The Energon Theory

A brief outline of its line of argumentation,
its practical applications and its philosophical consequences

The underlying premise

The Energon Theory is founded on the fact that all organisms exhibit intrinsic movement and that complex processes take place in their bodies and organs. According to the natural laws derived by physics, however, no movement or processes are possible without "free", useful energy. Where do the millions of the animal and plant species obtain the energy they need to carry out their many functions? The main laws of thermodynamics state that energy cannot be created from nothing. All organisms therefore *must* extract the energy they need from environmental sources. This is an undeniable fact. This, in turn, also means that all organisms, both uni- and multicellular forms, are "energy-gaining systems". No matter what their shape, they must generate positive overall energy balances in order to exist and to reproduce. On the average, they must extract more useful energy from the environment than their combined activities consume.

The term "energon"

As there was no common term for "energy-gaining systems" when I first published my Energon Theory in 1970, I coined the word "energons". This designation is rooted in the terms applied to elementary particles such as protons, electrons and neutrons. In its most simple formulation, the Energon Theory states that just as all types of atoms are formed of protons, electrons and neutrons, all the structures that independently promote life are energy-gaining systems or energons.

"Energon" is a relative term. Those material structures that generate positive overall energy balances can be termed energons. Should they fail to do so under altered environmental conditions, then they cease to be energons. An example: In a suitable environment, a gazelle is a very successful energon that can grow and, after reaching a certain size, reproduce. Transplanting this gazelle to the ice floes surrounding the North Pole (or 50 meters below the ocean surface) terminates its viability: this structure ceases to be an energon. The same principle applies to all other animal and plant species as well. And it is also valid for the other energon types discussed below.

Whereas biologists refer to all structures composed of cells as "organisms", the Energon Theory views every material structure that promotes the potency and volume of the energy flow as an energon. Over the course of evolution, the terms "organism" and "energon" were largely synonymous. Those organisms that developed "artifacts", i.e. additional organs, are an

exception. They boost the capability of their cellular bodies with functional units that are not created via cell differentiation, are not permanently attached to the cell body, and that need not be produced by the organism's own genomic mechanism.

Organism and artifact

First example: the spider's net. The spider is not permanently attached with the net it produces and, indeed, that net would be useless as a prey-capturing organ were it attached to the body. Nonetheless, it remains an essential component of the spider, without which the animal could not survive. Second example: the ant-lion (genus: *Myrmeleon*). This larva forms a very similar predatory structure with loose sand – a funnel into which ants fall when scurrying by. The ant-lion lies in wait at the bottom of the funnel and devours the ants that come slipping down. This trap consists entirely of inorganic material. Third example: the empty snail shells that hermit crabs use as a protective organ for their soft abdomens. Over the course of evolution, the calcification of the abdomen and tail proved to be superfluous and this protective armor was reduced. According to the Energon Theory, the inhabited snail shells represent organs – for the hermit crab as much as for the original snail occupant – even though the crab did not produce the shell itself.

Biology tends to view these additional functional units as remarkable exceptions, but has avoided tackling the issue of whether they should nonetheless be categorized as organs. They are developed by innate behavioral control mechanisms and are clearly of selective advantage for the respective species. But they are not part of the cell structure that traditionally defines organisms. Considering the great number of biological oddities on our planet, this was a secondary issue.

A major difference between the terms "organism" and "energon" appeared with the advent of humans. Our mental capacities were so highly developed that we began to fashion and successfully apply "tools" – and to communicate with our fellow humans using language. Quite understandably, we subjectively consider all our tools to be something entirely separate from our bodies. The energon concept takes a completely different view. These tools improve our viability, make us superior to animals and plants. In this sense they very clearly do represent organs! Their specific advantage is that they can be put aside. Walking upright freed our ancestors' arms and hands, and the latter were functionally ideally suited to bind such tools to our cellular bodies and put them to good use. The necessary control mechanisms were secondarily imprinted in the brain through learning processes and "practicing"; those that proved successful were then passed on to others using language and, later, writing.

Tools as an evolutionary factor

This behavior of animals that form artifacts or usurp foreign organs arises through changes in their genetic makeup (via mutation and sexual recombination). This slow process, which is analogous to all other improvements of the cellular body, only very rarely gave rise to more than *one* additional unit (simultaneously forming *numerous* additional organs would have

been obstructive). In the evolutionary process, artifact development and the use of foreign organs constitute another pathway of attaining inheritable advantages. Nonetheless, simultaneously developing *numerous* tools that did not obstruct one another only became possible after the motor for new organ formation shifted from the genome (a cell organ) to the multicellular brain of humans.

Early human groups gradually developed a division of labor. Certain individuals specialized in fabricating necessary tools, ultimately leading to occupations such as "craftsman" or "tradesman". The latter initially involved exchanges. The prospects here were limited because only rarely did the goods or services offered fully correspond to the needs and desires of the potential exchange partner. If one person had an axe to offer and the exchange partner could only supply eggs and beets, then it could be difficult to close the "deal". The introduction of money as the universal mediator between supply and demand solved this problem. Business transactions could be broken down and converted into any number of units. Applying the energon concept, humans are no longer the "goal" of evolution, but merely the first organisms in the animal kingdom to boost the capability of their cellular bodies almost limitlessly. This new capability was not, however, a sudden "fulguration" in the sense of Konrad Lorenz, but rather tremendously slow and tedious, requiring no less than two to four million years according to our current state of knowledge. About 50,000 years ago the pace of progress began to accelerate considerably. Our ability to weigh experiences, to draw conclusions, and to play through a set of conscious, self-aware scenarios – in our minds and not on the battlefield of life – played a key role in this process.

Humans: high-performance organisms

From this perspective, it is not the naked human body that is subject to natural selection, but this body along with all its additional units. The resulting, enlarged human "capable entity" is therefore comparable to the bodies of animals and plants. How can we designate such additionally formed units? Functionally they are clearly organs, just like the heart, lungs or eyes, but the term "organ" is hardly applicable because its usage is reserved for units composed of cells. In my first books I referred to these structures as "artificial organs", but this repeatedly led to misunderstandings. I now call them "additional organs", which is simple to understand and enables me to retain the apt term "organ".

The human worker as an energon

The crucial aspect of additional organs is the competitive advantage they confer to the energons that working people represent: they help everyone fulfill the basic function of all organisms – to generate positive energy balances. In organized communities, money is the ideal mediator that allows every required service to be converted back and forth. In plants, sunlight is the source of energy, which is tapped through the photosynthetic process. In animals, the tissues of other organisms serve as the energy source and are gained by devouring and digesting the prey. Our mental capacity allows us to tap a third, entirely different form of energy. This is an indirect process involving a "two-fold exchange" or "two-

tiered transaction". In the first transaction, products or services that others need are sold to gain money. In the second transaction, this money is then used to purchase food – and the energy it contains – from others.

The first transaction is the crucial, most difficult one in this new form of energy gain. It requires two things: First, that you can offer services or products that others need and, second, that you can gain access to interested parties who have enough money to make the purchase. "Supply and demand" typically sets the price. The divisibility of money is essential here. The second transaction, when the money is subsequently used to obtain food, is usually the simpler of the two transactions. Under normal economic conditions, sellers are quickly on the spot. An additional advantage of money is that it can be used to purchase far more than only food: it provides access to the full range of services that others can provide to satisfy our every whim. This has become the new focus of human endeavor once the basic function – generating energy surpluses – was fulfilled.

The result is a completely new twist in energon development. Traditionally, all stockpiled surpluses were channeled back into renewed energon formation. Today, however, they are being applied to completely different activities that severely strain the balance sheet. Are we disrupting the overall flow of events that we have fueled? By no means. Our pursuit of positive inner experiences requires money. The focus on "culture" in the broadest sense has therefore become a powerful motor to actively integrate ourselves into larger energons. It goes without saying that positive balances are also a prerequisite for survival and growth in modern energy gain through two-tiered transactions. A novel development is that reproduction in this business environment transcends the rigid "species-specific" mechanisms in the natural environment. Whereas a pine tree can only beget a pine tree, and a ladybug only a ladybug, no working person is forced to invest the earned surpluses into mirror-image energons. Rather, these surpluses can be plowed into entirely different energons.

Mega-energons

The formation of ever larger and more powerful energons has become a reality. We term them "business enterprises" or "firms". They represent energons of an even higher integration level. In their expanded frameworks, humans become functional and therefore exchangeable units – even the managers or owners of the businesses themselves. These expanded energons also gain energy through "two-tiered transactions". The energy source they tap ("the market") also needs specialized services or required goods, wares, or production means. Business enterprises are also caught in a life and death struggle to maximize their gains. Again, these profits need not be invested producing new energons. Every technical advance also advances our culture, i.e. the pursuit of lifestyles that promote self-fulfillment, pleasure, happiness and the satisfaction of drives.

Business enterprises cannot always be cleanly distinguished from their employees, especially in individually or family-owned businesses. But the exchangeability of humans as functional

units (employees, workers, managers, etc.) does enable a clear differentiation from the simpler energons represented by every working person.

The energons known as “states” are even larger. They must also generate positive energy balances. The interrelationships with the other energons are far more complex here, but the fundamental physical principle that no movement and no process is possible without corresponding energy input is valid here as well. States are a group of energons that incorporate business enterprises (as typical components of states) into even larger entities. Their potential lifespans are even longer than those of businesses.

From unicellular to hypercell organisms

Three major groups can be distinguished in the evolutionary hierarchy of energons. *First*: unicellular organisms (including all their phylogenetic predecessors up to “true” cells with nuclei). *Second*: multicellular organisms, all of which develop from a single cell (the egg cell). *Third*: the large group of energons formed by multicellular human beings. I chose the designation “hypercell organisms” because these entities are not exclusively formed of differentiated cell complexes, but also include the “additional organs”. These are not permanently attached to the body, and can be put aside and exchanged. They can be formed directly of inorganic material. And they can also be fabricated by and purchased from others.

This large group of hypercell organisms can be broken down into three subgroups: working people, business enterprises and states. This concept clearly requires a completely new evaluation of humans and their achievements – a re-evaluation of basic positions.

The hidden commonality

Energon research pursues further capabilities that all energons may have in common. Generating an overall positive energy balance is a *conditio sine qua non* for all of them. Another obligatory feature is acquiring the building blocks necessary to maintain their structures and for growth and reproduction. A third commonality is the control mechanisms necessary to convert energy surpluses and building blocks into additional energon structures. This is accompanied by a fourth and fifth common feature, namely the ability ward off unfavorable or threatening environmental influences and to utilize favorable, friendly environmental conditions. This represents the “outer face” of all energons.

Each energon also has an “inner face”, one whose individual sectors are clearly definable: All functional units that make up energons must be *joined* to one another in some manner. Certain movement processes must be *coordinated* with others. All functional units must be *attuned* to each other in order to avoid mutual interference. The overall functionality must be maintained and, if necessary, reconstituted. Finally, individual *improvements* or those that promote energon evolution are advantageous for all energons.

These and other similarities provide strong evidence that traditional “organismic” evolution is now being directly continued by human-based energons. In their central function and orientation, all are energy-gaining systems. They carry the flow of life, a highly branched continuum that has been steadily gaining in potency and volume for 4 billion years. Thanks to our exceptional mental capacity, the human energon supplemented its cellular organs with artificially formed functional units that can be put aside, exchanged and combined at will. This empowered us and further boosted our efficiency.

Today, this development has reached a crossroads. Planet Earth and its resources are becoming too small to harbor this process. The superiority of hypercell organisms over uni- and multicellular organisms has become too crass. By suppressing, corralling, and otherwise impacting them, we run the danger of triggering the self-destruction of the human race and of life itself.

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