

Manfred Faßler
Displayed Worlds

- Translated by Carsten Ochs -

„There is nowhere evidence supporting the claim that unfolded cultures are at the service of the biological struggle for survival, and also not for the further claim that culture necessarily emerges once biological survival is guaranteed. The view, stating that human culture is an implicit goal of biological evolution lacks any foundation. Cultures, however, definitely emerged, and they did so successively to the development of a brain-monitor and the extraordinarily strong sensory performance, which serves biological ends.“

Erwin Laszlo 1996

„We had perhaps 6 million years, or more probable only 250.000 years in order to generate the specific human kind of cognition. This time-span is impossibly sufficient for the development of the diverse independent specific human cognitive modules through genetic variation and natural selection, at least there is no plausible evolutionary scenario for that.“

Michael Tomasello 2002

The Cultures of Media

I want to invite you for a scientific trip through an abstract world, the *Gestalts*, the forms and requirements of which are surrounding us since long time already: media. I am not concerned with the artefacts themselves in the first place, which have always been and which still are of high complexity whenever they were used. I am rather dealing with the paths of invention, the development practices, with the ways in which humans conceive signs and media, and with the ways they act with them, interact with them, and finally think, perceive, design, and discard by using them.

However, why talking about 'medial evolution'¹ of the cultural? Why not the other way round – cultural evolution of *das Mediale*²?

¹ In German, *medial* is an adjective that stems from the noun 'Medium' (which is the singular of *Medien*, in English media). *Medial* is consequently used to refer to something being connected to a medium or showing traits of a medium (*mediale Aufmerksamkeit*, for example, is the attention of the audience for the media; a *mediales Produkt* is something produced by the media; *mediale Kompetenzen* are skills to deal with or use media). *Das Mediale* is the adjective *medial* re-transformed into a noun. The reason for the introduction of this term is to avoid a limitation in the description of the observation of artefacts (media), without taking into account the processes in which they are involved (see footnote 2). I will use the the English adjective 'medial' in order to translate the the German *medial*, even if the English term is usually not used in that context and carries different connotations. When *das Mediale* occurred in the original text, I did not translate it but only put it into the translation in italics, since there is no proper way to replace it by an English term, it seemed to me. So I have to ask the readers to keep the meaning of the term in mind, as it is defined by the author in footnote 2. (-*The Translator*)

² The usage of the terms '*mediale Evolution*' and '*das Mediale*' is not equally fruitful in every language. What am I intending to describe by using it? What I refer to are the diverse cultural programs to abstract signs, to invent numerical, graphical, linguistic, and acoustic designations, and to store the designations, to transmit and re-invent them, and to build networks by connecting them. These programs are newly differentiated over and over again. The medial capacities of humans, by means of which multi sensory relations are coded into the most

It is not easy to answer this question.

The easy part of the answer is concerned with the level of phenomena. Human beings do have the biological prerequisites for inventing and conceiving visual, scriptural, optical, numerical, and acoustical signs of different orders. Humans possess 'Zahlensinn' ('a head for figures'; S. Dehaene), 'Visuelle Intelligenz' ('visual intellect'; D.D. Hoffman), or they have a 'wohltemperiertes Gehirn' ('a well-tempered brain'; R. Jourdain). They scour the world, they grasp at the world they draw and mark it. Thus, there is *the possibility for us to have enormous abilities* at our disposal. From these, we form the coding for dimensions, for perspectives, for musical space and harmonies, for proportions and norms. Now the hard part of an answer to the question mentioned above consists of an explanation of the emergence, of the inter-human stabilization and the cultural broadening of these abilities. For, they were not just there, they were not ready-made. They were also not given.

The search for answers could consequently not only refer to the products in these abilities resulted. It could not be reduced to a 'Sachkunde der Evolution' ('an archaeology of evolution').³ The conditions of production, perception, sensory apparatus, thinking, abstraction, and formalisms, that is, the occurrence of significant change, the recognizable reasons for change and the conditions of change, as well as the unexplainable, sudden, or only in retrospective view explainable reasons for certain developments needed to be taken into consideration.

There was a certain distinction becoming especially important to me: the one between *Praxis* (contemporary usage), *program* (concrete long-term transmission of conditions of organisation for *Praxis* and things/objects) and the *logics and surprises* (structural rules to connect invention, choice, combination, and function designation of thoughts and material/immaterial products) of development processes. The long-term programs (readability, visibility) and 'mise-en-scenes' of utility, the dramatic techniques of media operation (as war communication, as storage device, as archive) or the individual usage of numerous media formats (love letter, dismissal, contract, note, instruction) should be considered without narrowing the idea that invented media made it possible to think out and to develop further culture. For me, it was important right from the very outset to connect the term evolution to (1.) concepts of time (long-term, momentary, immediately), as well as to (2.) human behavior of cultural transmission, and, last but not least, to (3.) the variation-rich structures of the human faculty of speech and media.

There was an idea emerging: *the Interactivity between humans, their environment and their own expressions and inner worlds, has been and still is the source of these abilities* (I will deepen this idea in the introduction under the headline of the media module). The thesis states that medial skills thus only developed *by means of, in, and out of* actions, of artefacts, of structures, of forms, and of perceptions - and their further development is going on all the time, as the introductory quotation of Erwin Laszlo suggests. There is no end to this process within sight - and why should there be one?

diverse models, patterns, and abstractions, and by the means of which these relations are also illustrated and distributed, are a necessary precondition for what is commonly called 'modern culture' in an anthropological sense. These cultural programs are communicatively embedded. They cannot be reduced to a *Mediamorphosis* (R. Fidler), although they depend on the structural transformation of materiality, range, and the cultural distribution of media. Populations organize their information flows and their cognitive and communicative processes by the means of media, and they distribute meaning and functionality of scriptural, visual, and audiovisual forms through them. *Das Mediale* is since 3000 years at the core of the processes of communicative and informational differentiation on a global scale.

³ 'Sachkunde' is a term stemming from the *Volkskund*, the 'folklore studies' in the German speaking tradition. Sachkunde could be described as a certain method or sub-discipline, a way to approach the things (goods, instruments, tools) of a culture, and their embeddedness in this culture. The best way to translate this term is, as I believe, to replace it by 'archaeology' is also concerned with things and their connection to a given culture - even if archaeology deals with the past, whereas Sachkunde does not necessarily. -*The Translator*

‘This paradox of creative circularity has any form of autonomous bringing forth or autopoiesis for its own.’ (P. Levy 1997, 122)

Explosion, Proliferation, Embedding Embodiment? The Mightiness of *das Mediale* (of the medial)

What may seem to be expressed in a manner a little bit too pointed, or perhaps to be an exaggerated wordplay - *by means of / in / out of* - describes what is sometimes called in a literature context the *Muenchhausen-paradox*: man pulls her/himself by means of the media out of the media-less phase of evolution, and then s/he says: ‘Great! I’m this symbol producing entity!’ And it is indeed nice and exciting at the same time, if one has a look at the immense abundance of more than 15 million registered 40 - 12.000 years old cave drawings all over the world, the pictorial narratives, the tokens and the memorial signs, the formalisms of sentence constructions and structures, of word-formations, of material media and their automatisms, the computer simulations and the technologically generated ‘images of mars’. There were loads of inventions, and there will be loads.

David B. Givens wrote in 1990 about a ‘semiotic explosion... a sheer proliferation of the human activity of generating signs’, which started 40.000 years b.t.⁴ (98). Whether on purpose or not: humans invented the artificial, and we are still in the act of ‘embedding it into nature’. (Herbert A. Simon) *Explosion, proliferation, embedding* - important terms, which express the surprise, fascination, and the seriousness of the way semiotics (Givens) and artificial intelligence research (Simon) are reacting on a permanently existing evolutionary phenomenon: the ability to produce signs.

I will make some suggestions here, which locate this ability in many-layered and open evolutionary courses. Doing so, I assume that we are in any moment of our activity part of an evolutionary process, and that we will have to face a lot in the future, because of both, new research findings, and unexpected events. For the time being, it is not that important, whether the future will bring the *post-biological life forms* Ray Kurzweil addresses, or *post-human formations of life and action*, an idea that Hans Moravec uses in order to advertise artificial forms life; perhaps *autonomous labour robots* will serve the human intellect, as Thomas Christaller believes, or human mental faculties are on their way towards *new spaces of thought*, as Marvin Minsky presumes - anyway.

Naturally, in this book, it will be impossible to totally avoid to deal with the question what further developments could bring. Assumptions and expectations are permanently moving our thinking. I was, however, taught by research, which was done on evolutionary processes that one should not be too fast in describing coming events or forms in a too optimistic or pessimistic way.

Phenomena, Lifetimes, Evolutionary Processes

All the insights and truths concerning medial abilities refer to more than one human life, to more than one describing closed culture or epoch. Talking about an individual human, one is likely to use the term *competence*.

Humans have invented paper and signs, but not ‘on their own’, not without other humans, not without ‘need’, not without the power of perception, not without biological conditions to be presupposed, not without formalisms and standards, and not without

⁴ ‘b.t.’ stands for ‘before today’ and is used in order to avoid a religious system to date. Quotations that use ‘b.chr.’ are not modified.

techniques and their formats of usage, which are called technologies.

There are some things, which are located at the boarder of what one can give evidence or proof for - this is true for any era, we are dealing with. We 'prognosticate' the becoming of the medial past as well as the present - and the future anyway. This is the 'sober' insight of a constructivist way of thinking. Keeping this in mind, it still makes sense to distinguish evolution from prognostics, extrapolation and futurology. We refer to the spacious trans-cultural long-term processes of the *medial evolutionary development*.

In this process, the human capacity to separate signs and meaning, and things and behavior, the capacity to bring together behavior and meaning - which is to say, to generate symbols - at different points in time, holds an important position. Very often, this is overemphasized, is overcharged with the *kitsch* ('cheesiness' -the translator) or the seriousness of meaningful memories. Humans generate *symbols* (bringing together, connections), as much as they generate *diabols* (separations, oppositions, contradictions, antagonisms, non-connections), they include as much, as they exclude, they make something important, or they neglect it, they store and they forget. From this perspective, the symbol is probably not the most important achievement. It is rather the cultural paths (the information channels and their selected usage), which are important, paths of which symbols are only a variety of different products.

Observing them from an evolutionary perspective, the symbolic fields are variations, which were generated and maintained by the means of human perception, thinking, design and interactivity. The term 'evolutionary' indicates that one should abandon the idea of a development, which is exclusively brought forward by concrete individuals or by clearly outlined cultural entities and formations: a rationally and creatively generated development. The solution is not an *Archetypik* (a standardization or 'typification' of archetypes; -the translator) of symbols (W. Reich), which are woven to the fabric of cultures. Instead, the approach, which was chosen here, follows the question:

How do human beings generate media, and how do they generate the world by the means of media?

Fields of cultural abstraction

Thus, we can neither avoid to deal with problems of long-term development, nor to question what humans use as media, and how they do it. This leads us to the domains of increasingly complex human faculty to interpret and design, that is, to the respective *cultural, aesthetic, economic, or scientific status of human abstraction*. Today, all of us strive in different scientific disciplines after the status of abstractions, or to put it more precise: after the status of abstraction and application, after the *interactive cultural field of abstraction*. The formulation of (global, local) knowledge cultures, of the intellectual working capital of businesses, of societies, which have become scientific and of informational cultures, these are the public issues, which are concerned with the cultural fields of abstraction. I am also concerned with them; besides, however, I am also interested in something else: the evolutionary quality of these fields and their respective historical products.

This is a pretty strange approach, especially for those scholars, whose scientific reasoning was taught to them in a detective manner, focusing on causes and effects. Those, who are specialists in deductions of all kinds, might find this equally odd. It is searched then for linear consistency - a risky undertaking, which is not very fruitful to come to grips with increasingly complex relations. On the other hand, however, not totally senseless actually, since we assume and have to assume that there is indeed linear consistency also in complex systems. But part of this assumption is that the directions of the linear, the proofs or

evidences, change.

There is probably a permanent 'cultural sparkling', which consists of linear (cause-and-effect relations) and non-linear (networked, dynamic relations) dimensions, or, if you like, of micro logical and macro logical dimensions. They are considered as permanently oscillating between order and chaos. Some search for the 'essence of mind and structure', as Douglas Hofstadter subtitled his 'Metamagicum' (1988). Others are looking for the rules of fiction (S.J. Schmidt), or the sources of the imaginary (K. Ludwig Pfeiffer). All these changes can only happen in a flowing manner, because they happen within complexities, which make them possible. There are forms, which follow every change, changed forms, and then changed usage again, that is, novel processes. They are precisely, what generates networked systems, which become new (worlds of) causes; they change the direction and plausibility of the linear and of the trivial.

New forms generate new abstractions, and accompanied by them, there are changed ways of self-observation of knowledge cultures or information-dependent groupings occurring. The mathematician John D. Barrow, pointing to computer technology, drew a conclusion which went even further:

'The employment of computers in order to support human reasoning, could, one day, totally change our notion of a 'proof', as we know it today.' (1999, 362)

If we translate this into categories of medial evolution, the thought describes the phenomenon that calculation and storage *procedures* influence the notion of formal-logic proof as well as they can change it entirely. The quotation subtly allures to what we call media integrated perception.

In the foreground, the problem is about formalisms and formats; but underneath, there are many questions concerning the individual and cultural sources of these formats and formalisms, concerning inventions their probability. I do not want to decide, what (structure) source is to be rated the most important one, whether it is thinking/ media/ interactivity/ usage/emotionality; for, from a media scientific perspective, this would not at all be reasonable.

The Sense(s) of Media

We assume that all the sensual and mental faculties *have had and still have* a share in the development of human medial abilities.

Talking about media, we are moving inside the fields of perception, abstraction, and storage devices, in the fields of maintenance rules valid for notes, in the fields of texts and *holy* texts, of the great narratives and real-time media, of fading individual memories and murmuring cultural memory. It is impossible to determine the quantity or quality of the relation these fields are bound up in with one another, through perception and through interactivity. The weight this thesis carries becomes clear, if one presents this idea of a form of linking or connecting organization as a selection procedure, or even as a selection principle. The thesis then states that *every interactive reciprocity, is a selector* - that the binding force of interactivity consists of the setting of selection-, distribution-, and maintenance-criteria.

This is true for the standards of listening, reading, writing, tasting, thinking, playing music, etc.

So, let us not be deceptive of the predominance of the script/book/reading/orders, which exists since more than a couple of hundred years. These orders formed a powerful structure, worldwide. In the era of handwriting, they were accompanied by manual painting,

by arabesques, ornaments, images; beginning with letterpress printing, they were reduced to the standard of the imageless message of the (educational) text. However, it seems this predominance is hardly to preserve. Activities, such as looking at something, viewing, speaking with verbosity and grammatically correct, listening/listening to music, are more and more intensively tied up together with the medially and technologically generated flows of information of cultures and individual perception.

Our expectations towards media are increasing, we want 'more'; more information, more possibilities to choose from, more freedom in selecting, more world, more proximity, more entertainment:

They are supposed to *address* us, to entertain, to inform. This is not only pointing to the consumption of the media. The sense of reality, so often referred to, is integrated into the *sense of media* since long time already. The sense of reality is embodied as sense of media. We take the world 'inside' the world of the media serious, we acknowledge the reality of information, we trust the latter, and we also trust the rules of taking information serious. So, what is this term describing then: '*sense of media*'? What is meant is the following:

- the emerged human capacity to enter an abstract, artificial, designed space, to be lost in a book, in a movie, etc. (Immersion)
- the human capacity, to recognize a (specific) reality in any generalized illustration, that is, to take something from texts, images, sounds, melodies, movies (generating meaning)
- to transmit signs and meaning into the procedure of coming to an understanding with the Other
- the development of a sense of reality, which is bound to and, in the end integrated into media (confidence in the non-physical, the distant, the abstract)
- and the increasingly extensive and information dense generation of media realities

The sense of media - it is a result of the *medial self-qualification of human beings, the first-class product of media evolutionary processes, so to speak*. I am using the expression *sense of media* in connection with *cumulative cultural evolution*. This is not only about the formatting of the senses by the means of offered perception potentialities. It is about the formation of, many-layered references to reality, about their reliable social transmission, about their reliable cultural hereditary, and about their plausible applicability. 'Sense of media' describes the 'connecting performances', which are executed by humans today without even thinking about it, located between medially generated sensual surfaces and world expectations.

Our ability to distinguish between news, entertainment programs, films, documentaries, letters to the author(s), leading articles and formats, their truthfulness, their narratives styles, etc. has to do with our ability to assume individually and culturally that *media worlds and their sensual and formal interfaces* are '*Weltzusagen*', promises to be world. Alphabetization belongs to that as well as the type of view acquired by learning, cultural unquestionable sign languages as well as the credibility of unverifiable information. The sense of media, which is a very young phenomenon in the history of human beings, is to be explained by the developments of human-media-interactivity. I am using the notion to refer to an *existential*, an *experimental*, and a *cultural* level:

- the term 'existential' is used here in the full biological sense, referring to the biological individuals, who we are; any life form is unique, since there would have

been billions of other possible combinations of genes. This biological individuality, called human, cares permanently about and deals with the living, the non-living, the natural, and the natural artificial, while the own capacities are in constant change. The biological individuals search for cooperations, offer reactions, create networks of more or less permanent interactive relations, they produce artificial marks they use in order to remember humans, things, or situations

- ‘experimental’, here is the opposite term to what is constant; it refers to irritations, imitations, tests, deviations, selections, decisions, routines. I describe humans, who are networks of contradictions, with human and non-human environments - and the *chances* to produce structures and media.
- ‘cultural’ here means that the media sense is subject to rules, which define how to medially store process, send, reproduce, or forget. As I use the term, ‘culture’ does not refer to ‘communities of meaning’ (Cohen), but does refer to preconditions of meaning, to standards, rules, structures, abstractions. ‘Sense of media’ does not connect perception to meaning too hastily, but to *Praxis, program, and the pragmatics* of medial knowledge about the world

I am concerned with the *mentally generated worlds, their forms and their materiality, with the mentally generated rules and the usage cultures of these artificial worlds.*

Artificial: The Priority of Cognition of *Episteme*

When it came to questions of the emergence and the usage of the artificial, I came across, among others, the work of Pascal Boyer. His work is based on Neuro-Science, Ethnology, *Kulturwissenschaften*, ethnographic research, a combination I definitely appreciate. In his work ‘Religion Explained: The Evolutionary Origin of Religious Thoughts’, he shows that humans generate many different forms of a notion of god and religion, that the differences between these forms, however, are not freely floating in the history of human beings, but point to certain functions of the brain - he talks about ‘a lot of special explanation schemes, or more precisely, epistemological systems.’ (2002, 28) Using them, humans ‘formalize’ recognition, and then, only afterwards, willingly or not, meaning is generated. Which is to say, humans do not search right from the outset for meaning, but they search *forms of recognition*. Yet the thesis of ‘explanation schemes’ or ‘epistemological systems’ becomes questionable, if conceptualized as being innate ideas (‘schemes’ and ‘systems’), as stipulated by R. Descartes.

R. Boyer’s work is pretty helpful, since he, while drawing on a manifold of ethnological examples, shows that gods and ghosts emerge in explanation or recognition gaps of everyday life. (2002, 313) The religious artificial occurs as a ritualized, artificial (communicative) bridging of two seemingly unambiguous or functional situations. We will follow here another path.

Media are not conceptualized as the result of ‘explanation schemes’. Instead, I assume that they sprang from marks, from tokens, from recognition, from rediscovery, from the message. The *functions of cognition*, of remembering grasping, of the playful-testing sorting of the world or of emotional consideration, are perception- and communication-biographically localized before the function of episteme. Plus: I recommend to keep a rather big distance to the term *episteme*, since it has still a normative connotation, and since it does not unveil the ways, in which (re)cognition works.

It is pretty risky to assume a superposition of *episteme*, if it comes to the elaboration of an explaining and describing theory of media evolutionary processes.

This is why I suggest five interrelated levels of cognition and media:

-cognition - recognition: the requirements, which make it possible to re/cognize, to remember and to inform, arise time and again from cooperative action processes of humans. They are developed all over the world, and they get condensed to very different sign-forms

-presentation - elaborate consideration: the recognized requirements to remember something between two points in time, to mediate something between two places, make the discovery of cultures of presentation, of the artificial, of the art of communication possible

-coordination - cooperation: the requirements to coordinate actions and activity within vast physical and temporal spaces in order to make a hunting or theorizing cooperation possible, strengthens the global tendency of *Homo sapiens sapiens*, to develop sense(s) of media

-define - store: the communicative requirement to coordinate action, even if one has nothing to do with them in a 'personal' or 'direct' way, leads to the storing of signs for longer but undefined periods of time and to the securing of their material and cultural readability for a time-phase, which is not known in advance. The global mechanism of medial evolution originates from that.

-discovery of the artificial - artificial paths to knowledge: strange forms of conceiving and designing the world develop from the abstracting codes. It is fun for humans, they develop an interest in the artificial, they invent proofs and aesthetics in the artificial, they define seriousness and truth in the artificial in a normative way, they move mentally or by means of cursers or avatars in media worlds.

It is not important here, if and when humans put the load of the super-code '*episteme*' on these levels.

The Artificial - a Home in the Mentally Generated. Five Hypotheses about Reality

So we already used some words, which are localized on the outside of common vocabulary and usage of media: *Homo sapiens sapiens*, *sense of media*, and *global medial evolution*. The following chapters are required to explain them. Still, however, there are some definitions possible here.

The generality, which is addressed by the three of these terms, requires some explaining lines. This generality is referred to as made by humans, generated by them. It is pragmatic and unfinished. It is the result of the *multiform* of the sign-forms, language systems, and media structures one can find all over the world. At the same time, there is the assumption *that they point to equality*. Equality, here, does neither refer to inflexible fixed structures, nor does it even raise ideas like original forms of the visual, of speech and language (so-called constancy), nor is the term to bring in ideas of fixed, inflexible structures in general (static). Rather, what is meant is the interminable connections of neuro-physiology (plasticity of biological determination), individual physical equipment (biological individual), and human-environment-relations (group related coordination of perception, behavior, thinking).

The equal, in which multiform emerges, is varied and is partly newly designed, is integrated in five realism hypotheses:

I. *biological realism* (we know that we wouldn't know anything at all without the biology of our bodies and minds)

II. *evolutionary formation of biological individualism* (any human is genetically and physiologically different from any other human, in spite of the same bio-chemical equipment)

III. *cultural realism* (the human life forms are made, varied, rejected, overcome, fixated by humans; they are specific to cultures and groups and in the end there is no way to surmount them)

So we're addressing the ability of humans to 'use' their brain in order to give them and their bodies a home in the realm of the invented and the mentally generated.

It is a common assumption that *Homo sapiens sapiens* possessed the ability to leave a sign of recognition about 50.000 b.t., which is to say, s/he was able to conceive of thing, memory, cognition, sign, recognition, usage in a related way. S/he developed *codes* and a *whole culture of re-cognizing signs* (agreements, conventions, command-obedience, reproducing learning), which made a transmission, a kind of mental hereditary possible. I presume the fact of these abilities when I talk about memory, archive, storage. The ability to shape what is thought in a certain form and to maintain it, comes from the codification of a thing, of an issue, of an affair, of an idea, of a thought. This is what we call memory: giving form to what is thought.⁵

Memory is only culturally known and common since 2500 years.

Jean-Yves and Marc Tadié can show in their book '*Der Gedächtnispalast*' how memory and remembering were developed, how a 'sense of memory' ('*sens de la mémoire*') developed. 'In the 4th century before Christ, the reasoning about memory begins, and it is dominated by the dialogue of Plato, the metaphysician of remembering and ideas, and Aristotle, the psychologist of memory.' (2003, 21) In this 'cultural history of thinking'; which is extraordinarily worth reading, it becomes clear that there is and has been a manifold of ways to culturally and individually reason about thinking and memory, and how the sense of memory becomes important in the course of cultural evolution through this. This allows us to talk about

IV. a 'memory realism'. It brings what is remembered into the presence as valid for reality; what is remembered becomes in its respective form possibly a static, conserving, or compulsive form of communication. In this respect, we can talk about political and religious, cultural or scientific realism in this field.

What is memory 'formally' concerned with?

Memory generates an artificial equal. A marking bridge is built between at least two moments in time, a coding is established. One has to refer to it in order to be able to generate - or to reject - a 'relationship' plausibly, credibly, knowingly, or playfully. Memory has thus nothing to do with innate ideas, as René Descartes mistakenly assumed, being criticized by John Locke. Memory is made: by humans.

It is the artificial equal (as in the 'collective memory' studied by Jan Assmann), the

⁵ It is unfortunately not possible to translate these two sentences without losing the etymological relation between what is thought (*das Gedachte*), and its shaping the or giving form to it (*das Gedächtnis*). –the translator

structure of secondary perception.

Under the influence of mathematics, electricity, communication-cultural changes and finally the digital, an equal artificial emerges out of the artificial equal: the binary coding of the navigation-, archivization-, and processing programs, which are applied worldwide. This is the preliminary achieved state: global standardization, which was developed out of memory, with participation of a further evolutionary product: the sense of media.

We consequently note a fifth realism hypothesis:

V. Artificiality realism. It extends from the bi-formality of signs to generate themselves and their environment, and storage devices of all non-physical kinds, whether index, symbol, or representation, to digital standardization of medial tele-presence, and artificial presence in medial networks. To put it another way: the virtuality of the brain creates itself its own rules of reality.

This text is concerned with the medial conditions and forms of recognition in the first place, which is to say, it is about these forms, in which recognition makes itself recognizable by the means of the signs it uses, the signs through which it is communicatively inherited, and culturally maintained.

What we recognize is always a selection: it does not matter, whether big or small. We reduce in the course of perception and recognition, and in the process of generalizing. Any sign and any generalization reduces the assumed plenty of reality dimensions. The world, which is brought further through thinking, the realism, which is further 'treated', is the one of the maintained signs and of the whole of the rules, which define how to communicate by using them.

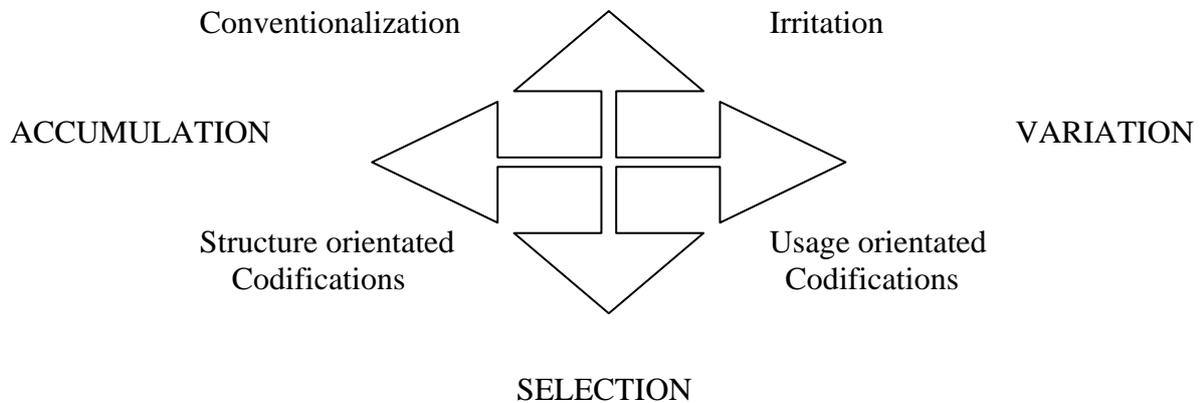
Informational Wolverine: The Brain

The following is as much valid for signs as for media:

They are selections, made by the brain in cooperation with the communicatively called upon environment, for the brain does not learn 'what is part of the environment' (Boyer 2002, 12) Environment is conceived of and preserved under the headline of the five realism hypotheses. The brain lives with and in this specific selection of information. The 'automatically' happening procedure in the ear, on the skin, in the eyes reduces the received information from 1.000.000 to 1. Information getting through is sorted and enriched by the brain. The brain picks up any information, no matter where it's coming from. It is able to consume any information according to its capacity. There is an explosion following the reduction. The reduction of the informational entry-manifold generates an eventful inner world of multiform, showing high productivity. But it is not only the brain, which participates in this process.

I would like to illustrate this with a basic model:

Human-Media INTERACTIVITY



In this model, culture provides the possibility for humans to move in the different fields, to think, design, invent, substantiate, derive, refuse, feel, sense, study, shout, or dream. Culture is - observed on that level - a manner to recognize something, to interpret, use, or change. To put it a bit simple: have you not ever got upset about a book or praised one, have you not ever watched a movie time and again because you were touched by it? Have you not ever been happy about the form or function of the new espresso machine or the new cutlery, tried to derive an assumption from a letter, or tried to take a blurred photography or drawing 'serious'? Have you ever thought about the gain of the mars mission, its chances to be successful or to get financial support? Haven't you ever wanted to have a look on 'mother earth' from the orbit?

The artificial is the field of reasoning, of feeling, of design, of distinction;- and it is a pretty unstable one, it permanently changes because of random or planned variations all over the world. We are thus not talking about the 'Biology of Reality' (H. Maturana), but about the *biology of the artificial*, and, in the end, about *post-biological artificiality*.

If the artificial, which was elaborated so far is kept back from individuals, from us, we are separated from vital information, and we will therefore sensually shrink and also in respect to our faculty to abstract.

This would be the greatest imaginable rupture of communication. If we push processes forward, we do not know what is going to be the outcome. However, be sure: the 'Dance of the Cultures' (Joan Breidenbach/Ina Zukrigl 1998), conditioned by the media will, go on changing humanity. If cultural systems do not have or do not give the permission to themselves to participate in flows of information (there are and have been loads of examples for that), they will be destroyed. The development, however, goes on, in other populations, in other milieus of innovation. Since several millennia, information is passed on like 'hot potatoes' from population to population by means of *das Mediale*; and information is transformed and returns after that, generating new environments and modes of perception. The topicality of the media is their further modification in us. Christoph Tholen writes: 'Co/m/munication has no place. It loses itself in the *Gestalts*, in which we can perceive it.' (2002, 60) For media evolution, this 'losing itself in the *Gestalts* in which we can perceive it' is an important question: To what extent are evolutionary processes scientifically graspable?

As far as cultural anthropological and systems theoretical research is concerned, I will focus on the concept of *medial coupling*. It is derived from the concept of structural coupling, elaborated by Niklas Luhmann. Since my approach can impossibly work with a strict

separation of *social* and *psychological systems*, but only present and explain their systemic reciprocity, I stick to the distinction, while conceiving of the two distinct areas as *connected in terms of information*. It is the structure of this networked connection, which I describe as medial coupling.

Medial Coupling

Using media, humans invent, constitute, maintain, and extend a non-objectified informational world in usual sense. This informational world is characterized by material structures, physical-chemical 'objects', institutional forms, standardized programs of storage and directed *Schaltungen* ('switching'). However, this should not draw our attention away from the emerging logics of the artificial; still, we have to face the exciting processes, which are describable by referring to abstraction and its codification, to standardization, to the transmission of the ability to abstract, to the artificial, to the virtual and the socio-cultural performance of information.

'Logics of the artificial' does not only mean: consistency of abstractions, plausibility, consistency in general; it refers also to paradoxes, deviation, irritation, variation, in the end: the emergence of evolutionary processes. Logical orders refer to the respective complexities, which are defined

1. by the genetic and cerebral capacity of cognitive openness, by the ability to anticipate and abstract, on the part of the biological individual
2. by codification, conventionalization, standardization of reflexive processes (sometimes these processes are open, sometimes closed, the result is fixed in advance, or not), on the part of the collective individual
3. by generated environments (by the means of languages, archives, machines, documents, institutions, norms, classes and schools and even industries of coding)

So how to illustrate medial coupling?

Here, I will use a textual fragment, which I developed for a lecture I gave at the 'Creative Evolution' Conference, at Goldsmiths College, London in 2005.

>>

The Emergence of Medial Coupling

Or: The Co-Evolution of Higher Informational Complexity

1.

Couplings and interactivities based on signals and non-verbal coherence

- From undated beginnings to 40.000 years before now (the first signatures of Homo sapiens sapiens) -

Formal, body-linked dimensions of group coordination:
Calling (warnings / hunting cooperations...) -
facial expressions -
body-linked attention structure -
body-language -
non-verbal communication -
voice-based interactivity -

kinesics and cooperation -

2.

Couplings and interactivities based on drawings, pictures, signs, numbers (1st Order Systems)
- From 40.000 years before now until today and tomorrow -

Formal, sign-based, abstract and artificial dimensions of group coordination:
emergence / invention of visible, readable signs -
invention of the abstract body, of the artificial form (picture, sign) -
invention of the abstract sign and its cultural readability -
emergence and developing of logics of notations -
invention of logics of co-notations -
the rise of the idea, to link signs with meaning (storage-pattern) -
cognitive capacities of thinking the artificial -

3.

Couplings and interactivities based on languages (2nd Order Systems)
- From 6.000 years before now until today and tomorrow -

Verbal, numerical, pictorial languages as formal agents / movers of groups -
- inventing rules for reading and using the signs -
- invention of sign-meaning-relations -
- convention of sign-storage-essence-relations -
- invention of coupled signs as epistemic agents -
- systemising the rules and couples as language -
- conventionalising the languages as cultural regime of communication -
- inventing and formalising the relation between basic storage (sign), epistemic agency, the
idea of archive and heritage -
- conventionalising the structure of the artificial and combine this with
the emergence of media -

4.

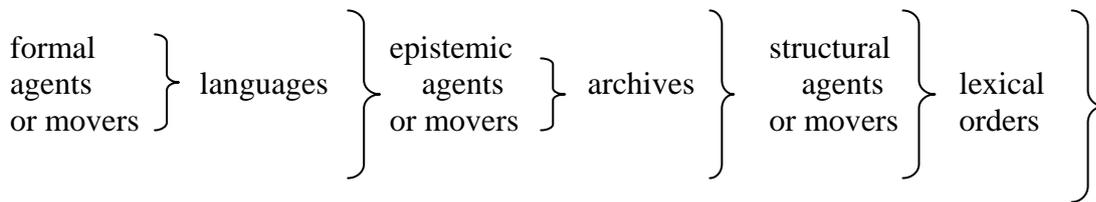
Medial couplings of cultural and social systems, cognition and knowledge

- From 3.000 years before now to coming cultural forms of self-organisation

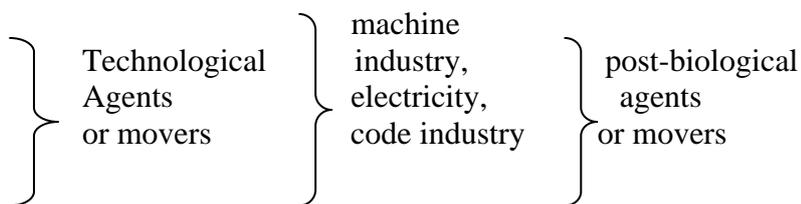
groups and systems start a non-human informational structure and regime of self-organisation

- invention of informational texture and the corpus of written text -
- arrangement and assignment of one linguistic communicational order -
 - setting the order of enduring uses of one language -
- expansion of storage capacity of signs into archival capacity of language -
- exclusive / inclusive structure of the virtual (imagination, fiction, truth, trust, religion, heritage) -
 - hierarchies of *epistemes*, meanings, knowledge -
 - creation of documents
 - regulations for information accesses and uses
- structural coupling of information, institution, norms, and power
 - the making of teaching, education, learning

Based on these four cultural-anthropological dimensions of medial coupling we can differ between the following phases of co-evolution, combined with a growing complexity of interactivities, based on the heterogeneity and dynamics of informationflows.



SIGNS > < SYMBOLS > < STANDARDS >



< SCIENCES > < SIMULATION

The history of media-evolution integrates not only the world order through word order, but also: order through information, through regulation and irritation of informationflows. We have to deal with a not very old co-evolution of invented virtuality and restricted or contained virtuality. These restrictions are formed in codes, texts, books, drawings and their canonisation, explanatory systems, closed theoretical systems, closed religious systems.

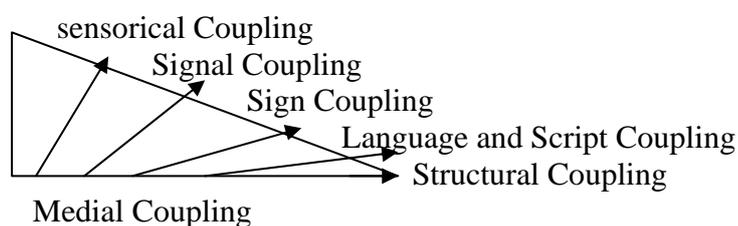
These structural processes have their specific agencies, their human co-actors (or inter-actors). Along the differentiation of invented virtuality and restricted virtuality, I distinguish between innovative agency, epistemic agency and conserving agency.

<<

This is the extract of the lecture at Goldsmiths's College so far.

Smart Populations

The extending change of the coupling processes, could be illustrated by the following sketch:



Thus, the term ‘medial coupling’ describes the structures and programs of those environments, which exist exclusively in the form of an ‘informationally’ generated world. With regard to media structure, the argument of the coupling includes the materiality of media structure, the logics of information storage and management, and especially interfaces, which are the fields of presentation and cognition of media usage. *It follows that media coupling refers to information, and not to knowledge.* The latter emerges in the reflexive processing of selecting received information. ‘Coupling’ thus describes not only the close contact of the basically different (but interdependent) areas of *medial information and cognitive information*. It also describes the degrees of freedom, which accompany the distinctions, which were unknown before, and which can be invented, defined, experienced. This is a precondition for the definition of the differentiations between

- innovative (distinguishing, designing)
- epistemic (designating, recognizing) and
- maintaining (conventionalizing, standardizing, archivizing, institutionalizing)

activity.

It is fruitful to use the list of cognitive operators as developed by Andrew Newberg and Eugene D’Aquili, in order to come to grips with all the different levels of activity:

- *holistic* operators (the world as a whole)
- *reductionist* operators (dismantling, analyzing, distinguishing)
- *abstracting* operators (inventing patterns, models, paradigms)
- *quantitative* operators (defining measures for magnitude, amount, time, distance, volume)
- *causal* operators (abstract models of consistency, pairs of oppositions, linear ordering)
- *existential* operators (supply, group ideals, economy)
- *emotional* operators

It would be worth figuring out by means of research how networking is inserted into these areas of perception and thinking. Let’s include these distinctions in our model. They do not form a coherent picture concerning activities or forms of knowledge. However, they do give us a hint when it comes to dominance and its conflicts, which have to be elaborated in any case. One could assume that there are distinguishable hierarchies of operators in any actor, at any given moment in time.

It is only their collaboration, which allows us to talk about innovation, or about innovative knowledge.

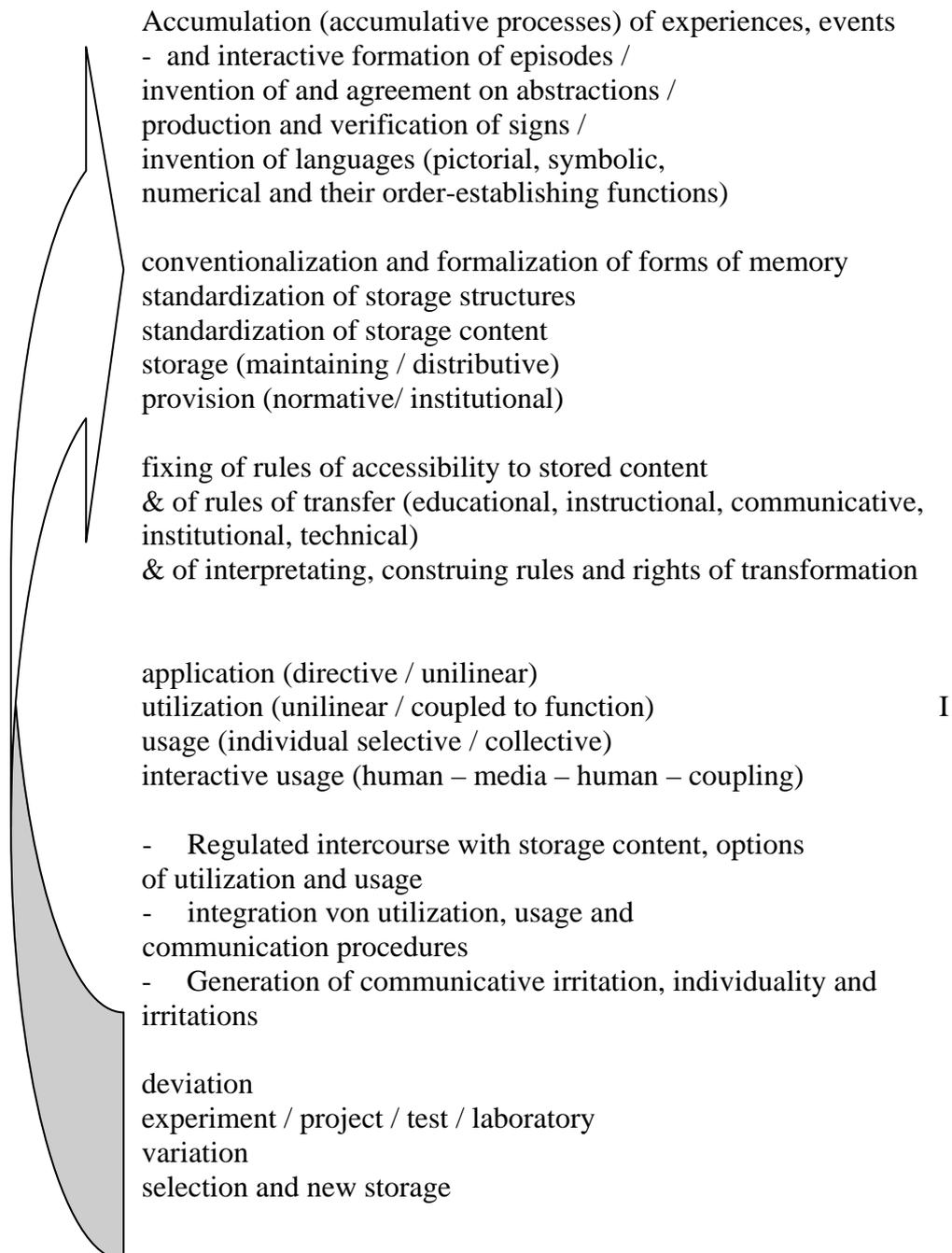
On the one hand, we can assume that single individuals represent the mentioned agencies. It is, on the other hand, only their inter-individual combined efforts, which bring change, being presented by means of programs, conventions, standards, etc. In innovation research, I think it is compulsory to study the dynamic mutual effects between the three agencies. A new status of informational self-organization emerges through cooperative action in these three areas.

The emerging, informational condensed forms of cooperation require a kind of project-related cooperation of the three agencies. This is what I call smart populations: humans, who coordinate themselves through these processes. They are assemblies of humans of very high informational competence. They navigate themselves via exchange of

information, and via negotiations, how to generate knowledge, in the course of which recognition and innovation becomes a 'normality', which is to say, they lose the charming appearance of inventions.

Smart populations navigate those knowledge processes between economy and science, which M. Gibbons and H. Nowotny called Mode 2. They belong to the phenomenon of networking.

A Model for the Activity of Smart Populations



new conventionalization of forms of memory
new standardization of forms of storage
standardization of storage content



Make Way for the Media or: Reentry-Loops (Edelmann)

In spite of these illustrations, my claim that the artificial is the field of thinking and feeling requires a short explanation.

I am not claiming that thinking and feeling is the same.

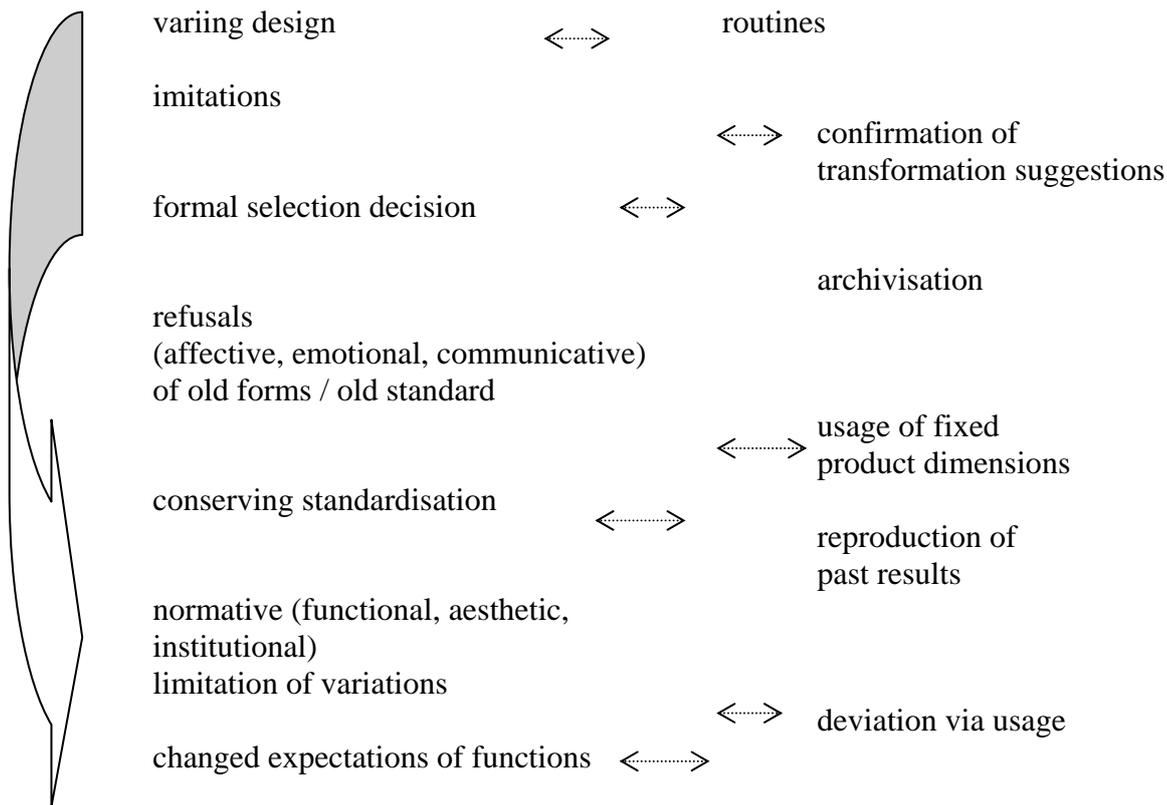
The thesis rather indicates that perception, abstraction, feeling, designing thinking, and self-observing, methodological thinking is executed by the brain - these activities are what is called *radical constructions*.

I am observing these construction processes under the headline of the artificial. It is the central living space/living condition of Homo sapiens sapiens.

Thinking and technology, design and machines are part of it. It might be surprising that I locate technology also in the realm of the artificial. Without thinking, perception, emotions, knowledge, affective participation, however, there would not be any technology. Technology is just as little self-generating as media, photography, newspapers, or thoughts are. We assume instead that there are reciprocal, constantly changing interdependencies of human inner and outer worlds.

The artificial, whether described as technology or as thinking, is not a substitute, but an additive. This is the only way to maintain the thesis of increasing complexity. We do not deal with prostheses!

Referring to a central idea of Gerald Edelmann, who received the noble price in 1972 for his research on anti-bodies and the selective immune system, one can comprehend media evolutionary processes as re-entry loops (1995). This does not mean than one could jump into same river again: there are other streams of water flowing at the same place, there might be less or more water, there might be a rill or a torrent. The re-entry happens formally. This 'formality', however, is part of and impulse for change. This can be illustrated by a little diagram:



Sketch: Uninterrupted Reentry-loops

The mutual interdependency of technique and physiological perception is not 'purely' technological, as Dietmar Schmidt showed in 'Gesicht der Mikroskopie' ('face of the microscopic'). Referring to the example of the microscope, he illustrates how this observation technique is integrated into the 'substantial re-ordering of the visual', and how it takes effect (2001, 159) Generally speaking, it is always changes in visibility, in 'switchability', in storability, in usage expectations and functionality patterns, that open up new spaces for the artificial (Peter Geimer 2002). This is especially true for orders of signs, languages, and media.

Instead of Origin: Permanent Becoming

These preliminary remarks may show that I do not follow ideas, which overcharge human development with philosophical anthropology or claims of universalism and constancies excluding a notion of Praxis. I locate

*Medial self-qualification of humans
and
The medial evolution of the cultural*

at the centre of my model, since there were some theorists talking about a *Homo medialis* too credulously, as I think. There were conferences on that topic all over the place, and fixed ideas about human beings were raised.

After the decline of the thesis and of the theory of humans as symbol-producing entity, which was caused by the explosion of information technologies, the notion of a *Homo medialis* seemed to be the rescue and the future of a model, in which a human being attained symbols and meaning on its own accord. Like a good old friend, one again encountered the

historically powerful - but grown old - connection of *origin* (of symbols, media) and *meaning* (as addressing different orders and norms). After all I knew - on the basis of a constructivist's and system theoretical mode of observation - origin was just a misleading term.

I remembered the strong passage in Michel Foucault's 'Subversion of Knowledge', which pleads for a notion of occurrence, for *emergence*:

,Generation is rather about emergence, the principle and the unique law of flaring up... Emergence always happens within a certain relation of forces. The analysis of emergence has to unveil the interplay between these forces, their fighting against each other, against unfavourable circumstances, and also their attempt to get away from degeneration and to recover their strength by their self-division against themselves... Emergence is thus a step into the arena for these forces, their jumping on stage from behind the scenes...' (1978, 92)

-REPLACE QUOTE BY OFFICIAL ENGLISH TRANSLATION!!! -

So far, so good. Still, this statement is not sufficient. For, applying this concept, how can we grasp the processes, which surpass the situation of emergence, of degeneration, of new forces - which is to say, processes, that make possible a kind of long-term generation? And how are these possibilities actualized, shaped, built? And what are they changing on their turn? What about disappearance, what about selection?

In Search of a Non-Trivial Understanding of Evolution

On the one hand, thinking in terms of evolution, a thinking which was carried by systems theory from the realm of the natural sciences to the realm of *Kulturwissenschaften* ('cultural studies'), included a notion of emergence. However, it was not at all clear to me, why these models of self-organization dealt so few with the dynamic, interactive reciprocity between human-artefact-usage-perception-irritation-design. The logics of self-organization, that is, the logics of sign-usage, of the emergence and usage of media, of the paradoxes of self- and world-explanation were not studied.

Perhaps, the strong connection of systems theory and radical constructivism (S.J. Schmidt et al.) to Humberto Maturana's model of perception, cognition, and *autopoiesis* (that is, self-organization), is responsible for this blind spot of material media development, and its logics concerning usage and change. What is more, the problem of interactive processes between humans and their environment, between permanently newly made, useful inventions and house-made evolution has not been studied intensively. The discussion seemed to be oscillating between the *Darwinian Theatre* of spontaneous, functional survival-evolution, and the 'Cartesian Theatre' (Daniel Dennett) of thinking and reason.

Heinz von Foerster, in contrast, has always made clear that, as opposed to those who are only talking about survival, the whole thing is about living instead. I believe, he is perfectly right.

There was *no non-trivial Darwinism* to be found at all, one, which considers also the autonomous development of human cultures.

Gerhard Vollmer published his evolutionary epistemology in 1975, subtitled as follows: 'Innate epistemological structures in the context of biology, psychology, linguistics, philosophy, and theories of science.' The cosmological claim was not able to hide that it was still not at all clear, how human beings succeed evolutionary in creating, what defines them in always changing variants: let's broadly call it culture! Stephen J. Gould, one of the committed analysts of evolutionary thinking and its biological mixed and opposed worlds, always stressed the 'manifold ways of evolution' (1996). Rupert Riedel published in 2003 his

'*Kulturgeschichte der Evolutionstheorie*' ('Cultural history of evolution theory'), which was concerned with that topic - note that he called it a 'Cultural history'.

Niklas Luhmann drew a more radical conclusion in 1997: if Darwin's thesis that the 'evolution of civilization' cancels natural selection was true, civilization had to 'guarantee itself' (1997, 427) Let's do not bother about the thoughtless use of the word 'civilization', and ask instead: how does it do that, guarantee itself? Rationally, self-reflexively? Exclusively on the level of communication between systems?

And what is 'it'?

Who are the agents, and what do they have to do with it?

With what kind of artificial evolution, with what kind of evolution of the artificial are we dealing?

How are the areas of the artificial, such as economy, love, politics, or poetry related to each other?

I want to extend this question shortly:



If human inventions possess a biological (genetic and neuronal) reality, and signs, media, and culture did not emerge following a biological 'scheme', which is to say, they don't seem to be natural, then how can man create these artificial worlds? How does s/he perceive them? How does s/he act in them, with them? How do these worlds change humans, and vice versa? How are these worlds held together?



Observing ourselves, we can realize that we do not evaluate signs and media according to the mode of their connection to the culture of abstraction or to artificial spaces. Instead, we give time to them, and a living reality, about which we reason. On the other hand, we announce that artificially possible worlds are reality, that is, we breed media documents of those realities, as it were, which we assign to the status of empiric reality, of scientific testability, of credibility.



By means of the digitalization processes globally pushed forward world-wide, we can observe the current laboratory of medial structures and cultures guaranteeing themselves. This raises plenty of questions, we need to find an answer for; and loads of answers, the questions of which we don't know yet. For the explosive development of productivity in the realms of the artificial world-wide has attracted up to now less questions than the phenomenon of the power of figures, of physics, of Bill Gates or the manipulation by means of the media.

Luhmann's suggestion, to study self-maintenance through 'generalised media', such as love, power, knowledge, art, economy, resulted in thousands of book-pages and gave surprising insights to the observation reality of system-environment relations. Luhmann presents an amazing phenomenology of systems. However, the following question lacks: how come that things could get where they are, what put that trick to use signs, information, and meaning in human heads, how and why did they bring something like *cultural seriousness*, *fun or fright in medial evolution*, why games and their rules, why institutions and norms, etc. This is why the model of evolution seems to be remarkably 'culture-less'.

There are No Epochs – Evolution as Never-Ending Process

This is helpful for the time being, since culture is located besides 'the irreversible time' of 'evolution as never-ending process' (Luhmann 1997, 427). Evolution is terminologically supported by terms, such as *variation* (=exploitation of other possible states), *selection* (=choices of structures and of directions of action, which are preferred for the moment), *re-stabilizing* (=agreements or random fixation of decisions, valid for a limited time-span). Since one cannot know, 'whether variations result in a positive or negative selection of novelty', nor whether a 're-stabilizing of the system... will be successful or not' (426), an epochal classification is not plausible. Now, it is interesting, what task culture is evolution-theoretically responsible for. It is something like a macro-detective, which is able to make the following clear to evolutionary procedures of decision-making, while using completely different thinking modes, than these procedures suggest: restrain yourself, the only fundament of your existence is the chance to become cultural practice!

There's No 'Blind Evolution'.

Media – The Artificial Senses of Cultural Evolution

In spite of this idea, to link culture to evolution in a detective way, this move is defective, unless it is connected to a dynamic, interactive concept of emergence. I will deal with that in different chapters of the book this essay is extracted from, exhaustively. Here, it might be sufficient to state that variation, selection, re-stabilizing are cultural products. The logics of these situations, their networks, their architectures are cultural and evolutionary at the same time. 'Culture' rather describes the current condensates while 'evolution' describes the temporally far-away changes!

This is an important thesis. It turns against a statement of the 'blind evolution', which is to be read over and over again, most often concerning society. From this perspective, 'culture' would be the sensory apparatus of the system 'society', as conceptualized also in Luhmann.

However: there is no 'culture' existing as an evolution-less observation-gesture.

Please follow this thought for a moment:

If cultural evolution is a human invention, and if this invention presents itself permanently in different material, structural, organizational, semantic versions, then by which means can humans, groups, social systems, cultural systems observe themselves? The answer is: by means of media. Note that, saying media, here, I mean material information storage devices and communication agents.

Media are the artificial senses of culture evolutionary processes.

They are the artificial senses in an artificial, non-natural universe.

Invention, extensions and usage of artificial things are the basic precondition of fiction, imagination, *mise-en-scène*. Wolfgang Iser, writing about '*mise-en-scène*, or the principle of stage-direction as anthropological category' (1993, 504), he talks about an important relationship. The artificial has to be put on the stage permanently in order to be possibly remembered and used. The ability to read, to write, to calculate, to paint, to write lyrics or to compose vanishes, if one does not cultivate it.

If the rules of this *mise-en-scène* become automatic, that is, if they are transformed into a state in a switching diagram, in which the conditions of the scene are relating to the apparatus, as it is the case in the software programs of computers, they become an autonomous environment. From Stone Age to Screen Age - long-term processes...

Those generations of humans, who live with audio-visual media surfaces, who

discover or perceive their worlds in new screen media, are called 'screenager' (Martin Rieser / Andrea Zapp 2002). The ability to conceive of the artificial, here, is used as a cultural- and social-anthropological category. I do not want to limit this to symbol and representation, but want to think of it for plans, practice models, logics, *formalia*, formats in the first place. The artificial as a developing program of human sketches, of tasks, of usages, and of interactivity. From this perspective, the discussion about artificial intelligence gets an evolution-scientific base, which still is to be elaborated.

Cultural evolutions are thus not blind, deaf, numb, silent, colorless. They are located in the usage of language, signs, scripts, numbers, calculation rules, storage devices, access permissions, the ability to read and write, the permission to listen, in inventions, medial experiments, in perception, listening, reading, writing, programming, playing... and so on.

A Model

So if we assume that man-made evolution is not happening blind, deaf, and mute, but rather random, chaotic, episodic, preliminary, loud or quiet, black-and-white or Technicolor, analogous or digital, the observation model becomes important.

We assume

-that humans handled signs, played with them, thought about their usage together, made rules concerning their management, from the moment of the first invention of signs on, and that they 'prepared' their *thinking and their perception* for further inventions by doing so

-in these very moments, *sensual-abstract thinking* - what is called by Keith Devlin the ability of 'offline-thinking' - is as much required, as the ability of interactivity

-within a particular group using the signs etc., *imitation* is an important step for emerging and solidifying communication. Perception, abstraction, interaction are extended through in imitation

-this way a *learning process emerges*, in the course of which used means of communication must be confirmed, on the one hand; on the other hand, changes must be playful simulated; *irritations and variations* are added

-finally, the latter have to be re-included into the procedures of understanding, into the requirements of order, into expectations of continuity, meaning, and functionality. This is, what we call *selection and decision* concerning a usage-option, concerning a device, a communication channel

-and so on...

This process model does not explain exhaustively how the new comes into the world. But it puts the procedural logics of such processes into the foreground, and it also shows that there can be noise, massive interferences, even crises on any of the mentioned levels. No linearity - nowhere...

In the concept of medial evolution I am adopting here, perception, abstraction, interactivity, imitation, communication, irritation, variation, and selection cannot be separated systemically.

If we talk about the usage of *das Mediale*, we give special prominence to human-

sign/human-media-interactivity. We will deal with the importance of this capacity of human interrelationships by the means of the interface, the medium, the abstraction, later on at length.

I just talked about the massive interferences, which can occur on each of the addressed levels. Severe problems can emerge, when a reality medium, which was established for centuries, like the book, enters into competition with an informational extremely powerful rival in the realm of the attention- and truth-economy. Let's have a look at that.

„Brain-Monitor“ and Interfaces

With the arrival of photography, or with cinemascope at the latest, with moving images and cinema, media became suspicious. There were exceptions, like Henri Bergson's discovery of movement as a philosophical category, which could probably be traced back to the artificial movement of film images, as shown by Gilles Deleuze (1998, Vol. I). But this should not deceive us: people do not like media, as we can see in most of the disciplines in humanities, in the weekly advocacies of writing culture by newspaper Feuilletons, or in the everyday thinking of those, who defend books in general - except for low-culture's 'trash literature', 'cheesy paperback novels' - and 'the mass media', of course.

The further cultures step out of the centuries-lasting demarcation conflicts between 'good literature', 'high culture' and bad industrial commodity production, that is to say, the more they seem to become postindustrial, postmodern, or more dramatically: posthuman, postbiological, the more controversies are there, about media, about what they are, and about what they should be. For many, it seems to be frightening, even threatening that *das Mediale* cannot manage, couldn't ever manage without fixed cooperation relations to technology and economy, that these demarcations cannot be kept. The century-long exercised and defended administration of the leading medium, the book, by libraries and archives loses control, which seems to produce uneasiness: *the monitoring of the world does not happen exclusively by the means of the display windows of the book anymore.*

To put it another way:

Media evolution permanently intervenes in the construction of social systems, and keeps itself out of reach of their forms of time; it is permanently influenced by these systems, extends them, however, significantly, is out of their reach, is located in the trans-social or in the intercultural domain of mutual influence of medial skills - world-wide. It is possible that this experience is sufficient for many critics of the media, to distrust media evolution: it revises the well-cultivated establishment of a culture, which was thought to be stable. Erwin Laszlo's quoted notion of a 'brain monitor' (1996, 92) at the beginning of the chapter, points to the biological in-determination of the extraordinary sensual and abstraction-capacities of humans. Humans, or more precise, the human brain, invented in the course of countless interaction- and cooperation-procedures not only its own internal artificial pattern-world.

In co-evolutionary processes, humans had got the idea and the abilities to link the 'brain monitor' with an external field of agents, with *das Mediale*, or otherwise: with interfaces. Why, when, and how humans were occupied with visualization, with design and with signs, why for some cultures oral sounds were of importance, while others praised signs emptied of meaning, why some gave prominence to the optical associations of script, that is to say, to the pictorial, and which biological, dietetic, or administrative ends signs served - all these questions are not grasped by this thesis.

Fascination: Cold, Sensual?

What is basic here, is that *das Mediale* increases and pools the mental and *cooperative degrees of freedom* of human companionship - and that it decreases and blocks them as well. Despite that, media do not determine details of perception or meaning. It is in the cultural paving (definition) of their utility, in the normative settlement and institutional embodiment of the latter, that the functional autonomy of *das Mediale* loses itself in the cocoon of meaning for a short or - as we can see in catholic-protestant book-culture - for a long time-span.

Speaking of co-evolutionary processes, we cannot only depart from the 'brain monitor'; the notion of co-evolution also raises dynamic reciprocities between media, interfaces, perception, and changed, sometimes newly conceived worlds. Media have indeed an influence on thinking, but in a profound sense: in the sense of perception and reflection of non-natural experiences and the accompanying reality expectations. This kind of 'cold fascination', as Siegfried J. Schmidt (2002) termed it, is 'heated up' inter-subjectively, when it is useful for certain group interests, or if the exclusive meaning expectation is credible.

Reading Non-Medially: Paradox and Ideology

The cocoons of meaning of the book and of script, being narrowed down pretty forcefully since so-called modernity, that is, since late 18th century in Europe, are being medially broadened more and more. The different kinds of reaction are very interesting. Since that moment, when one could see and hear the apparatus-like preconditions from the appearance of the media, when there were technological preconditions for viewing and listening, it is not *printing* anymore, which is defended, but the text-corpus, it is not the book as a final product of a technological production infrastructure, but the weight of the meaning of the content. Marshall McLuhan was indeed right there, stating the printed world-view of the Gutenberg Galaxy. However, also him did not succeed in viewing the honorable text with detachment. There was a significant dread of assigning a techno-logical status also to handwriting. The temptation, to assign an non-medial status to written language so to speak, to locate it above any material, technological, infrastructural, institutional, or economic logic, was forceful - a piece of hereditary, a piece of power. It seemed like there was possibly a short-circuit relation between non-medial writing, and non-medial reading: a mind lost in another.

There are currently attempts to decrease the crisis of the derived myth of creation of the Holy Scriptures and of the word (In the beginning / In the beginning there was the word) by the development of models of 'Intelligent Design'. Evolution is acknowledged, in religion (by Christian fundamentalists), as well as in the institutionalized church (catholic clergy). Evolution appears to be a road map of a history of creation, in which every form, variation, or selection was already 'intelligently' decided upon beforehand. One has to observe this development very carefully, even if we will not follow these ideas at the least.

Typography, Image, Movement and Other Things

Let's return to the 'masses' for a short while.

Well, there are reasons for the suspicious refusal of so-called mass media; after all, printed and typographic media, and successively film and audio-visual news and their extensive reach have been used for propagandistic ends (from front-line report, to Leni Riefenstahl's propaganda aesthetics in her movie 'Triumph des Willens' and 'Fox' toenende 'Wochenschau'). What is not sufficiently taken into account, is the fact that it has been the *one way principle* by which they are characterized, and that made this kind of propaganda possible

- a principle, however, which was also a trait of the love letter, of the printing press, and of pamphlets. Knowledge about and interest in media and their anonymous techniques of production, distribution and storage was confusingly reduced to the seemingly definite judgment of the *Frankfurt School* and its exponents, such as Siegfried Kracauer, Herbert Marcuse, and Walter Benjamin, as exemplified in the concepts of the 'Culture Industry' and the 'mass medium television'.

It is quite understandable that predominant realms of knowledge and meaning, which are products of an exclusive writing culture, felt responsible for the latter. It is, however, at least scientifically extremely questionable, if there are no thoughts at all dedicated to the question: *which kind of media realm is defended here, by referring to the occident?* Which kind of knowledge is defended and maintained by referring to the *bibliothèque*? Although I do not agree with Wolfgang Ernst in every aspect of his framework, I must state that his book about 'the infra structural configuration of German memory', that is, the construction of German History through systematizing archivization, is very helpful for this line of thought (2003). It is very plausible inside their world, if theologians define script as the permanent medium of truth because of their profession and faith. But what happens terminologically, so to speak, if we stick to that position in a scientific context? How does such an attitude relate to technological-graphical procedures and lines of argument and reasoning, as in physics, biology, astronomy and neuro-science?

This is not about denying the functionality of written language and its extraordinarily efficiency. There are very diverse demands upon script and text, sedimenting in the global achievement of the capacity to read and write - a capacity which requested a lot of blood, sweat and tears. The *Sumers*, Egyptians, Mayas, Chinese, Greeks, or *Teutons* conceived of signs, texts, writing skills, notations, etc. in very different ways. At least, all of them used the capacities and the achieved logics of *das Mediale* in totally different ways. All of these are contributions to the media evolutionary dynamics generated since thousands of years, and all of them are of outstanding importance for these dynamics. There are no permanent trans-cultural long-term constants in the latter, but still there are comparable processes. Which is sensational, exciting, amazing enough.

Play With Me – According to the Rules of the Artificial

'One of the forces pushing humanity further is pleasure. Even if some mathematicians call the work of their colleagues sometimes 'playing around', still a good deal of serious mathematics was developed out of these plays, which contest logic and which facilitate the understanding of mathematical problems.'

Ivar Peterson, 1990

The privileged position of written language, which was obtained by force of extensive philosophical and authoritative politics of the prohibition of images cannot deceive us: images not only survived, if only in the niche of paintings (from a protestant-reformatory view, the prohibition was out of question anyway). What is more, especially in the last two centuries, ICT and finally media technologies have been developed, which made their way into the book shelves, and which began to poach in the fields of attention economies, of perception, of world views, and of media-didactic communication strategies; they did so as evolutionary parasites, stemming from the realm of military intelligence (Morse, telegraphy), from the realm of annual amusement fairs and the like (photography, cinemascope), from

leisure, entertainment, and propaganda (radio broadcasting, film, television), from individual real-time communication (telephony), or from the realm of video games (*Gameboy*, computer games, *X-Box*, *Playstation 1, 2, ...*).

What is interesting from a media studies point of view, is the fact that the strict medial rules of these game universes changed the cognitive, semantic, and practical fields in a persistent way, whereas so-called mass media were banned to the valley of non-active, non-playing entertainment - one way, and dull: 'The Weakest Link'.

Critics of the mass media might go on getting upset about the fact that it works like that now for a considerable time already. But it works. And, I mean why not? Why should one not relax while enjoying nonsense? Of course I am aware that the critique of the mass media aims at the faking, influencing, diversion creating, untruthful or 'exclusively for the medium generated' information character. The capitalist commodity, which is the subject Dieter Prokop studies and deals with so unceasingly, is an interesting route marker. Also Harald Wenzel's 'Echtzeitmassenmedien und der Handlungsraum der Hochmoderne' ('Real-time mass media in the action space of high modernity' varies the topic of mass media critique (Goettingen 2001).

To formulate it in a negative way: these critics suspect of the media for sensually forcing the people using them to overlook the world in reading, watching, or listening. A positive formulation would state that all of these critiques acknowledge the culture generating significance of the media. What they do not take into account is that humans always took and still take pleasure in abstractions, in rules of the game, in fantastic worlds. We should learn, as media scholars, *how to connect pleasure and trust in our reasoning*. It is worthwhile to start from that position. For the time being, it is necessary to turn our eyes away from current media technologies and formats, in order to elaborate this position and to transform it into an argument inside the realm of media evolutionary processes. This is the only way to elucidate some of the logics of development, which are helpful for the monitoring of further medial transformations, and plausible for the explanation of media evolutionary processes belonging to the past.

Logic of the Development of Medial Forms

One could turn the suspicion theorem upside down and thus claim: Cultures manipulate media, they obstruct their development, their diffusion, their adoption. We could draw on a huge stock of empirical data to support this claim, referring to dictatorship regimes, to global media players, to decisions about capital investment and educational politics, which hesitated for a whole decade to install computers in class rooms. But this text is not about this level of generalization. All these data are entries in the logbook of media evolutionary processes. The latter are influenced by the processes mentioned above, they are irritated, variations of concrete media settings and formats emerge. I am, however, much more concerned here with the mutual reciprocity between long-term logics of evolutionary processes and concrete conditions of usage.

It was Georg Kubler who demanded to study 'the logic of further development' (1982, 8) in his book '*Die Form der Zeit*' ('The form of time', -the translator) in 1962 (1962 / 1982).⁶ This was an intervention in the state of mind of art history, turning against the retreat of this discipline, focusing solely on problems, such as sources, interpretations, cataloguing, iconography, or the history of styles. Since art history at that time followed a thesis of Ernst

⁶ I am indebted to Christian Reder for the hint to Georg Kubler. We met in April 2004 in Vienna and talked about the Sahara project he was concerned with at that time, about the cultural visual capacity of humans, and about abstractions and their 'heritable transmission'. I explicitly want to recommend Kubler, especially to contemporary disciplines dealing with art history.

Cassirer, stating that art should be conceived of as a symbolic language, the study of meaning was in full swing. There was a high price to be paid. The alternative view, 'the possibility to define art as a system of formal relations', was neglected. I will pick up this thought and connect it to a media evolutionary line of argument. In this book, I will look at media as a system of formal relations and their learning, evolutionary transformation. Media are subject to change caused by technological inventions, by changing usage cultures, by 'explorations' of novel functions, by senescence of functions. These do not concern meaning, unless meaning is invented successively.

Medial Experiment in Self-Design (from caves to digital caves)

Whatever humans do with meaning, in whatever liberating or disdainful way they are used: they have little in common with the medial experiments of self-design. Man is not finished doing these experiments, since we just started (perhaps about 50-40.000 years ago) to perceive our own *perceiving biology* (thinking, abstracting, forming signs, formatting, developing numerical, pictorial and scriptural languages), and to take the latter serious. Meaning here is a rather short-lived occurrence, a varying and selective procedure for the very moment, a certain meaning is acknowledged.

To put it in other words:

The evidence of signs or of the meaning of media, as any other artificiality, needs in general to be culturally supported. Master-Scholar relations, monastery schools, public and private schools or universities illustrate the efforts that must be made time and again in order to keep signs, script, images, films, and television 'understandable'. This kind of supplementary course is not in the focus here. I cannot ignore it, since it is part of the utilization and selection processes of a culture. Despite at, I think it is more important to study the manner in which humans use sounds, images, script, and numbers, that is, *what logics of the artificial they invent in order to create their worlds, their realities*.

There are excellent publications at our disposal, concerning glacial cave drawings and those of the early ice age in Europe or India, in Asia and as produced by any of the world religions. They are mostly described as 'glacial cave art', or they are taken in the 'heterogeneity of the phenomenon of pre-historical art' (Antonio Béltran et al. 1998; Jean Clottes 1997; Vjaceslav E. Scelinskij 1999; Jean Plassard 1999; Jean Clottes and Jean Courtin 1995). I am not in the position to decide whether the category *art* is an apt one here, or whether it might be more plausible to refer to them as religious, magical or cultic images. I don't know and those who use the terms cannot satisfy the meaning expectations connected to them with qualitative data.

If we assume that meaning changes very fast, the questions are rather:

What are and have been the criteria for the development, maintenance, transmission of visual capacities, and how have they been 'translated' into logo-graphical, pictorial-graphical scripts? What are the procedures for our translation of the visual into written language, numerical into images, images in numbers, script into pictorial narratives? How are the multi-sensorial narratives of our everyday lives, of political news, of scientific argumentation constructed? Is meaning constructed in a differently, if it is generated in a dialogue situation, compared to a one-way communication form?

This leads us back to the question of the logics, that is, to questions of evolutionary

logics connecting of the artificial, of the breaking down of the latter, its chaotic and radical changes, its paradoxes, its being influenced by wandering writers and painters. Besides, the question arises, what the cultural processes are, which maintain hundreds of pictorial-scriptural signs for communication, as in Chinese language until today; or what those processes are that 'purify' the scriptural signs of any recognizable pictorial form and of any meaning, that reduce the signs to less than thirty, as exemplified in the career of the alphabet.

Media – Core Mechanism of Cultural Evolution

Media irritate humans. At the same time they are the most powerful evolutionary achievement of *Homo sapiens sapiens*.

Without media, culture would be neither producible in the contemporary 'classical' or 'trans-classical' sense, nor would it be describable. In the meantime, media have left the fossilization of architectural objectifications, as well as they have left the territories. Media are the most powerful mechanism of the maintenance of human inventions; at the same time they are the most powerful 'press button' for design, innovation, and development. They are the closest mental relative to humans, the impulse and source of culture, and the other way round also a result of culture. They are a kind of external agency of thinking; through the manifold uses, they are also educators of thinking. This book is about these reciprocal relations: the co-evolutionary processes, the permanent transfer between thinking, media, knowledge, culture.

The basic underlying thesis states that man medially qualified her/himself. Once this process was started, perhaps with *onomatopoeia*, oral language, 100.000 years ago, these co-evolutionary process was irreversibly unstoppable. Starting from questions which deal with the documented cave drawings all over the world (the oldest ones are 40.000 years old), the argumentation will lead via the sense of language, of images, of numbers, of scripts (5.000 b.t.), the emergence of concepts, such as history, philosophy, text based religion, the Greek classical era, to digitalization, and fibre-optical media. This is in the focus: the emergence and stabilization of a sense of media, which made the plausible illustration of an abstract world order possible.

There were the most diverse medial capacities and systematizations emerging, located at different points in time in the course of human evolution, and at different geographical place, distributed all over the globe. What have been, in the beginning, fairly random cooperation events, successively became global media evolutionary processes, preliminarily resulting in world wide standardizations of operating, storage, and transfer systems.

Testworld – Real World

Media are the human world laboratory - from early ideas about philosophy, religion, and history, to computer graphics of nuclear reactions or computer tomographies of the human brain.

Subordinated to this laboratory and at the same time re-influencing it, are all the different material modes of production. The world laboratory media is reconstructed time and again; these reconstructions exceed Artificial Intelligence and Artificial Environments by far. Observing from this point of view, this book is distinct from argumentations, which suspect 'the media' in general of destroying culture, and also from those, which reduce them to matters of publicity, politology, or theories of power relations. The thesis I hold is rather: The cultures of *Homo sapiens sapiens*, which were developed worldwide, emerged out of the very different inventions, interactive usages, and permanent extensions of the Artificial, of signs,

languages and, last but not least, of the media.

Man learned evolutionary to enclose the artificial worlds in small or big narratives, in history, religion, knowledge, art, or identity. S/he created and manipulated presence and absence, designed regimes of time and space, and also invented the accompanying stage-direction. Meanwhile, the media evolutionary processes massively influence social and economic systems.

It is pressingly necessary to learn to describe the logics of the emergence and development of the medial self-qualification of humans, as well as the accompanying paradoxes, contradictions, and dead ends. To do so will support the development of instruments and logics, which do not only follow standardization politics and practices of global economic actors, but which also explain and strengthen the global usage cultures, their non-scaled networks, and their dispersed smart populations in the contemporary *world laboratory of the media*.

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