Moments to create new thoughts within the theme of „information“

Please be leniently about errors in this my selfmade translation. Each advice would be high appreciated, e-mail to forcht@systemstheory.de

A short introduction to the project of the Relational Information Theory

The project has started within lively debates of the „Information Theory“ (created by Claude Elwood Shannon). The importance for transmission of messages is undisputed. Incidentally was attempted, to develop with this information theory also semantic funktions in Physis. But against that, SHANNON himself as well as technicians and philosophers offers resistance.

Now the following explanations will show possibilities, to perform semantic descriptions of physis outside the frame of the Information theory SHANNON's. Some questions and answers may lead to the *Relational Information Theory,* to be present as follows:

Surveillance and first question

How is to explain, why we are able to recognize a Melodie even if this is presented through a piccolo flute or a double bass ? Well-known is only the relevance of identical relations of sound frequenzies and rhythm. The auditoric system within the brain is able to differentiate frequencies und rhythm, but the brain is not able to calculate relations

of sound frequencies ? Whitch way in the evolution was given, to mediate an indiviuum mental effects, given from objectiv physical phenomenon ?

- From secured scientific findings about the mode of operation of neurons is to learn, why the operation of arithmetic processes in the brain needs a *consciousness* about the relations. On the other hand, relations while musical detection will not be arithmetic considered. Besides that, animals also are able to detect relations and mental feeling. A Dog will recognize his Master from meters of distance even if the Master is directly in front of him, although the picture on his retina is differently. In the row of complexity of each Individuals we have to go far back to find the beginning of the detection of relations and identifying them as an basic capability.

- An examination of evolution theory suggests, the achievement ***for relational detection*** was important for survival. Qualified darwinistic, the creation of that capability already started while crossing the border from unicellular organism to organized multicellular organism. How the evolution was able to force that crossing? This is to explain in the following way:

- Results of biological research inform, the sensibility of sensoric cells will go down while constantly animation but increases again after recess of animation. In consequence, the capable of detection for simple organisms was dependent from inside varying conditions. Moments to have „memories“ had no chance to develop right. Advantage for survival consequently through „memories“ could come into being just after an outside discern was created. This could come into being after a capability to detect relations was – how ever – created. This kind of capability <u>was the only way</u> to eliminate the uncertainty, caused from the biological precondition. *In accordance deep to see is the anchorage* for the capability to detect relations in the phylogeny of creatures. The humanoid subjective detection works at the same way to present psychological (mental) effects.

Possiblities to describe objectiv the subjective psychological effects:

- Relations are defined by the harmonic row while each value is judged as an distance from relativ 2^n. The real value, which is supposed to have the function of 2^n, can be any number. Decisive is the relation of other appearing values to that „relativ 2^n“. Consequently we can say, two or several values are relevant through the account of distinction of their distance to 2^n.

- Simplifying the discussion, the relative value of a real value will be called „Relationalwert“ and the distance to 2^n will be called „Attribut“. Consequently easy is to produce the following theorem:

  In a structure of relations corresponds the Attribut of each <u>Relationalwert</u> to the product of the Attributes from <u>their factores</u>

- For imagine a scale for relations, we have only to organize the harmonic row in accordance with the above theorem:

weighted harmonic row; actually after transfomation in accordance with the above theorem

"Attribute"

e.g. demonstration of some "Relationalwerte"	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	2	***3***	***5***	9 ***7***	***11***	15 ***13***	***17***	27 21 ***19***	25 ***23***	33 ***29***	***31***	45 35 39 ***37***	***41***	51 ***43***	55 ***47***	81 63 49 57 ***53***	***59***
	4	6	10	18 14	22	30 26	34	54 42 38	50 46	66 58	62	90 70 78 74	82	102 86	110 94	162 126 98 114 106	118
	8	12	20	36 28	44	60	68	108 84 76	100 92	132 116	124	180 140 156 148	164	204 172	220 188	324 252 196 228 212	236

italic = "Aszendenz", growing distance to 2^n causes decrease of physical Relevanz

Picture 1: Organization of the harmonic row in accordance with the above presented theorem

Surveillance und second question

If all physical been is basicly built from relations, and even if the relations can be objectivized with the above presented theorem, how and in which application field of information technology that theory is suitable ?

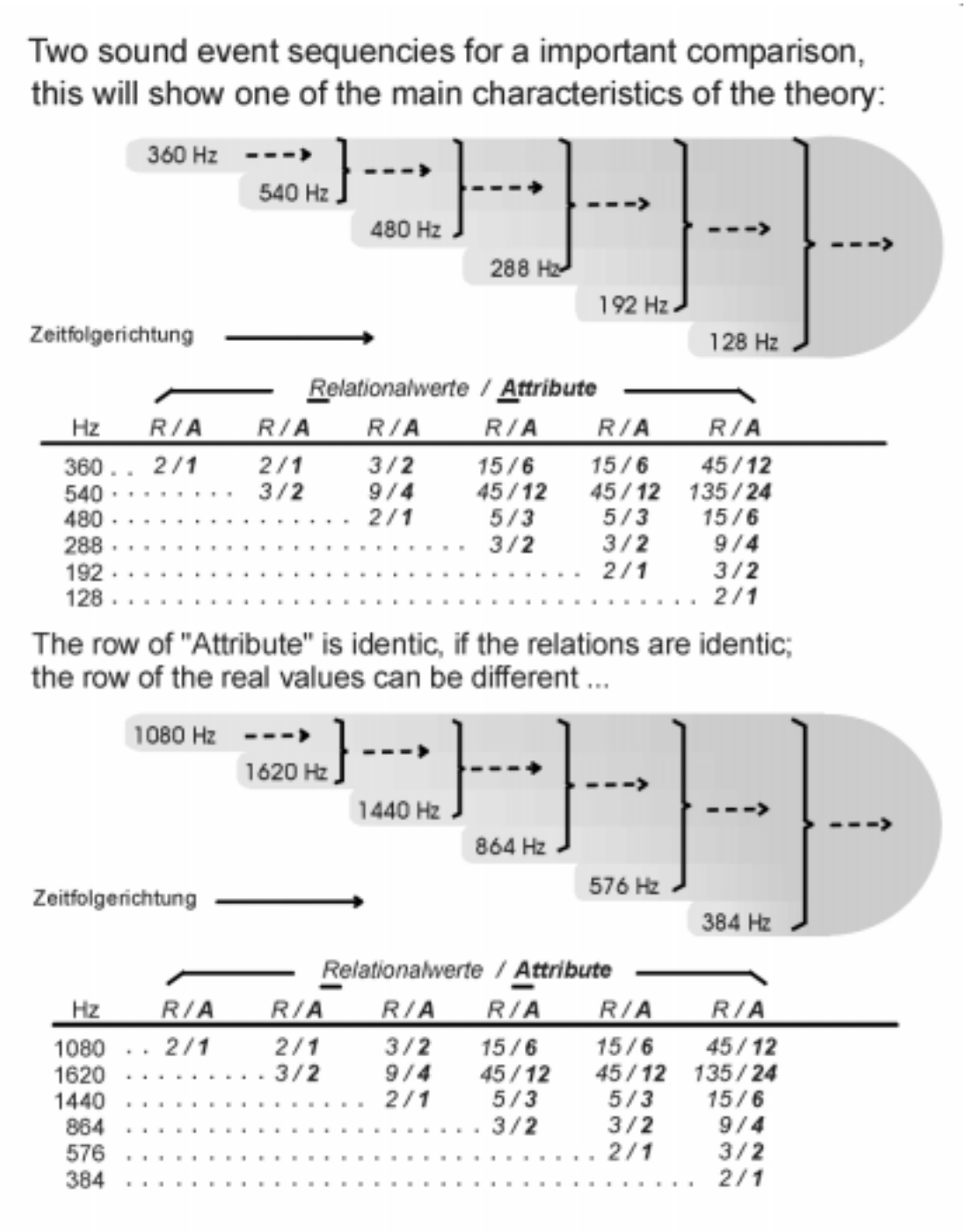
Argument: Bit versus Relation

-- The „bit“ is well known as the small information unit, corresponding [1/0] and applied in spatial and temporal struktures, e.g. in Codes for words and pictures.

-- The „relation“ is now well known as the universal information unit, marked through the relational distance of the constituents of a relation to 2^n, to identify and to use each time *unimodal* in spatial and temporal struktures, e.g. in funktions and forms.

- Against that human leaning, „values“ equating with „worth“, the equating of „*relations*“ with „worth“ present the realization to see the sort of methods of the brain, e.g. remember melodies without arithmetic Operations, even in which pitch that melody would be presented.

- Now we have the basis to explain possibilities of technical applications, mediated with the picture 2 including explanations:



Picture 2: Deciphering of sound event sequencies

The picture shows how the „Attribut" of a konstituent pro event get the position inside one structure of relations. This is an example for Prozesses: Two sound event sequencies consist of different frequencies. In both prozesses are the <u>similar relations</u> decisive for equality of the Attributes of the constituents. (Remember the argument: Two or several values are relevant on account of distinction of their distance to 2^n.)

- To set up Software it is imaginable, to build an universal usable funktion „Relationenprozessor“, to fulfill the following tasks:
  - -- the data to process, e.g. submodalities from measured values, are present in an array[a][b]
  - -- an appeal take place with handing over the address of the arrays[a][b] and a value in question for a range of tolerance;
  - -- the content of vektor[a] is to work on in the kind of shown arithmetics;
  - -- return contain physiological data in the vektor[b].
- The capability was demonstrated in the theme of „artificial intelligence“. A verry little program (written in „C“) was able to pretend the differentiation between a pleasant against a unpleasant melody (published in CHIP professionell 1989, „Denken ist kontrolliertes Tolerieren“).

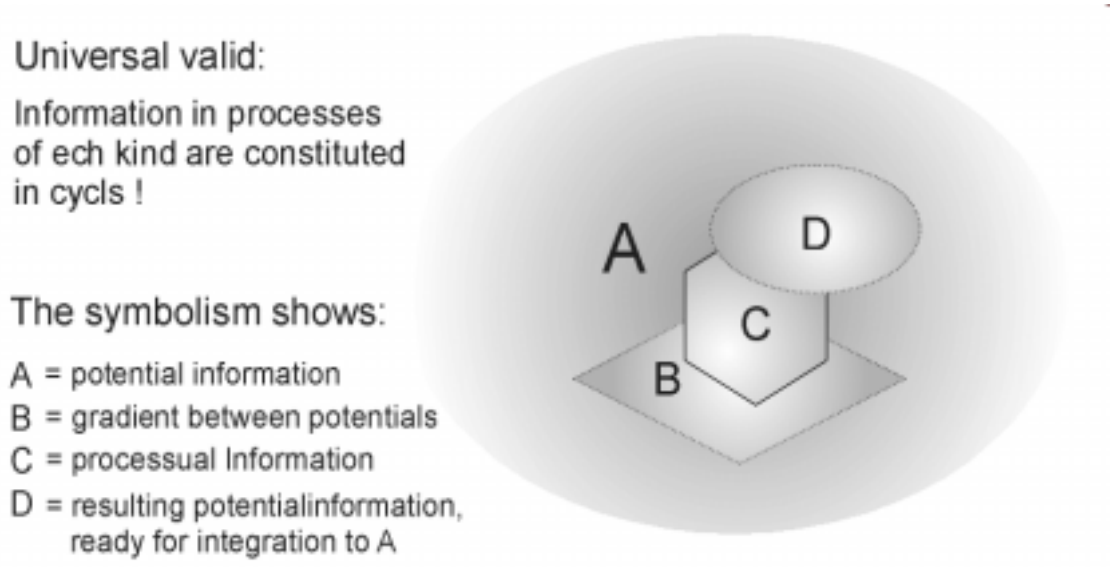
Surveillance und third question

Our view of world is well formed philosophical and ethical but now we see a technical/physical way to explain the not-mathematical procedures of natural systems e.g. of humans. How we can join this ?

- What ever happens in our world, is based on interactions. What the human see and try to describe, that are differential moments as part of the universal processes.
- In Front of each interaction we have a potential, searching for exhaustion through balancing potentials.
- Each exhaustion of potentials have to be seen as a process (= interaction), in which are to overcome sorts of resitors. Processes as well as resistors are to be seen as the reason of potential information, which are in the frame of the potential exhaustion

prozessual information (e.g. astrophysikal the lessening gravity effects over the distance valid may be seen as a kind of reststance in exhousting processes of informational potentials. The kind and effect of potential information is consequently appropriate)

- The prozessual information determine what ever will be created and furthermore be available as a new potential information.
- What ever – even in material or mind – is changing, is a consequence from changing relations. This changing relations determine the informational effects in the process. E.g. one and the same value of energy is going out from several phenomenons und leads to other phenomenons. On each changing of phenomenons are potential und prozessual informations involved, even if the time differencies are inexact (e.g. <= nano- up to >= teraseconds).
- In this moment is apparent: „Iinformation of physis“ is to understand as progressive cycles. The charm of that discovery is enough reason to intensify advertise for appreciation in all discussions in the area of „information“.



Picture 3: The universal cycle of information

- More to picture 3: What ever is changing and / or propagate, is information alone. All processes are leading from potental information [B] over prozessual information [C] to potential Information again [D], drifting to the universal totality of information [A].

- Natural-scientific, this processes are uninterrupted present in all material and temporal ranges of size, from <= nano- up to >= teraseconds even from <= nano- up to >= terameter in each dimension. E.g. a temporary activation of a synapse in the neuronal system of a creature. This is valid analog up to sociological processes.

- Part of the being of potential information (fokal): That information may exist for short or longer time without any effect, e.g. a book.

- What ever in natur be caused, is only the increase of density of information. This is also valid, while decrease or destruction are temporary appearances.

- If state and availability of energy are changing, so this occur only on basis of „potential“ und „processual“ Information.

- In accordance whith current astrophysical information, the density of energy in the univers is decreasing. Against this, the density of information increase, even if immediately or indirect.

- Altogether, the *Relational Information Theory* offers to try to join „information“ with „entropy“(thermodynamics), where e.g. the 2. main clause gives the statement, the entropy increase without return.

Résumé

- What ever a man is able to cause, even if material or intellectual/ mental, if to build or to destroy, constructive or destructive, immediately or indirect, that all is information. Measurements of utilitarian [+/-] of effects are only subjektiv qualitatively evaluated.

- Our world is therefore informational constituted. This can be safety be supported. All mentioned points of view are suitable to develope up to the question about sense of world and life.

Justification:

- Theories are suggestions to think. Occasional they offers also several instruments, that makes intelligent creatures to be able, to improve existence and evolution for oneself and for others. This is an important aspect because the possibilities of knowledge und to act are still suited to increase more and more.

Application:

- Technological, the relational information theory enable an informational transcription of processes und forms, up to the develpment of humanoid systems and parts of systems.

- The relational information theory is suitable to explain a lot of phenomenon in our world. Therefore we see the basis to arrange and design our world in alliance with natural processes, although with new concepts and devices.

Particular explanations are given in the detailed manuscript, „Die Relationale Informationstheorie". For download look at the presentation »www.systemstheory.de/manuskript.html «