

Agent-Modelling & Design

- ◆ Agent concepts hold great promise for responding to the new realities of information systems. They offer higher-level abstractions and mechanisms that address issues such as knowledge representation and reasoning, communication, coordination, cooperation among heterogeneous and autonomous parties, perception, commitments, goals, beliefs, intentions, etc., all of which need conceptual modelling. On the one hand, the concrete implementation of these concepts can lead to advanced functionalities, e.g., in inference-based query answering, transaction control, adaptive work flows, brokering and integration of disparate information sources, and automated communication processes. On the other hand, their rich representational capabilities allow more faithful and flexible treatments of complex organizational processes, leading to more effective requirements analysis and architectural/detailed design.
- ◆ [Paolo Giorgini Brian Henderson-Sellers Michael Winikoff (Eds.): Agent - Oriented Information Systems. 5th International Bi-Conference Workshop, AOIS 2003 Melbourne, Australia, July 14, 2003 and Chicago, IL, USA, October 13,2003]

Grundzüge der Agententheorie und -Technik

Characteristics of the Agent-Theory and –Technique

- Vereinigungstheorien der Physik (TOE) stoßen auf I-Monaden als letzte Ur>sachen<!
- **Union-theories of physics (TOE) evidence information-monades as last causes**

- Internet – Virtuelle Agentenkollektive als Netz-Management
- **Internet - Virtual collectives of agents as network-management**

- Biologisch-medizinische Agenten-Modellstufe
- **Biological-medical agent-model step**

- Sozialtheorien als kybernetische Agentenwelt
- **social-theories as cybernetic agent-world**

- Literatur [z.B. allein 2004f: ~15 (Tagungs-) Bände bei Springer-HD],
- Kongresse und Arbeitsgruppen [Unis; Industrieforschung etc.]
- **– Literature: [for example alone 2004f: ~15 (Confernce-) Volumes in Springer-HD, university and industrial research]**

BIO-LOGOS – Agenten-Modellstufe

Agent – Model - Level

- Der theoretisch einfachste Organismus >Zytos< [Membran, Chromosomen-Spindel, Zytoplasma, Organellen] erzwingt die Agenten-Autonomie und das Agentenmodell als kategoriale Darstellung (Leibniz: Zell-Monade!);
 - **The theoretically simplest organism > Cytos < forces an agent-autonomy and an agent-model as categorical representation [Leibniz: cell-monade]**
 - Zelle ohne Vorstufe als BIOS-Monade [Reduktion auf >Teile< \equiv Sinnverlust]
 - **Cell without any initial (pre-)stage as BIOS-Monade [reduction on > single parts < \equiv loss of sense]**
 - Einzeller-Kollektive - **Single-cell collectives**
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Agenten-Paradigma Krönung Kybernetischer Modellierung

Agent–paradigm as coronation of cybernetical modelling

- Der Physiko-Logos zwingt über die Ure- und Projektions-Theorie das Ur-Monaden oder Ur-Automaten-Paradigma auf.
- **The physico-logos forces via the Ure- and projection-theory the paradigm of basic-automaton (Elementary automate-machine).**
- Die kybernetische Theorie und Technik vollendet sich im Agenten-Paradigma – realiter und virtuell.
- **The cybernetics theory and technology finalizes itself in the agent-paradigm – in reality and virtual.**
- Internet und Roboter-Theorie und –Technik führen konsequent zur integrierenden Modellstufe hierarchischer Agentenkollektive.
- **Internet and robot-theory and -technology lead consequential to the integrating model-step of hierarchical agent-collectives.**
- Die kategoriale Abbildungssprache des BIO-LOGOS ist hierarchische Agenten-Kybernetik.
- **The categorical illustration-language of the BIO-LOGOS is hierarchical agent-cybernetic.**

Agenten-Paradigma Krönung Kybernetischer Modellierung

Agent-paradigm as coronation of cybernetics modelling

- Das Substrat der Agenten-Kybernetik ist der in dimensionaler Topologie präsentierte Hyperraum der Planck-Welt. In der Hyperraumordnung der digitalen Planckwelt ist Informationsvermittlung praktisch zeitlos [$c \rightarrow \infty$ $h \rightarrow 0$]. Die Koordination und Stimulation der Zellen beruht auf einer trans-physiologischen Informations- und Kausalordnung [Vgl. Ordnungsstrukturen in Einzell-Kollektiven].
- **The substrate of the agent-cybernetic is the hyper-area of the Planck-world, presented in dimensional topology. Information-transmission is practically timeless in the hyper-area-order of the digital Planck-world [$c \Rightarrow \infty$; $h \Rightarrow 0$]. The coordination and stimulation of the cells is founded on a trans-physiological information - and causality-order. [Compare: assortative structures in single cell-collectives].**

Agenten-Paradigma Krönung Kybernetischer Modellierung

Agent-paradigm as coronation of cybernetics modelling

- J.C.Eccles: >Das Ich und sein Gehirn<. Allgemein: >Das Lebewesen und sein zellular differenzierter Leib<. Jedes Lebewesen ist von seinem Hyperraum-Agenten [HyCo : hyperspace-core] geführt. Das HyCo differenziert sich in Sub-Agenten bis in Cybersomes des Zytoplasmas.
- **J.C.Eccles: >The self and its Brain<. In general: >The creature and its differentiated cellular body <. Each creature is led from his/its hyper-area-agent [HyCo: hyperspace-core]. The HyCo becomes more differentiated in sub-agents finally into Cybersomes of the cyto-plasmas.**

Agenten-Paradigma Krönung Kybernetischer Modellierung

Agent-paradigm as coronation of cybernetic's modelling

- Die Interaktion der HyCo-Hierarchie mit der atomar-molekularen Repräsentation ist für den physiko-chemisch bezogenen Kategorien- und Modellraum >Rätsel< schlechthin. Jedes Elementarteilchen in atomar- molekularer Repräsentation ist selbst eine Projektion aus der Planck-Matrix und fußt auf einem String-Knäuel als Informationsträger.
- **The interaction of the HyCo-hierarchy with the atomic-molecular representation is for the referential categories and model-area of physics and chemistry a conundrum, a quintessential mystery. Each subatomic particle in atomic-molecular representation is itself a projection from the Planck-Matrix and rests on a string-clew as information-carrier.**

BIOS & Mikro-MECHATRONIK

BIOS & micro-mecha-tronics

- Mechatronik = Wissenschaft & Technologie der Umsetzung von Informationsregularien in physiko-chemische und physiologische Prozesse.
- **Mechatronics = science & technology of the transposition of rules of information and commands into physico-chemical and physiological processes.**
- I-Regularien der Planck-Welt [$C(u) \rightarrow \infty$; $h(u) \rightarrow 0$] vermittelt auf die Einstein-Bühne [$c(o)$; $h(o)$] durch Quantenverschränkung der Photonen [$c(i)$; $h(i)$]. Die Projektion von Cybersomes [enzymatischen Molekülaggregaten ins Zytoplasma $c(u) \rightarrow c(o)$, $h(u) \rightarrow h(o)$; Projektionszeit Planck-Einstein-Welt [$10 \exp -35 \text{m}$
- $\rightarrow 10(\exp -15 \text{m}] \sim 10 \exp -23 \text{s}$ (LSP118), praktisch zeitlos]. Die enzymatische Wirkung als Stimulanz der Meiosis gehört der physiologischen Zeit an!].
- Im BIOS ticken zwei Uhren, die Planck- und die Einstein-Uhr verschränkt mit zwei Kausalitätsebenen
- **Information rules and commands of the Planck-world [$c(u) \Rightarrow \infty$; $h(u) \Rightarrow 0$] mediated on the Einstein-stage [$c(o)$; $h(o)$] through quantum-entanglement of the photons [$c(i)$; $h(i)$]. The projection of Cybersomes [enzymatic molecule-aggregates into the cyto-plasma $c(u) \rightarrow c(o)$; $h(u) \rightarrow h(o)$; Projection-time *Planck-Einstein-World* [$10 \exp -35 \text{m} \rightarrow 10 \exp -15 \text{m} \approx 10 \exp -23 \text{s}$ [LSP, 118], quasi infinite. The enzymatic effect as stimulus of the meiosis belongs to the physiological time realm!]. In the BIOS, two clocks tick, the *Planck* - and the *Einstein*-clock entangled with two causality-levels.**

Allusion of particle birth - quantised steadily power expansion in hyperspace

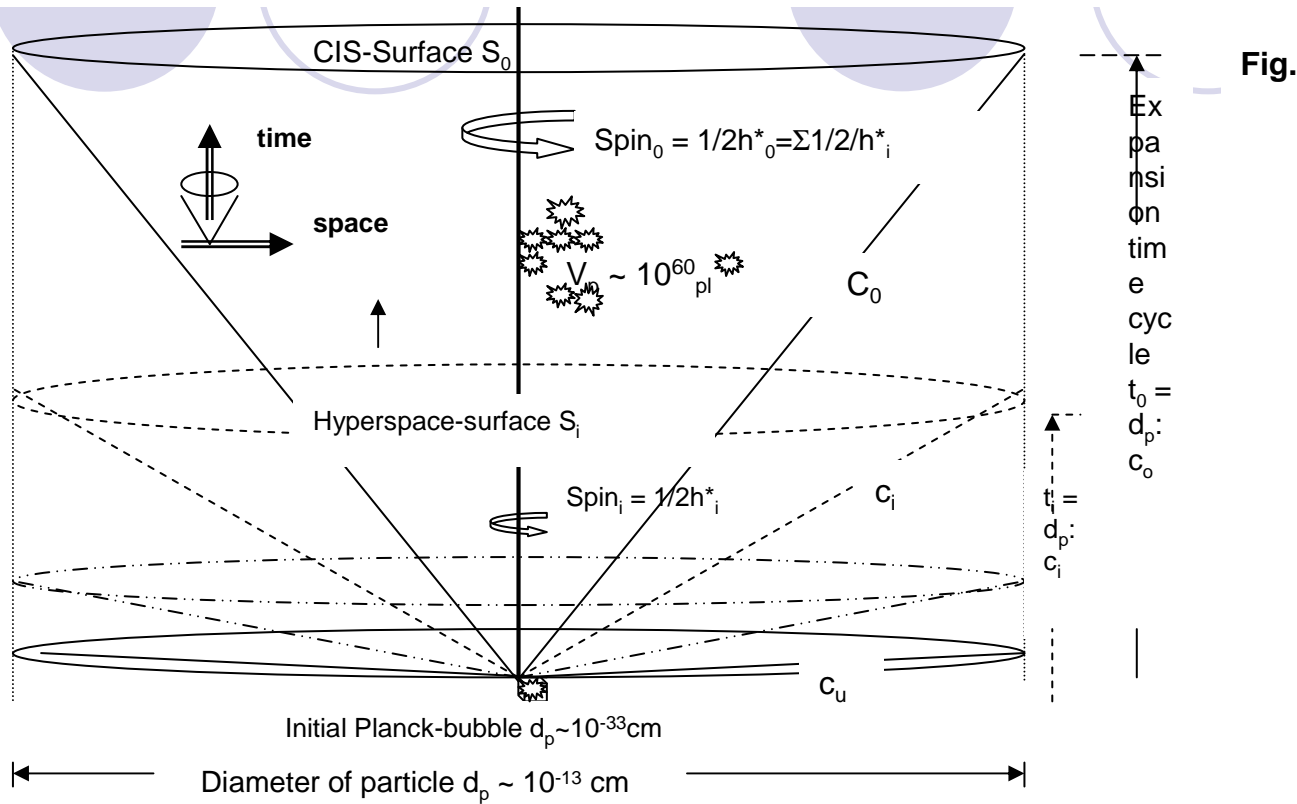
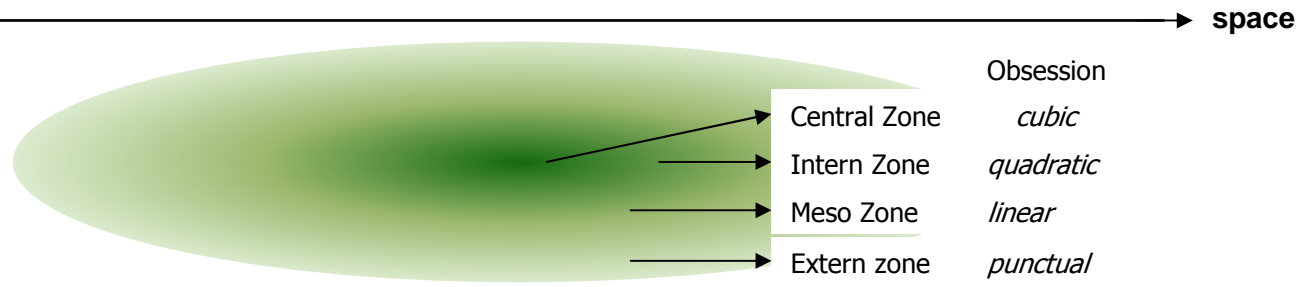
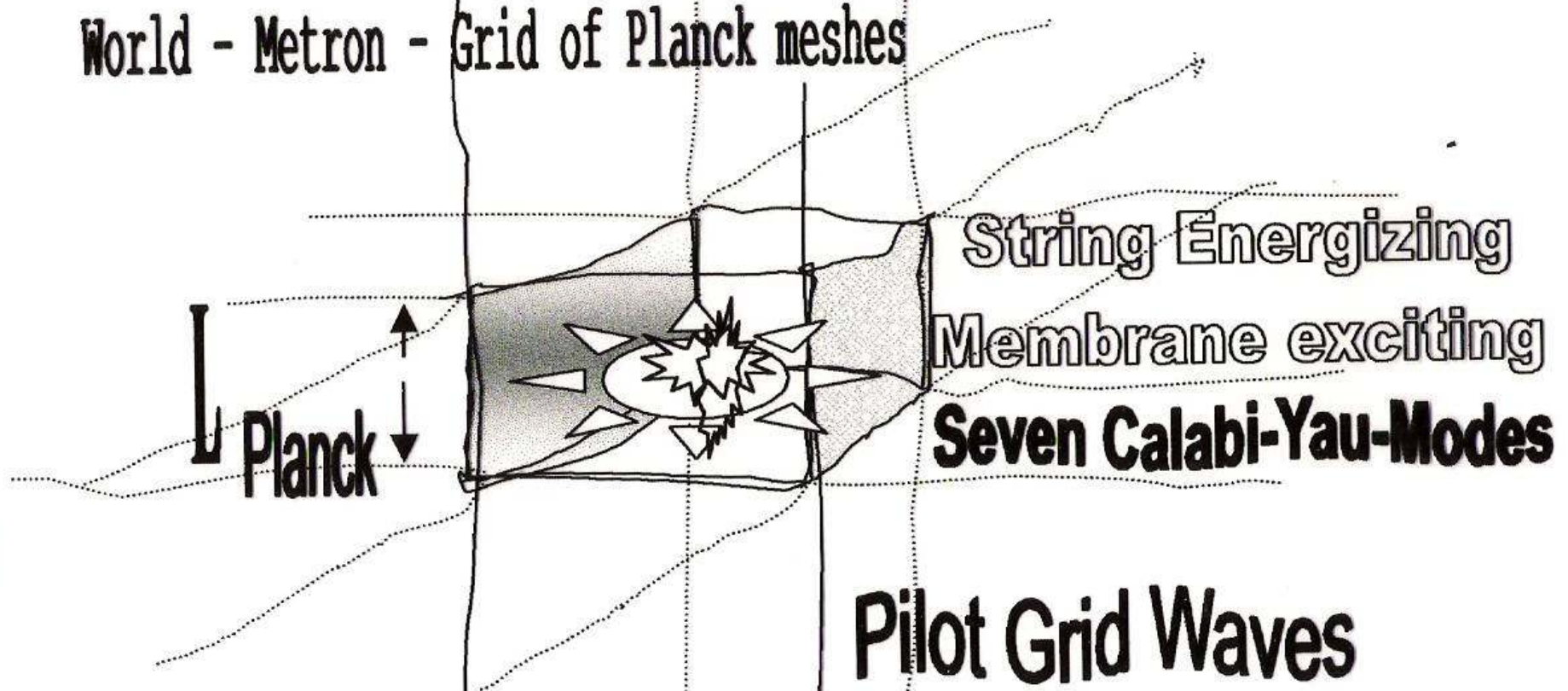


Fig.6



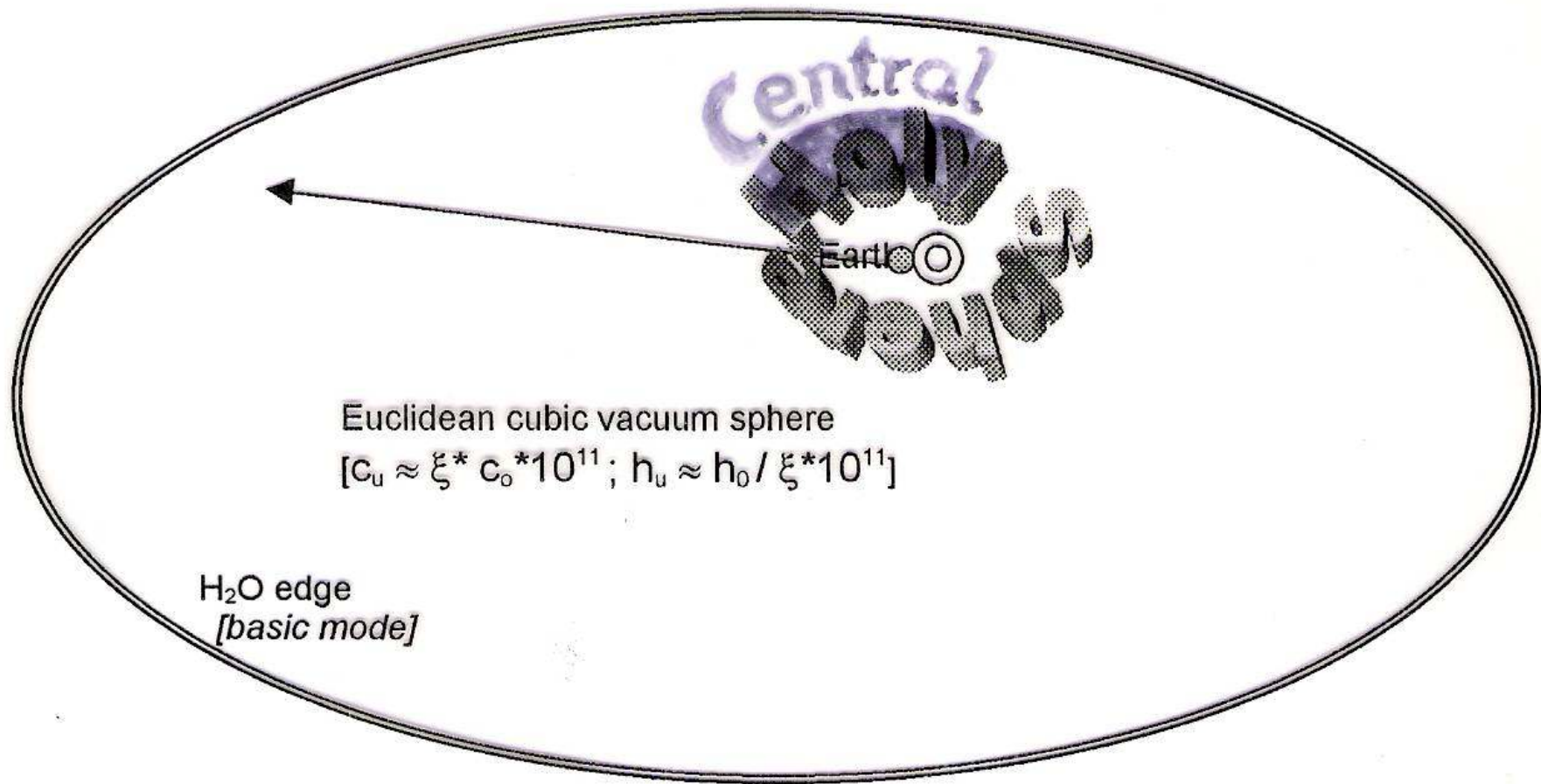
Elementary PLANCK - CUBE

World - Metron - Grid of Planck meshes



Tentative Sketch
of discrete world mesh
as tiny birth place of energy-
matter phenomena: virtual
mathematical ontology

**Expansion of Vacuumsphere (Stretch-Phase) in accord with B. Heim
and the contingent border conditions of D.R. Humphreys**



vacuum characteristics: void of matter; pure bounded radiation: standing pilot waves $\{\epsilon_u, \mu_u, l_{kub} = h * c / 2 \sqrt{\pi} m_p * c^2 = 1,61 * 10^{-33} \text{ cm}; [\text{Schwarzschild horizon of Planck mass}]\}$

heuristic suggestion: solution of the discrete world equation of B.Heim with the boundary condition: be the edge a water surface! the boundary edge cubes are specifically energized to represent H₂O - molecules : the atomic status is on $c_u \sim \infty \sim > \xi * c_o * 10^{11} !$ [basic mode].

SKETCH OF PROBLEMS:

The crisis of paradigms in Physics and Biology is on the swell to the 3rd millennium in the following affirmed: The comeback of the "Ether-Problem" for Physics and the "Body-Soul-Spirit-Problem" for Biology. Both culminate in accord with expert's opinions in the insight, namely that "Information" is a energy-matter domain ruling basic power or mutual effect.

The visible entities of Universe, from elementary particles to galaxies, outreached to the "Organisms", inclusive all mutual effects (powers) are embedded in an overall existing vacuum quantum foam. The Physicist Kip S. Thorne points to the s. c. Quantum bubbling at each space-time point: *"The quantum foam is overall present: inside a black hole, overall in the interstellar space, in the room, in which you are sitting now, and inside your brain"*.

The quantum foam has an overall present interface, a s. c. "Cis"-, "Trans"-Swell, which is appointed by Planck-Values: The Planck-Values $[h_0, l_0, t_0]$ veils a hidden specially tuned reality, which transgresses our visible reality in a multidimensional way. The so named Hyper-Space is theoretically sketched with 10 to 12 dimensions. What on the stage of the 4-dimensional Einstein-Space appears, e.g. all atomic-molecular phenomena until the "visible" organisms, account for projections induced from the hyper-space. Its representation of shape and function could not be understood or respectively causally explained by the four physical mutual effects {powers - WW}. [Gravitation-WW; electromagnetic WW; weak and strong nuclear power]. In short: >Gestalts<(shape)-growing (morphogenesis), and actual functioning, and esthetical design, inclusive the nearly mysterious relation Geno- Pheno-type, cannot be causally grasped in the explaining realm of pure physical-chemical mutual effects (powers).

The life-sciences, the "-Logic" of Bios [=biology], need a specifically reflected **outreach of paradigm** unto the hyper-space conditions. Cosmological physics spends new issues in the sense of additional multidimensional information- and causal-hierarchies in the dialectic between stationary and contingent rows of happenings. [W.Dröscher - B.Heim: Strukturen der physikalischen Welt und ihrer nichtmateriellen Seite, 1996]. The life-sciences can found on this ground, but they have to outreach those new issues unto their own topics.

As actual results of theoretical and observational Cosmology could be marked: the physical phenomena from light particles unto the nucleons and their atomic and molecular aggregations could not be separated to unambiguous entities in the Einstein-Space-Time like in classical physics. [**Quantum theoretical Holism; Non-Locality**]. For organisms follows, as they are multidimensionally embedded inside the quantum-vacuum, that they are likewise non strongly separable in the sense of classical objects. A striking example: hard experiments with apparently separated bacteria collectives show, that they react simultaneously on local impacts [Experiments, Institute for Microbiology, University Stuttgart - Hohenheim, 1995ff].

The overall present quantum-vacuum mediates the mutual effects, respectively >information<, quasi proper to Newton, that means >timeless<. Recent vacuum-tunnel-experiments [Nimtz et al. Cologne/Germany, 1996ff] confirm the >transluminal< causality. A multi cell organism has its conclusive, quasi distance- and timeless information bridges inside the quantum vacuum. So each cell seems to swing in an >**information resonance**< mutually which each other. a kind of > information like

Transmitter of information are supposedly >transluminal< s. c. > Bio-Photons<, respectively > Bio-Gravitation wells of diverse quantum field dimensions [$h_{vak} \Rightarrow 0$; $c_{vak} \Rightarrow \infty$].

Each organism possesses a holistic information autonomy, disposed and handled proper to its kind-specific life endowment by the information hierarchy of the quantum vacuum.

Like the suggestions of the German Quantum field expert B.Heim, couples a basic-type specific individuate >Hyper-Space-Entity < traditionally named "soul", here "Hyper-Space-Core" titled, in abbreviation >HSC<, by the case of Sperma- Egg- Symbioses, with the molecular substrate and leads started with the *initial coupling* from the >Vacuum-Hyper-Space< , all outreached morphogenetic and functional processes. What proper to the geno- or the phenotype in the so called "Cis" appears - thus on this side of the "Quantum bubbling" -, presents the molecular phenotype with its measurable power fields like a projection from the hyper-space. The organic causality and information hierarchy could not be taped out of this measurable mutual effects of the Einstein-Space-Time. The physic-chemical representation space maintains its own "anorganic" laws, not touched by this meta-biological insight. To its own law realm belongs essentially the *openness of the microscenery*, which join into the questions of interaction. [Popper-Eccles' Trinity]. From the standpoint of theory of science we have in vision the so named *projective downward causation* [HYCO-> Phen (phenotype)-> Gen (genotype)] in contrary to the *naturalistic upward causation* [Gen - Phen].

I Coupling of "I(self) - individuality" with modules of the neuro-cells [Synapses-Quantum-Chemistry: F.Beck-J.Eccles 1996]: The proper to B.Beim named Hyper-Space-Core "HYCO" [traditionally >Nous< = Spirit-Soul] controls since the initial-coupling the organic information hierarchy. As a arbitrarily example be chosen the in the Eccles-Model handled act of speaking like an all day human normal *function*. [Popper-Eccles: "The Self and its Brain" 1980-1996]. The result: the "I"(Self) modules by the >Individual-HYCO< amplitudes of probability of the cortex-synapses].

II The Cell as "interface" between the conscious act of will and reactions in the cell-physiology. Experiments with bacteria demonstrate significantly those interactions. One can suggest also besides the neuro-synapses by multi-cell organisms the cell itself as *interface* for HYCO-Information.

III The relation "Phenotype-Genotype" seems without the mediation of the basic-type specific Hyper-Space-Cores "HYCO" on single-cell organisms, plants, animals, and human by mere physico-chemical relations not to be grasped categorically. The >Phen< controls by the >HYCO< with its vacuum-potentiality the cytological and genotypical processes [downward causation].

IV The HYCO seems obviously capable to separate inside the vacuum-hyperspace-dimensions accordingly to our normal space experience from the molecular >Soma<. Concerning humans the s. c. *out-of-body-experiences* are critically sorted out and quantitatively, sufficiently documented. The analogy conclusion onto other organisms should be at least heuristically fruitful. The mutual separability of HYCOS inside the hyper-quantum-field-dimensions remains a open question. The *maximal separability* seems possibly given by the sovereign individuality of humans, which leads to their special personal responsibility. [Maintenance of Individuality, E. Blechschmidt 1985-96]. Supposedly serves a basic-type specific HYCO-master-trace to be copied into the molecular phen, even as "copy". So we have a reduced individuality. In accord to the shortly sketched hyper-space-projecting-theory such a differentiation seems highlighting.

projecting theory such a differentiation seems highlighting.

V It follows the on principle possible space-like separation of the "HYCOs" from >Soma<, the visible body. So the experience and religious beliefs are earnestly understandable. That means at least concerning the human HYCO a) the individual existence remains preserved in hyper-space-dimensions faced the real death of molecular body-substrate [Discussion by Popper-Eccles] and b) the human HYCO may be potent to realize a partial alien coupling. "Obsession" seems nowadays a against opposition accepted reality even in medical psychiatry. So >Schizophrenia< seems open for such an interpretation. [Also problems of seemingly prima vista "re-incarnations" are located here].

VI Here opens the sensible realm of Trans-communications with HYCOS, which have either exclusively its being and acting inside the Vacuum-Hyper-Space, or have trans-contacts with visibly living humans mediated by Hyper-Space [Telepathic communication]. One can not exclude plants and animals from Hyper-Space-communication. It is the above mentioned general problem of non-seperability of entities of all size classes concerning its micro-realm in quantum physics.

VII About the Vacuum-Hyper-Space we poke on effect bridges "human-matter", which surprisingly grow to sober phenomenology by the electronic micro-technique. "Instrumental Trans-communication" >IC< obsesses meanwhile a field of research with strong "naturalistic methods" [E.Senkowski: Instrumentelle Transkommunikation 1995³].

[E. Senkowski: Instrumentelle Transkommunikation 1995°].

May be that each of us could influence by will on the computer screen presented and from the micro-level controlled processes in such a way, that the statistic significance grows to evidence.

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For such an engagement are offered, e.g. by internet, computer games on mathematical algorithms, which reckon statistically by will induced deviations from pure randomness and demonstrate deviation curves with striking significance.

The IC has also indeed sensible perspectives: Which Subjects are able to influence computer dates? S. c. "Trans-Texts" respectively "Trans-Pictures" appear on TV or computer screens. Mediated inside the Hyper-Space telepathic >IC< Men-Electronic device seems evident. >Trans-Texts< respectively >Trans-Pictures<, which are phenomenally a fact, one must envisage "Trans-Individuals", Trans-HYCOs. The marked "Cis"- "Trans"- Swell, with its Planck-Characteristic, seems like the picture of >Quantum bubbling< obviously a diffuse membrane. Our visible "Cis"-World cannot be sealed up from the Vacuum-Hyper-World ["Trans"-World].

VIII The gene-technique opens the question, if by purposeful gene-field-manipulations organisms could be changed in their kind basic type. From the reductive-naturalistic sight the "yes" seems at once consequent. The Hyper-Space-Quantumfield-Vacuum-Biology sees by the HYCO as projection and control center the basic-type-like conditioned.

