ESSAY ON ORDER

Karl Javorszky

***Abstract**: We offer a definition for that elusive term, "order". Order so much directs our perception, cognition and intellect that we should take a look at the infrastructure of how the human mind builds up its view of the world. Order is shown to be a combined statement about properties of things and how they are placed. The interdependence between "where" and "what" has been split for processing by the brain due to evolutionary pressure. Similarity is neurologically preferred above the properties of dissimilarities and is used as an intercultural tool of communication. We present a model that combines place and property attributes and integrates the dissimilarity properties of the present state of the world to the alternatives. We re-introduce the differences that we were instructed to ignore while we have learnt basic dexterity with numbers. We influence, and encourage dissolving, a deep-seated posthypnotic suggestion of culture: "The foreground, the similarities are important."*

***Keywords**: artificial intelligence, theoretical physics, indexed, multi-valued logical statements; stepwise additivity of {.t.|.f.}; accounting concepts in arithmetic procedures; concurrent usage of logical operators; consolidation among contradicting sentences, Minkowski space model.*

Introduction

An essay is „a short literary composition dealing with a subject analytically or speculatively; an attempt or endeavor, effort; a test or trial" [1]. The essay presented here attempts to introduce to the International Conference on Natural Information Technologies a method of thinking that is rooted in the natural processing of information, as it happens in actual life.

After some 35 years of professional work in clinical psychology, one may feel emboldened to say that one has gained some insights into how information processing takes place in actual life. The human brain is the information processing mechanism we use to evaluate – among other things – the contributions to this Conference on the subject of Natural Information Technologies.

Looking attentively to the way the human brain functions educates one on the subject of information processing. The perceptional mechanisms that are the infrastructure of thinking are a product of the development of the human race. Nature, by the evolutionary pressure of selection, has made sure that only such brains will be inside of cranium of participants of this Conference, which obey its rules. One may presuppose that the participants of this Conference are of sound mind and are capable of reasoning, communicating and understanding.

The present attempt of offering an idea has good chances of finding resonance. The reason for optimism is that the participants of this Conference are, with regard to neurological capacities, quite able to understand what is communicated in the present essay. The task is to show to the willing, prepared and interested participants the idea in such a fashion that they can catch and absorb it. One learns in psychology the technique of "reframing" a system of thoughts, by giving a different background to them. We attempt the introduction of dynamism to the rational way of seeing the world. Re-learning fundamentals does not happen overnight. We encounter what is termed in the trade "resistance", which means a wish for consistency in one's identity, being cautious of perceiving something in a different light, an unwillingness to discard the well-trained methods of evaluating

something, the reluctance to leave the well-trodden paths of one's thinking, the comfort one derives of being at home in one's way of doing things.

Knowing that the participants of this Conference are blessed each with a brain that is capable of learning something new, and assuming that the participants participate because they are willing, prepared and interested in the subject of natural information technologies, the task of the essayist is to present the subject in a fashion that invites an interested participant to make the effort of thinking it thru. The contribution of the reader of this essay would be, then, to check his [2] conservatisms with regard to what constitutes rational thinking, as opposed to natural thinking. The title of the Conference: "Natural Information Technologies" does hint that there exists an opposition between it and information technologies that are not really natural. This contrast is the subject of the present essay.

Artifacts

An essay being a short work, only a few, necessarily selective and cursory, sentences introduce the term "artifact" as understood in psychology and neuroscience [3]. An artifact is an unavoidable bias that is present during an experiment. An example would be our inability to determine the weight of a living organism with the precision usual in Physics, because the living organism continuously interacts with its surroundings, e.g. by breathing, sweating, eating and discharging, etc.; the artifact of living imposes a bias on the exactitude of measurements. Similarly, the artifact of social interactions makes it impossible to determine in a conclusive fashion, once and for all, the opinion of the general public with respect to the Punic Wars: as long as there were, are and will be historians, there will be differing opinions on the role of Hannibal. Artifacts are a fact of life and when planning experiments in social psychology, one will always try to discount them.

Among the artifacts of perception, one will have to accept the influences of optical illusions, because we cannot escape the fact that our visual apparatus does process sensory input the way it does. We can deal with neurological artifacts: we have learnt to discount the Doppler Effect; we also know that it is not the Sun rising and setting, although the fact of our stationary place on a rotating body generates this sensory impression. Once we have realized that our brain generates neurological, psychological or mental artifacts, we are ready to discount their effects and feel enlightened by not falling prey to the bias our neurology imposes on our perception and naïve thinking.

With regard to rational thinking, there is still an extended catalogue of perceptional and cognitive artifacts that need some reevaluation. The present essay will enumerate the most obvious among the cultural conventions that we have learnt to accept as axiomatic. There is no danger of insanity in contemplating the ways the human brain builds up its view of the world. We in our culture of the 21st century smile about the resistance scientists and the general public of bygone ages have offered against ideas that went against the socio-cultural axioms of the respective ages. We can glide over the arguments against the idea that the Earth is a big globe: no one today offers the argument that the "antipodes" would fall off the Earth, if it were actually round, and so on. The ideas that appeared hair-raising of the day have made it eventually into both common-sense and scientific thinking. A fine example for accepting the formerly 'unthinkable' as a self-evident axiom is the discovery that children as young as newborns have a neurology and try to maximize sensual pleasures; this thought, perceived as scandalous, was encountering strong resistance in the cultural environment of the last years of the Monarchy.

What counts as a self-evident, rational truth is deeply dependent on the cultural environment of the day/decade/generation. The fact that a Conference is called that dedicates itself to Natural Information Technologies gives rise to the hope that our present day/decade/generation is ready to question what is the present cultural agreement on Information Technologies and in which ways would be a modification necessary and acceptable in order to make the presently orthodox view of Information Technologies to be changed and

become a system of thoughts and insights that merits the name Natural Information Technologies. Working on the artifacts of perception and cognition in the domain of rational thinking could help in this endeavor.

Factors Improving Survival

Among the many faculties that determine, which individual is among the fittest that survive, the ability to recognize similarities is of high prominence. The ability to think in analogies is to recognize that a present impression is similar to an impression that the organism has encountered previously, and this faculty is the basis both for the memory and the ability to learn. No wonder then that our culture lays a great emphasis on similarities. In fact, our abstract, rational thinking is based on a picture of the universal unit, which is devoid of any properties and similar to replicates of its own shape. We base our rational thinking on the idea of the unit, denoted as "1", and we live in the idealized world, where every sum is made up of 1s. We decree that it is rational to believe that the basic building block of our concepts is one of unit properties. This idea may be pleasing to the neurology, and makes thinking a simple matter of dealing with uniform units, yet we may be seduced by insight to improve on it.

Our ability to focus on a specific thing of interest is good for survival. Pointing out one specific instance of something is good if we want to hunt it down and eat or impregnate it, but as always, this advantage has also its drawbacks. By single-mindedly neglecting the surroundings of the target object we gain survival advantages, so we promote this technique as a superb tool of thinking rationally. We save the trouble of having to decide, which of the aspects of the mental picture the important one is, but we incur the costs of not training decisions, and generally domesticate our thinking into believing that a well-founded logical picture of the world is free of conflicting, even contradictory results of evaluations.

We can very well distinguish between objective and subjective. One is outside and factual; the other is personal, intimate and not so easy to communicate. So we use the mental techniques of contrasting, and differentiate between what is the foreground and what is the background. No communication can be understood unless it relates to its specific background; yet in a rational discourse it is a cultural taboo to switch between that what is clear, circumscribed, defined and that what is the subjective background, the insinuation and the debatable. Only the poets have the liberty to use the connotations freely, by others we usually see in the infusion of background information a sign of a troubled mind. We are trained – and used - to believe that a mind works correctly, if it restricts its public communications to elements of the foreground [4]. Yet, poets are a part of Nature.

Small children, even animals, are able to distinguish between bigger and smaller, more or less, quiet or loud, bright or dim. This faculty of discrimination can be observed by far earlier than the ability to make additions. A child can distinguish between extents or amounts that we describe by 2, 3, 5 (size dolls, heaps of chocolate, etc.) far earlier that it can figure out that 2+3=5. The ability to use the logical relations {<|=|>} is at the disposal of a child of some 24-36 months, but we believe formal logic begins with its education in the marvels of the logical relations within the set of logical sentences that are based on the operator {+} within the domain of {=}. Somehow, we have come to look down on the simple ability to discern on size – or extent, or intensity, etc. – as a low-level, proletarian thing that every moron can do and which is not thinking at all.

These are but a few of the neurological artifacts of our brain that influence our thinking. We shall now look into ways to counterbalance the illusions that they create in our view of the world.

Counteracting the Effects of Evolution

The biases in our perception of the world show that we as genus 'homo sapiens' are part of the animal kingdom and are subject to evolutionary pressures. Our efforts to recognize and counterbalance the artifacts of our

neurology show that we insightful, intelligent animals. The task is now to identify areas of certainties in our picture of the world which are nothing more than artifacts of our nervous system.

Prominent among the areas needing a re-evaluation is our concept of what is a unit. The newborn encounters the world at first by means of its skin. Tactile sensations have an impact on our convictions that cannot be overestimated. The skeptic's "I'll believe it when I see it" is trumped by "Pinch me, I can't believe my eyes". We ascribe reality to an object which is – at least conceptually – accessible to be hold in one's hands. We are used to separate the logical categories of "logical object" and "logical relation". If we discuss – in a traditional manner – matters of combinatorics, we understand well the question, how many distinct logical relations can be maximally generated using n objects with some symbols on them. Reversing the direction of concluding is unusual: 'Having x logical relations, at least how many fractions of objects are necessarily present?' borders on poetry. The proposal to use the number of logical relations as unit and deduct the number of actual objects as a result of combinatorics, or, more practically, to use a unit that is a half-way freak between a purely logical entity – like a possibility – and a logical entity, like the unit in terms of objects, that could – if it was real – be touched [5] is a step towards overcoming a dichotomy that is present in our culture, because we know the difference between reality and imagination.

Similarly, we have learnt to distinguish well between the place of an object and the object itself. It is self-evident that a thinking person can distinguish between the direction the Sun is shining from and the light it emits; the time of the tide and the water. Only imbeciles would confound where something is to be found and what it is. The rational view of the world is extremely snobby against members of society who are unable or unwilling to respect the properties of places, e.g. eating or rioting in a church, talking about secrets in an inappropriate place. The properties of the place and the properties of the objects are connected by culture: there are types and categories of things that do and do not match with types and categories of places. This distinction is not purely man-made: we observe animals to discharge waste according to topological criteria. The concept of territoriality itself is however not constant over all kinds of animals: there are nomadic versions that survive well.

Let us come forward with an educational tool which can be used to de-condition our conditioned reflexes and culturally motivated prejudices about what is rational and acceptable in a picture of the world. Before presenting the tool, we first have to introduce the collection of logical objects we shall use and the main method of dealing with the collection of logical objects.

The Thing-As-Such and Its Place

If a solution to a problem is working well, the animal will repeat it. Humans find it useful to unify and to abstract. Discarding the particularities of an object allows building a more general concept of the kind of object this particular one is a representative of. Kant has repeated this step-by-step process to its ultimate end, where he arrived at the idea of the thing-as-such ('t-a-s'). A purely logical concept, the t-a-s is the idea of a thing without any of the properties of an actual thing. There might be, however, some advantages in doing one step less in the process of abstraction and leave a bunch of things as such with some basic properties of type, like the modality [6]. Overdoing the abstraction defeats its purpose of having a concept that is useful and helpful in achieving some goals [7]. Here, we shall use the t-a-s in its appearance as the mathematical unit of "1" but allow for multiples of the unit to be of a distinct modality [8]. Genetics teaches us that Nature does not go to the Shannon extreme of abstracting into "this" and "not this", but keeps at least 4 markers in use and distinguishes between left, middle and right among places. One of the differences between Information Technologies and Natural Information Technologies may be that the latter does not continue schematizing and abstracting to the very end, but allows for a small number of types and kinds of t-a-s to remain distinct. This concept is used in psychology under the

name of "archetypes", of which there are several, the last step of abstraction into an idea of the archetype-as-such not being done.

The management of the place-related properties of an object appears to be done by different regions of the brain than utility-related properties of the thing. We experience the well-established distinction between topical and sensual properties of the objects that make up our world by pairing the attributes of things in a mental experiment. That the place is clean does not mean that things from there can be eaten; edible things loose on the other hand their property of nourishment if they are or were located on a place which by its properties negates the edibility of things. The strict distinction between where something is to be found and what kind of a thing it is becomes immediately evident in the resistance against the idea that it is useful to *sort* things according to their properties.

Sorting is a central concept of the model to be presented. This essay attempts to drive the reader's attention towards sorting and resorting data sets. Normally, people treat the place of an individual thing as less relevant to the thing as its other properties. There is a reason for this condescending attitude towards the collection of comparisons {<|=|>} that assign a place to each element of the data set. After all, it is only sorting and ordering, and if the object were in a different multitude, its place would be a different one [9]. We overcome this critique by assuring that the individual elements are and remain in one and the same collection of individual elements; therefore the place an element will have depends only on its properties and the concept of order we impose on the whole of the collection.

We demonstrate the idea of order on a collection of things-as-such. It is obvious that a spider maintains a clear idea of what is order, and we cannot discuss the fact that spiders are a part of Nature. The task is then to figure out, what logical rules a spider obeys while establishing what to do so that its web is well-ordered. In order to be able to discuss, what is well-ordered we first have to discuss what order is as such. To do so, we introduce a collection of things-as-such and order and reorder them under several of their aspects.

Aspects of Order

There is no overall social convention about what is order; much less about what would be an ideal order. In order to have an intellectual concept, which is neutral and accessible to all, we propose to use the results of a sort on a data set to declare that the data set is in order after the sort has been conducted [10]. We point to the data set in its state as a sorted one and say "the data set is presently in order <…>", where we insert between the symbols < and > the sorting criteria which were used to bring the data set into this specific order.

To keep the discussion simple and general at the same time, we use as elements of the data set things-as-such which have retained some of their qualities that is, are not completely indistinguishable from each other. To be precise, we use numbers in the range 1 to 16. Learning from Nature that there is a dichotomy of two versions of the same idea [11], we build pairs of the things-as-such and call these *a* and *b.* The tool we demonstrate concepts of order on is then a collection of numbers in the range 1 to 16, always two together, where we call the left one *'a'* and the right one *'b'*. One may visualize the collection as summands in an addition of the form *'a+b=c'*. To put it simply, we generate the 136 smallest additions [12] and sort and resort them.

The starting order of the collection will be dependent on the way we have programmed the loops which generate *a* and *b*. If the collection has been generated so, that the data set is ordered as (1,1), (1,2), (1,3), (1,4) and so on, we speak of an order SQ_{ab}, if the elements come generated in the sequence (1,1), (1,2), (2,2), (1,3) and so on, we speak of an order SQ_{ba}.

The sort has assigned to each element a place in a linear sequence 1..136. We see that element (1,1) is in both of the sorts we have encountered so far on place 1; place 2 is occupied in both orders SQ_{ab} and SQ_{ba} by element (1,2) [13].

We shall return to the conflicting assignments of places to elements (and of elements to places) by means of imposing an order that is different to the presently prevailing order, as this search for compromise between logical contradictions is the main theme of the present essay. Before doing so, we shall introduce the aspects of additions we shall be using.

One has been told at the age of 6 by Teacher, that the important thing on mastering rational thinking is that one neglects the differences among the summands and between additions if only the result of *'a+b=c'*, namely c is the same. To look into the effects of $a_1 \neq a_2$ while $a_1 + b_1 = c = a_2 + b_2$ has the emotional connotation that a) one has not understood what additions are all about, and b) one disregards Teacher's instructions. Massive resistance against the proposal to a) split hairs on differences of additions with identical results, and then b) sort on these differences, and then c) re-sort and then d) watch the patterns of items moving together, is to be expected.

We use the describing aspects of *a, b, c=a+b, u=b-a; k=b-2a, t=2b-3a, q=a-2b, w=2a-3b, s=17-(a+b|c)* to build a numeric table of alternatives among order concepts.

We have now introduced the data set we are using to demonstrate concepts of Natural Information Technologies. Reader is invited to generate his version of the data set [14], as looking up the numbers simplifies understanding the following discussion on order and disorder.

How Come This Was Not Discussed Yet

Information Technologies has had it easy and comfortable; Natural Information Technologies is a complicated and demanding business. How nice would it be, if all sentences were always true; everything could be seen as more of one unitary unit; only the foreground, not the contrasting alternatives, was important; one could discard differences without any consequences; there were an infinite number of equally valid logical statements: This is the mental world society has built up, intercultural, to be able to deal with problems Nature has confronted us with. The simplifications are partly for neurological reasons: the overriding importance of the similarity property among mental concepts; the determined focus on the contents of the foreground. Acculturation taught us to actively disregard the background, the ungrammatical something enveloping the realm of the rational. The endorphin boost caused by having understood something is visible on young children who enjoy learning. To rely on a codified catechism of what is reasonable and what is to be understood adds a social component to the self-concept: one belongs to the educated if one has understood something that is universally defined as important to understand. Our education is a great tool for endorphin production, as it teaches us to think in a fashion that is the right fashion. Many factors contribute to the stability of a world view; one encounters the continuity/stability in the form of resistance if one suggests a change to the habitual ways of seeing the world.

The history of rational thinking begins with correctly deciding, which of two alternative stimuli of appetence is of more utility: discerning, recognizing differences is a process that happens in the moment, the intelligence needs no memory to evaluate the sensory input [15]. Memory comes in, when after recognizing that b is bigger than a, the animal remembers whether a movement to or from b used to be more useful. Abstracting from most of the properties of a and b and describing them by means of multiples of a standard unit is a product of intelligence which beasts of prey that hunt in groups probably master. The visualizing ability of the brain encounters its natural limits usually near a dozen objects. Only thanks to the technology of the last decades have we the chance to introduce something basically new to concepts of logic. It is impossible for humans to investigate the patterns observable during reordering a set from one into a different order by using his fingers and his brain; methods of paper and pencil fail. Alone, to raise the topics one needs a computer to be able to present a possible way of consolidating the differences between Information Technology and Natural Information Technology. The task is roughly comparable to discussing the individual paths of each bird or fish in a swarm that exercises its

maneuvers. In historic perspective, there was simply no way of formulating the subject of the present essay in previous generations, as they lacked the accounting power of computers.

Natural Information Technology includes that what Wittgenstein has contrasted the subject of his Treatise to, namely that what is not the case. We propose a concept of the world, in which some logical sentences are sometimes true, in dependence of the spectator's decision, which aspect of the world is relevant for him in this moment. The world which we discuss in this essay consists of only two kinds of entities and each kind can have only 16 variants. By tradition, we have become used to reading the usual order of the set under the aspect of the two summands being interchangeable ('commutative') and their sum being the important aspect. We re-introduce the differences we were instructed to ignore at our first schooling in rational thinking, at Elementary School.

Contradictions and Compromises

By using more describing aspects of the pair of logical entities that are puppets we play with, we greatly expand the complexity of the question. By bringing the collection in a sorting order, we can say that SQ_{ab} is the case. In that moment, under this understanding, we know about each element, which is its place; concurrently, we also know about each place, which element is presently in occupation of it.

Contrasting to 'SQ_{ab} is the case' would be the state of the world if 'SQ_{ba} is the case'. Then, element e_i would not be on place p_j, but rather on a different place. The general idea of a resort is that most of the elements lose their place attribute's logical property of .t. and gain the logical property of .t. attached to a different place attribute. This is usually a process in several steps. In his everyday life, the participant has experienced and understood the logical processes involved in a reorder. The area of the brain wherein are stored the experiences relating to places is not directly connected to the parts of the brain that manage quality properties of the mental contents. One has to actively encourage the idea that this essay discusses the places of logical elements. These are pictured in the abstract world as the result of a sorting procedure. The sorting connects places to quantities [16].

Natural Information Technology makes use of the numeric constants that are the result of sorting the collection of additions. Nature appears to agree to the rules classical logic, Information Technology has elaborated. The transition is very smooth; because the mechanism is self-explanatory once one has set into motion the accounting machine. Once one has cleared the logical resistance of accepting *two* equally valid versions of what is the case, the technical solution of the consolidation comes quite naturally, as the numbers are very helpful. Any two of sorting orders can be resorted into each other and the extent of truthfulness of the alternative results of '$SQ_{\alpha\beta}$ is the case vs. $SQ_{\gamma\delta}$ is the case' can at any moment be numerically evaluated and registered.

The rational world, as we are used to understand it, is stable, even rectangular. The space concept this essay proposes is generated by change resp. movement and transformation. The basic idea of a unit in Natural Information Technology is the standard extent of disorder during a resort from a given order into a different order. The fundamental vision transmitted in this essay is a continued logical debate, about which of the views of a and b are more relevant, in this moment, given this history. The movement of the elements merges place- and quantity-related attributes together, creating practicable space concepts. Which of the possible orders is in existence, and to what degree, can at all stages be numerically tracked. What we direct the attention of the reader to is the group of elements that are in interdependence – in a common category - with each other [17]. During a reorder, elements usually are included in a sub-collection that moves together. These sub-collections can be seen as noumena in a logical connection, goods in transit, filaments or strings connecting places in linear, planar and spatial structures with amounts of *a* and *b* and of their aspects.

The numbers are forthcoming enough to supply a standard kind of chain, which is of length 3 and accommodates 4 distinct logical states in each of its readings. The accounting mechanism translates up to 72 differing readings of the order history of the set into 20 or 21 actually distinguishable logical prescriptions.

Let this essay conclude with an optimistic note. The concept is rooted in psychology: that the logical relations {<|=|>} and {=,+} are both accessible to the brain, and using them concurrently is only a matter of training; its content is communicable, as it deals with elements that have a well-known life in abstract thinking: the new trick is to watch the patterns that appear while reshuffling from a specific order into a different one; the demand for a numeric model to simulate Nature's ideas about order is urgent, as applied biology is advancing forward on empirical knowledge. May this essay support Information Technology into becoming a Natural Information Technology.

Conclusion

There is a natural order governing the functioning of the human brain. Computers, as potent reincarnations of paper and pencil, allow us to keep track of what is order, at least in the arithmetic based on natural numbers. Combining place and quality attributes can be achieved by distinguishing elements among each other by comparing them on the basis of {<|=|>}. Sorting is ordering. As there are several sorting alternatives at our disposal, their results will in many cases be contradictory.

We go into details within a central concept of logic, namely that a logical system has to be free of contradictions, and be, in effect, a huge system of tautologies. We allow contradictions to try to exist, without ultimate success.

We consolidate the logical contradictions by assuming that there is a continual search for compromise among contradictions. This position allows us to see Nature as having a dynamic will of its own, that follows its own rules. The order concepts as inferred from natural numbers show contradictions with regard to $a+b=c$ if concurrently subjected to the rules of {<|=|>}. The interaction of the two logical principles allows the contradictions to be consolidated. It is possible to resort a data set into a different sorting order.

The details of the resorting show that there is a third describing attribute to noumena: after the amount (name, extent) and the place (in a given order) there appears the category of *logical connection* as an attribute of the 136 individual elements we model Nature with. The logical connection exists in that group of elements that move together during a resort from a given order to a different order. These strings connect elements in a remarkable fashion.

The world view offered by this extension to arithmetic allows building new concepts in many areas of science. The Minkowski model is well supported by the numbers. One uses a moderately extensive data set of steps each element makes while being resorted from every possible order into every other possible order. The system gets complicated once one enters the combinatorics of not all alternatives being possible at all times.

The rules of selecting the next among the possible states of the system are connected to the ties in the comparisons. There can history enter as a logically circumscribed fact. The fact that elements that would be normally within a tie in a random sequence are ordered is equivalent to stating that previously such-and-.such order has been the case. This method specifically distinguishes one-of-four within a basic – spatial – statement of one-in-three. The basic translation mechanism of theoretical genetics appears to have been found.

Remarks

[1] Mobile-dictionary.reverso.net.

[2] Or her; „he" always means „s/he".

[3] See e.g.: en.m.wikipedia.org/wiki/Cognitive neuroscience of visual object recognition.

[4] Wittgenstein has declined to discuss the background of that, what can be expressed rationally.

[5] Or heard, smelled, tasted, etc.

[6] E.g. sound as such, smell as such, touch as such, movement as such, etc.

[7] See also: Musil, R.: Der Mann ohne Eigenschaften (The Man without Qualities).

[8] That is, we assume 3 to be intrinsically distinct to 1+1+1 or 1+2.

[9] Among the blind, the one-eyed ...

[10] This would be a deictic definition of a concept. We use the deictic method in this essay.

[11] E.g.: female and male versions of Homo sapiens.

[12] From 1+1 to 16+16, where a ≤ b.

[13] Reader is invited to determine the place of (15,16) and (16,16) in both SQ_{ba} and SQ_{ba} on his own.

[14] One may also download the data set from the site www.tautomat.com.

[15] This means that the logical operation based on {<|=|>} is more archaic than {=,±}.

[16] At school, pupils' line up sorted once on name, a different time on height. Their unique SSN is a quantitative attribute, as it is made up of multitudes of the unit '1'.

[17] The reader is invited to draw the succession diagram that shows by which way (1,3) gets from place 3 to place 4 in the resort ab→ba.

[18] Thanks to Gordana Dodig-Crnkovic for pointing out the term „noumenon" for 't-a-s'

Bibliography

The core statement of this essay is a proposal to include into arithmetic the use of numeric constants generated by sorting the natural numbers 1..16 according to some criteria of a and b. There is no literature on the most probable state the system is in during resorts.

As a speculative work of literature, an essay does not need bibliographical references. As a work of logic, Wittgenstein has set a precedent in the foreword to his Tractatus.

Authors' Information

Karl Javorszky *– affiliated to FIS since 1995. Works as a clinical psychologist in Vienna since 1979. Address: Landhausgasse 4/23, A-1010 Wien, Austria; e-mail: karl.javorszky@gmail.com*

Major Fields of Scientific Research: General theory of order and disorder; interaction between sequences and mixtures; a rational model of theoretical genetics; granularity algebra [see: Zaragoza Lectures, on invitation by P.C.Marijuán, in 1994], possible uses of disjunction operator M [a low-level arithmetic tool like division, yielding categories of disjunction].

More material relating to the model presented in this essay can be found in the e-lectures given at the FIS chat room in WS 2012/13, titled "Learn to Count in Twelve Easy Steps".