CHD. These pathological bodily processes can be caused just by morphological inputs, e.g. thanks to food habits. An additional and in principle different causation is coming from “inside” by subjective valuations (e.g. psychosocial stress) or by a combination of both. Even monkeys show high blood pressure. Primates exist since about 60 Million years. But there is no scientific model to link on a causal levels both types of processes (Body-mind-dilemma). Therefore the scientific argumentation is never “a closed chain of causality” but only the “risk” to link with the causal models of biology.

The situation is changing again fundamentally e.g. with Alzheimer: This disease is represented with the highest level of the barrel. Nearly all additional water is

⁴ See: Kuhn Th.: The structure of scientific revolutions, Univ. of Chicago, 1962.

⁵ See: Kofler W.: Pfizer ends Alzheimer-Research: An Emergency Signal for Medicine and Politics, *Herald of International Academy of Sciences*, Russian Section, 2018, 1, 56–62.

running out: Now the patient is never able to construct and realize processes which have been typical for his personality. The causation is coming from inside. Chemical, biological and other external influences seem to be not critical – maybe supporting the process. The time period between the occurrence of monkeys and of Homo sapiens is so long, that it is not a surprise that fundamental improvements in dealing with meaning and abstract ideas could have taken place.

1.2. Consequences:

You see: We can start our considerations from two sides:

- a) to focus on an extended view of the evolutionary process, and
- b) to focus on the principles of the decision making of the person

Both topics are interlinked. But we have to accept that we are not ideal. Therefore we have to focus our interest first on one aspect and neglect temporarily the other one. Therefore I will focus my interest on the timeless valid position of Aristotle and his four causes. Medical doctors remember the physiological discovers of Sechenov and Pavlov if the terms “to focus–to inhibit” are used.

2. A PROPOSAL FOR A SOLUTION

2.1. The support of think tanks to Sechenov and Pavlov

Sechenov discovered that the speed of a reflex is as more inhibited as more parts of the brain are integrated – up to the option, that the reflex is suppressed⁶. And Pavlov could confirm with his experiments about conditioning that the relevance of a stimulus – maybe the sound of a bell – can be enforced and modified in his meaning. So the sound of the bell can cause the stimulation of salivation without any food.

Both discoveries can be linked to a general principle of “inhibition/enforcement”, which is valid for processes on any evolutionary level. Firstly, it can be linked with another stay of knowledge. The conservation laws in physics: Energy cannot be lost or won, but modified. The general principle of “inhibition/enforcement” can be understood as consequence of the general principle of conservation. The available capacity e.g. of energy is restricted for other applications, if more of the capacity is attributed for a special one.

Such processes should be to expect even in decision making processes.

2.2. The integration of the evolutionary process

We can use the proposal of R. Riedl and of Aristotle to deal with evolution. Aristotle was the first scientist who described the entities on earth with different layers. E.g. Hartmann extended this position according to the stay of knowledge in the 19th century and Rupert Riedl integrated the knowledge of the 20th century in the following graph⁷. I used it to transfer this into a model of a human person as a social being and the integration of all the different levels thanks to discrimination ability

⁶ See: Sechenov I.M. The reflexes of the brain, in I.M. Sechenov: *Selected works*, reprint Bonset, 1968, 263–336.

⁷ Riedl, R. 1978/79. Über die Biologie des Ursachendenkens; ein evolutionistischer, systemtheoretischer Versuch; in: Mannheimer Forum 78/79. Mannheim.

(modified within the evolutionary progress further on into ability to organize for life, ability for emotions for sense oriented intentions and ability for critics for intellectual effects). You see easily: The increasing perforation of the barrel is linked with the increasing youth of the first occurrence of entities with the related characteristics (see Fig. 1).

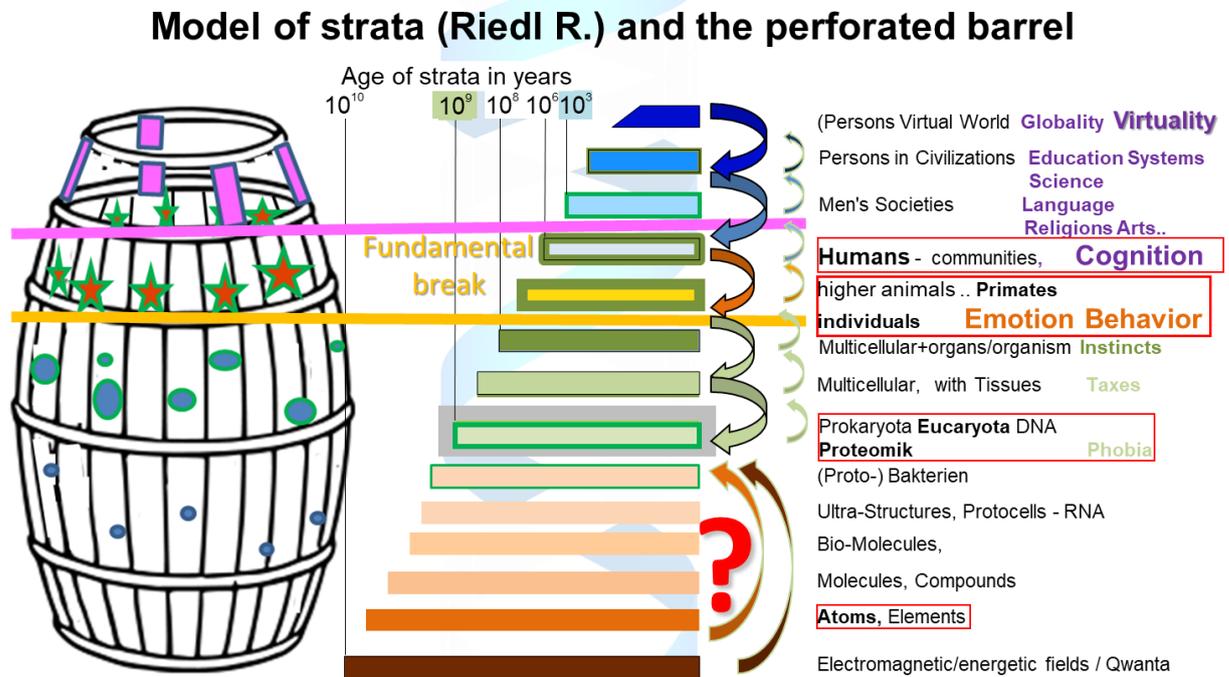


Fig. 1. Model of strata (Riedl R.) and the perforated barrel

Focus your interest on the fundamental break: The related self-understanding of an entity with the intention to be in a subjective relationship to another and not only to purpose orientation is linked with the loss of causality – thanks to its transfer to be an individual related to another individual. And the ability to create abstract assumptions about intentions and ideas (“construct – constructions”⁸) thanks to ability for critics causes individual personality. This is the level which cannot be handled with causal conclusions which are based on observables. But empirical data are the prerequisite for the power of physics and chemistry.

But we have to respect: Each bodily reaction is based on the function of a cell thanks to proteomics and genomics finally. But we do not have sufficient information about the linkages between the levels and their feed backs to the guiding centers on a causal level.

Aristotle has seen these differences: He created the three worlds of entities on the level which could be observed and recognized: The world of the not living ones (physics and chemistry), the world of living animals and the world of humans = if

⁸ See: Kofler W, Puritscher M. A follow-up of constructs, constructions and realisation for a constructivist interpretation of evolution and the uncertainty relationship. In: van Dijkum C., de Zeeuw G., Glanville R. *Methodological explorations in constructive realism*. Southsea, Amsterdam: BKS+, ISBN 0-9525046-2-6, 1998: 103–116.

entities with emotions and intellectual activities. This world is based on that what is distinct from the others thanks to borders of the fundamental break: No living ones did not reach the next level of life, animals reached – in his understanding – not the level of “the other side” of that what I describe with the “fundamental break”. But all entities are limited in their effectiveness also thanks to their ancient older levels up to their physical nature.

2.3. Supporting the model through the Aristotelian science

I focus in this paper just on two aspects: The proposals of Aristotle of “four types of causation” and of “potentia”.⁹

3. TO THE SUPPORT OF ARISTOTLE’S AETIOLOGY

3.1. Four types of causation

Aristotle distinct between four types of causes (which can appear in different forms) for the occurrence of processes.

- a) *Causa materialis*
- b) *Causa formalis*
- c) *Causa efficiens*
- d) *Causa finalis*

The four causae have to be seen as dynamic interlinked: The available tools (materials in special form) are often prerequisites for applicable intentions – if e.g. the person is able to use this tool and if the surroundings (environments) are adequate. The most fundamental prerequisite for intentions is the evolutionary level in the general and the related individual characteristics of the actor. These aspects should be discussed in detail with the focus on the evolutionary process. And we have to expect that all types are respected in any causation: consciously and unconsciously. But we have to respect “Sechenov and Pavlov” too.

3.1.1. Comparison of the traditional understanding of causation (“normal science” according to Th. Kuhn) and the application of four causes

I will demonstrate the differences of the two techniques and their compatibility with two examples: First Malaria. Then I compare the standard position with the ongoing on the basis of Aristotle. Then I apply the conclusions for a second example: my overweighed friend Peter.

3.1.2. The example 1: Malaria

The traditional understanding is based just on empirical phenomena: The mosquito transfers with a bite the parasite (*Plasmodium falciparum*) into the blood. The parasite reaches the liver and reproduces there the offspring. They infect red blood cells and destroy them. This causes the disease. There is no *final cause* *Causa*

⁹ The content of terms is modifying within the times. I use them with a focus on the 21st century. So the term “potentia” is used in an extended understanding: It covers also aspects which Aristotle attributed to his “entelechy”: So the actual and the dynamic aspects are integrated within the meaning of “potentia”.

efficiens is also summarizing in the implicit assumption: Anopheles and their offspring are able to do this

Aristotle would be much more explicit.

- a) The mosquito is our actor and starts the process: The (dominating) *Causa materialis* for the step “from outside to inside” is the parasite *Plasmodium Malariae*, its *causa formalis* the proboscis (= the “hollow needle” to sting the skin and to suck the blood). Its *causae efficiens* are two types of ability of the mosquito: One is to use its energy and morphology to fly, to make a whole into the skin, put saliva with the plasmodium into the hole, etc. The other one is to recognize the potential host, to guide its movement into the correct direction etc. We attribute to the mosquito as “*causae finalis*” the intention to survive and to support the growing of the offspring.
- b) Now we reach the second step “from inside to disease” in a long follow up of causations. Now the parasite (*Plasmodium falciparum*) is the actor. It was “simplified” as *causa materialis* in the first step above. Its *causa materialis* would be the molecular structure which fits to the related cell of the liver. Its *causa formalis* would be the structures to enable the parasite to pass into the lever cell and to interact with the related substructure of the cells, its *causae efficiens* would enable the movement and guidance to the related structures and interactions, the *causa finalis* would be again the reproduction of “offspring”.
- c) The offspring can be used as starting point for the next cascade with the – health related – unintended final result of the attack with fever.

3.2. Compatibility of the “Extended View” with “Normal sciences” – additional offers and demands

So the follow up of causations according to the proposal of Aristotle is in full agreement with the stay of knowledge in the related sectoral scientific disciplines. But there are also additional and relevant wins:

- The proposal of Aristotle includes the generalizable aspects of the “single cases”: Each single case needs a single actor and his intention. But common natural sciences exclude to attribute finality outside of intentions of scientists and persons. This cause the exclusion of the single case. We will discuss this later – with respect to Aristotle.
- The proposal of Aristotle is based on a comprehensive understanding of “*causa efficiens*”. It covered as well the ability to realize thanks to energy as the ability to construct for what and in which intensity and direction the realization should be done. The common position excludes the explanation thanks to what abilities the processes are running. We will discuss this also later – with respect to Aristotle.
- The proposal of the principles of “inhibition/enforcement” and of “conservation” are implicit enforced by Aristotle

3.2.1. *Example 2: High blood pressure and CHD – an additional type of causa finalis*

The *causa finalis* of my overweighed friend Peter to eat too much are not to survive or to take care for his children. Maybe the real reason is the acrimonious divorce of his loved Mary. Or was it the neglect of his friends after losing his position as president of the rabbit keeping association? But the key problem of overweight is a biological dysfunction: his high blood pressure. And drugs can be developed against the biological dysfunction – but not against the reasons for the voting out in the NGO and without any effect on his relationship to Mary.

So the good medical doctor has to deal with the ability of Peter to attribute meaning to processes, to options, experiences etc. and the fact that meaning and values can be influenced. But there is no equivalent in natural science for the ability to attribute meaning to structure, observations etc. to the different types of energy. Aristotle integrated both into his worldview.

3.3. Potentia

Aristotle introduced the term “potentia” for any type of ability to be effective. Even scientists are restricted and have to focus on one aspect with the consequence to neglect (temporarily) others. Therefore it makes sense to focus distinct on two different aspects of this unique potential¹⁰:

- a. To be able to modify the position within a “Euclid-analog” geometrical grid. (“movement”) and
- b. To attribute and modify meaning to structure (“information”) within a grid of meaning
- c. Both grids are interlinked – as we know e.g. from the “language of the bees. They can communicate thanks to movement of its body.
- d. Each aspect can initiate to focus on the other aspect.

3.3.1. *Substance monistic position – no mind-body dilemma*

Substance is the term which is used to name this which remains unchanged after a modification. You can accept just one substance as “carrier” of this “potentia”. Then you prefer a substance monistic model – in contradiction to the substance dualistic model of Descartes. My “Extended View” is based in a substance monistic view. The body-mind dilemma disappears if you shift from a substance dualistic model to a substance monistic understanding. Then a person is not understood as consisting of two in principle different substances – body and mind – but just from one substance which **enables** the person to bodily, mental, etc. efficiencies and properties.¹¹

¹⁰ This is done with linkage to the Extended View“.

¹¹ Aristotle interpreted the relationship between body/matter and mind/entelechy with the relationship between matter and form. Therefore this was compatible with the assumption that on earth is just one substance.

3.3.2. Where is the causation for information?

The application of potentia which is described above under a) is commonly accepted in “normal science” and named “energetical field, electromagnetic field, gravitation, power” etc. Its output is named “movement”.

There is no special term for the application of b), just for its output: It is named “information”.

3.4. Comprehensive simplicity and the need to introduce a term

It is mandatory to focus on the actual relevant. But there is the implicit danger to oversee relevant aspects. Therefore I claim to accept the “comprehensive simplicity”: We must be able to communicate all distinct what can be overserved or thought logically as different. We have to introduce a scientific term, if this is not possible because of a lack on terms. A scientific term “stays” for anything in our world. It makes only sense to introduce a term, if it is possible to confirm his additional power empirically or logic. Therefore there is a need to characterize the term adequately for empirical and logic proving.

Therefore I had to introduce a term for the aspect of the potential which enables to attribute information to energetical structures.

I will demonstrate this on an example (see: *Fig. 2*):

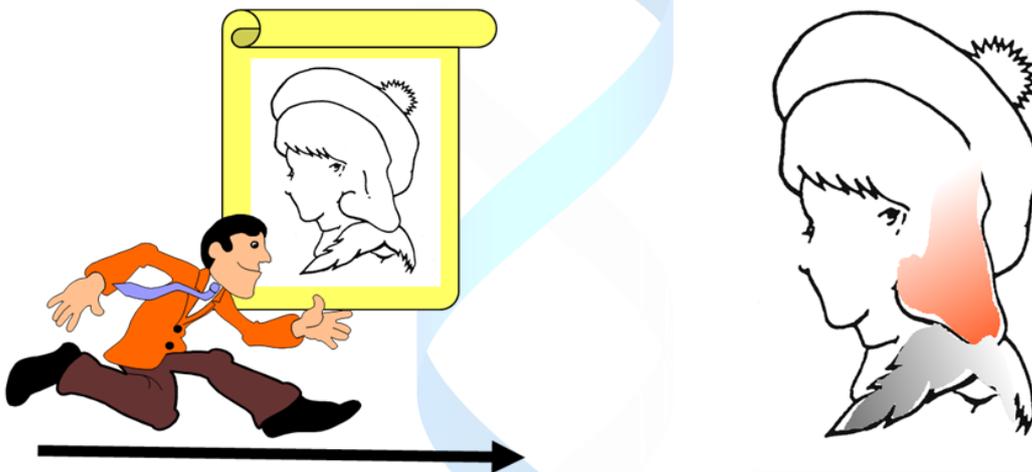


Fig. 2. Guidance of movement.

Do you see the young man moving the picture to the other wall? It is easy to understand this process as well with normal science as with Aristotle. The young man is our actor. The muscles are the *causa materialis*, their contractibility is the *causa formalis* and to reach the new position is the *causa finalis* – as in normal science. But the classic explanation would have a problem: Where is the sufficient cause for the guidance of movement?

3.4.1. The need to introduce an additional term: “discrimination ability”

Now look at the picture. How many faces you can recognize? Young men have problems to see the old lady, but nearly all see the young girl. I can help you with verbal explanations. Or to add colors to the picture. Then it is easy even to distinct

the old man. It is obvious: I can teach you – You could learn. This cannot be explained sufficiently with physical energy. Therefore we need an additional term in equivalence to energy. I proposed “discrimination ability”.

3.4.2. The need to characterize that “for what the term should stay and its empirical proving”

This small demonstration allows formulating characteristics for testing of the hypothesis. I use just one. The available amount on this ability has to be limited. If this is so then a lack on this ability in the organism should cause negative health effects. I could confirm these predictions e.g. in the mortality distribution of victims of Chernobyl, after environmental disaster¹² and especially of Hiroshima and Nagasaki¹³ (see: Fig. 3).

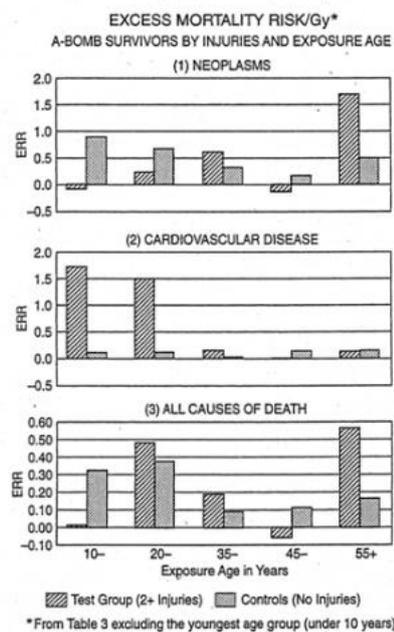


Figure 1 Excess relative risk (ERR) for three causes of death and five exposure ages. Excluding exposures before 10 years of age (see Table 3)

The excess mortality Risk of A-bomb survivors in Hiroshima and Nagasaki with two or more bodily injuries was significant higher than the risk of the control group without any bodily injury – standardized on the same load in Gray.

Stewart and Kneale (2002) assumed that bodily injuries would not be influenced by adaptive processes caused by radioactivity. Therefore the two collectives should show the same risks if their difference in the load of radioactivity is standardized.

The scientists could not integrate the relevance of the – at this time unknown – discrimination ability for any healing process and its restricted availability.

Therefore significant differences are to expect if you respect that any healing process needs this capacity – as I predicted. (Kofler W 1994, Kofler W et al. 2004)

Fig. 3. The excess mortality Risk of A-bomb survivors in Hiroshima and Nagasaki

The excess mortality Risk of A-bomb survivors in Hiroshima and Nagasaki with two or more bodily injuries were significant higher than the risk of the control group without any bodily injury – standardized on the same load in Gray. Stewart and Kneale assumed that bodily injuries would not be influencing the adaptive processes caused by radioactivity¹⁴. Therefore the two collectives should show the same risks if

¹² See: Kofler W. Health effects of environmental disasters and the need of a more complex model of man. In: Y. Steinberger, Ed. *Preservation of our world in the wake of change*, Vol. VI A/B. Jerusalem: ISEEQS Pub., 1996: 275–282.

¹³ See: W. Kofler, P. Lercher, and M. Puritscher: The need for sufficiently taking into account unspecific effects in the understanding of health risk: Part1, 2, 3: IUAPPA and Korean Society for Atmospheric Environment, Seoul, (on CD-Rom), F 0245c, 2001.

¹⁴ See: Stewart A., G. Kneale: A-bomb survivors: factors that may lead to a re-assessment of the radiation hazard, *Int. J Epidemiology*, 2000, 29, 708–714.

their difference in the load of radioactivity is standardized. The observed differences should be to explain with a special selection of persons with an inborn resistance against radioactivity.

The scientists could not integrate the relevance of the – at this time unknown – discrimination ability for any healing process and its restricted availability. Therefore significant differences had to be expected if you respect that any healing process needs this capacity – as I predicted.

3.4.3. Ability for discrimination and ability to use energy – expressions of just one potentia

It is easy to demonstrate that discrimination ability and energy are just two expressions of the same (Aristotelian) potentia: No movement without direction, no information without a structure.

3.5. Intelligent design or *Causa finalis*?

I have spoken above from the need to speak about the background of the fact that normal science skips the single case in consequence of the exclusion of *causa finalis*. This ongoing can be seen as starting point to skip also the explanation for the sufficient integration of *causa efficiens*.

Natural scientists hate *causa finalis* often. They do this because of the intention to exclude any risk to be accused to use religious arguments in their scientific argumentation because of teleology. The same intention is exactly the reason why I prefer *causa finalis* and a comprehensive understanding of potential: Traditional scientists have to let open in consequence of the neglect of *causa finalis* very often also “*causa efficiens*”: If you exclude an actor then you cannot attribute efficiencies to him or to anything. Modern scientists assume maybe that there is no need: “Natural laws”, the nature, “evolution” and other terms should represent, why all the natural processes are “running so well organized”. (“I think you should be more explicit there in step 2”) But what is “behind” – if not the individual actors with their restricted but modifiable potentials before the emergent step?

3.5.1. Newton: Natural laws and the first mover

The position of normal science seems to be sufficient if it is based on a philosophical conclusion of Newton. He was a well-known religious philosopher at his time. He had the problem to integrate his discovery of gravitation into the historic ontological position¹⁵: Gravitation works without any observable linkage between the mover and the moved. This was in contradiction to the state of knowledge at his time. Therefore he created a new understanding of god as creator of the world. He introduced – in difference to Aristotle and the scholastic – the understanding of God as the first mover using his physical power.

God is the cause for the ideal movement of the divine stars and planets also for Aristotle, but not because of a physical activity of God. The observed happiness of the ideal self-reflection of God is the reason that the stars are stimulating themselves

¹⁵ See: Newton I. *Mathematical principles of natural philosophy*: General Scholium. 1713.

to ideal movement: God motivates the stars similar as a loved person is stimulating the lover to reach him/her – proposed Aristotle¹⁶.

Newton linked this physical act with the creation of the universe: God created at the same time the universe with all its structures and forces – including gravitation – and the ideal natural laws. This was in good agreement with the substance-dualistic model of Descartes. All is pre-determined without the logic decision of the (male) humans: God is able to link even not linkable substances thanks to his omnipotence. And God is doing this permanently in the pineal gland of humans only.

Heisenberg and other quantum physicists excluded the predictability of the single cases because of uncertainty relationship.

Einstein relativized the use of forces on classical physics: Fields are needed to deal adequately with the universe.

3.5.2. Newton's position is falsified or relativized

But the philosophical and religion based assumption of the ideal eternal natural laws and their ideal consequences including the evolution persisted Therefore such terms like “evolution”, “nature”, “autopoiesis” etc. lock so as they allow to let the actor open. But such a scientist is in danger to accept implicit intelligent design or similar models, if he excludes not temporarily but in principle the option that the existing entities are able and have been able to cause the processes – even such one which cause the evolutionary process (Fig. 4):

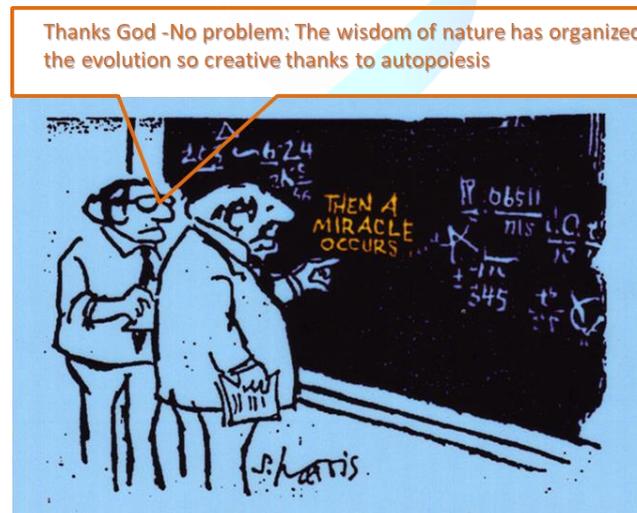


Fig. 4. Transcendent design and autopoiesis.

4. TERMS, SYMPOLS, FORMULAS, NATURAL LAWS, ETC: JUST FREE INVENTIONS OF THE HUMAN MIND

The widespread use of e.g. “evolution” as causer encourages us to discuss about the nature of terms – or of common words. Scientific and common terms and natural laws are free inventions of the human mind. A. Einstein. The map is from another nature, ...as the landscape.

¹⁶ See: Höffe O. *Aristoteles-Lexikon*, Kröner Nr 459, Stuttgart, 2005.

Ferdinand de Saussure¹⁷, the founder of modern linguistic and semiotic understands language as a system of signs about e.g. objects. Therefore signs are not only “anything others”. They have to skip a lot of, what can be relevant for the nature of that for what they stay.

“This is not a piper.” This picture is a sign and “stays” for a pipe! And the word “pipe” is also a sign. Words and other signs make “a more or less long story short”. The story can deal with characteristics of an entity, e.g. this pipe. But it can summarize also e.g. interactions between entities and their relationships and processes (see *Fig. 5*).

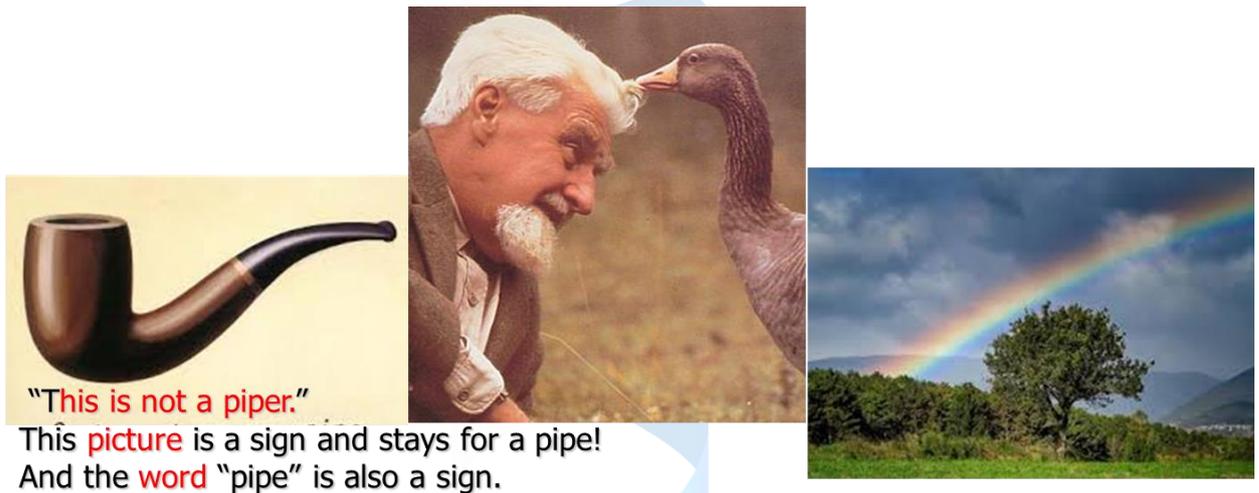


Fig. 5. “This is not a piper”

It is relevant for our discussion about natural processes: Substantives need not to stay all the time for real existing entities. “Konrad” and “Martina” stay for my existing friend and his gray goose. The content of a substantive can cover complex processes and the related objects. Therefore we can discuss: Does the rainbow exist – as Konrad? Or stays this term to summarize the complex process of the refraction of the (existing) light thanks to drops of (existing) water?

But there is no discussion: “Evolution”, “nature”, “autopoiesis” do not exist – cannot have any effect. These terms allow only communicating very long stories between existing entities on a scientific position with one word.

5. PREDICTABILITY AND ITS LIMITS: THE METAPHOR OF CHESS

The presented chain of argumentation lets open a relevant aspect: How can we make plausible what can be predicted and what not. I hope I can make plausible this with chess as metaphor.

5.1. Inhibition/enforcement and WIN/WIN as basis for emergent progresses

Recognize the game chess: There are endless options for figures and playing fields which can be made from wood or stone. There is no logic reason to

¹⁷ See: Saussure F.d. *Cours de linguistique générale*, (Charles Bally and Albert Sechehaye, eds.), orig. 1916, De Gruyter 1967.

inhibit/exclude all the different options and focus/ enforce just the option of 8 to 8 fields in black and white and the structure of the different figures. The same with the theoretically unlimited options for processes which could be done with figures.

The voluntary abstinence of options and agreements create emergent new types of freedom for all sharing the “subunit-constituting consents”

But chess-players have good reasons to skip all other options and focus voluntarily just on these two types of consents for the structure and the processes: The combination of them opens an emergent new variety of options for meaningful movements for any member of the “new subset of persons” Every chess-player wins the freedom to select individually options for movements but within the given frame of rules. There is no hidden law to decide in a given constellation to apply this and not another correct move. It is remarkable that there are two types of win: The win to play and the option to be the winner. But the prerequisite for both is to share these options with others. So WINWIN is the principle of this evolutionary progress.

Chess describes exactly the situation which Voltaire described: A situation in which “one part is well-regulated in advance, the other not,” and a part of that what happens, has to happen, the other not.”

5.2. Two types of consents: Inside oriented – outside oriented – for one intention

Any chess player knows¹⁸: If you are observer of two persons playing chess, then you have to be quite and have to respect an adequate distance to the players. They should be able to focus their concentration undisturbed to their game. This demonstrates: We have to accept two types of consents: A quite simple consent for the “outside relationship” and more differentiated consents for the “inside relationship”.

And both agreements should allow optimizing the new type of surplus which is the consequence of these voluntarily accepted restrictions: To have the win to play chess and the option to be the winner.

The prerequisite for this new understanding of evolutionary process is to accept actors which are not only able to move thanks to energy a figure but are able to attribute meaning to the position of figures according to agreements and to anticipate possible consequences of the own movements.

And a special issue (for future) is to present the linkage to the genetic based evolutionary process (based on Darwin’s ideas). Same of that is discussed in Part 1.

5.3. Potentia – comprehensively understood?

Even normal science on the basis of a radical empiricist has to accept that scientists must be able to deal with information. “Conclusions” are not observable, but indispensable for the work of scientists. Therefore even an empiricist has to attribute a comprehensive “potentia” (minimum) to himself. We attribute “potentia” not only to scientists, but also to our patients, medical doctors and other health care workers.

¹⁸ See: Kofler W., E. Khalilov. An attempt to integrate the Relativity Theories into a comprehensive health oriented model, *Science without Borders*, Vol IV, Baku Innsbruck, in press.

Medical doctors have to attribute even to any single cell to be a “restricted autonomous actor”. Therefore a wound is healing even during artificial sleep and cells e.g. of a tissue can be used for cultivation outside of the body. More and more persons accept that even their dogs, cats and horses are able to attribute meaning to structure and processes. It is impressive how effective microbes – e.g. Escherichia Coli – can organize themselves, e.g. for reproduction. Cairns-Smith illustrated this with the comparison of the time, which would be needed by humans, which are able to fit 12 atoms in one minute on the correct position. 1000 workers would need 35 years if they are active 8 hours daily. They would need a space as large as the Basilica of Colonia. E. coli is able to reproduce itself within 30 minutes – without any crash or mistake and no waste.¹⁹

Microbiologists publish phenomena which have to be based implicit on a comprehensive potential even for anticipation – but even on a very basic evolutionary level: So the German Research Society pointed out that simple soil microbes of the species Myxococcus Xanthus cooperate in hunting other microbes “like a pride of wolves”²⁰.

Nobel Laureate Heisenberg proposed to attribute the Aristotelian Potentia also to quantum objects, e.g. particles.²¹ Therefore we should not expect any loss of power in comparison to the “standard situation”, if we use the proposed position for applications e.g. in medicine. But our position allows dealing more appropriate with the background of “experience” and “empathy”. The “experienced” doctor is able to integrate the consequences of learning processes of patients in comparable settings. Chess-player and patients are able to learn successfully options within the rules – again thanks to their “potentia”. “Empathy” is based on the quality of the doctor to “think with the head of his patient” and to anticipate his individual valuation in a special situation.

6. CONCLUSIONS

The use of the Aristotelian “four types of causation” and of “potentia” for energetic and information related effectivity within a substance monistic position allows to integrate single cases on a scientific level. This has to be linked with a generalized principle of “inhibition-enforcement” of Sechenov and Pavlov and to accept the principle of conservation generally. The proposal of this “Extended View” “fits” to the actual used scientific frames which focus on the generalized aspects. The proposed Extended View allows a better understanding of some reproducible phenomena, which cannot be made plausible on a causal level without an implicit basis of a pre-determined model e.g. of intelligent design.

¹⁹ See: Cairns-Smith AG: *Seven clues to the origin of life*, Cambridge University Press, 1985.

²⁰ See: Velizer GJ, NY Yuen-Tsu: Evolution of novel cooperative swarming in the bacterium Myxococcus Xanthus, *Nature*, 425, 4.9.2003 M. Planck Gesellschaft, Inst. f. Entwicklungsbiologie, Aussendung 4.9.2003.

²¹ See: Heisenberg W. *Physics and Philosophy*, Harper Brothers, NY, 1958.

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