Learning - Widening the Mental Horizon[*]

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Content

1 Introduction

What is an article on learning doing in a book which endeavours to clarify the intent of 'hermeneutic pedagogies'; and this at a time when the untimeliness was noted a generation ago? Is there a hermeneutic approach of any kind to learning? Learning has been promoted as the fundamental concept of the very pedagogics which has begun to be seen and established as a positive discipline. The 'blurred' concept of 'educability' was in this way replaced by the scientifically defined concept of 'learning'. What learning is and, above all, how it works, is something which has to be researched to determine its inherent structures. Against the background of the theoretical learning concept and its scientific experimental interpretation, the learning

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objectives themselves can be made operational and verified in a practice which is technologically orientated and based on efficiency. The value and purpose of learning objectives can be decided in a rational discourse which reveals the relationship between learning objectives and practically valid social norms. It is true that one cannot manage without decisions in a pluralistic society, but they too can be infused with rationalisations, so that pedagogics can be shielded once and for all against crude decision-making.

The advancement of the learning concept in pedagogics within a pluralistic society is not accidental. 'Closed societies' in all their forms of manifestation (such as society divided into classes or a society which tries to find its identity in the idea of a unifying national culture and, not least, the fundamentalist societies of our days) have devoted learning to the service of their idea of integration or their 'educational ideal' from the outset. Learning seemed to fulfil itself in the formation of a conception of humanity conceived in the educational ideal as if it were teleologically founded on it. In contrast, scientific theories have freed learning from its ideological fetters. It is therefore [31/32] into the context of emancipatory educational objectives. It seems that, by learning, we disengage from traditional dependencies and free ourselves from the restrictions of ideology. Against this background, the learning ability of the individual appears as a correlate of and correspondence with the 'open society'.

Within the concept of learning we seem to accommodate, loosely speaking, the ability to produce something new and to focus on it. Strictly speaking, this means, however, that learning is linked to a special attention paid to reality: a way of obtaining a firm footing in reality for which Martin Wagenschein (1965: 11; 465; 521) introduced the term *'enracinement',* adopted from Simone Weil. In terms of the concept of learning the focus is thus on a kind of 'rooting' which is likely to safeguard freedom and autonomy of the individual postulated in the open society. Thus learning is particularly challenged where reality is no longer conceived as a closed world with uniform ideas: a reality, therefore, in which everything seems possible and in which behaviour is not determined by necessity of a moral, cosmological or logico-mathematical nature. Accordingly, there should be a positive content of learning, irrespective of what is being learned at any given time. This positive content would have to be seen as the ability to exist and endure in a contingent reality. Only in a contingent, and thus complex, reality in which anything is possible is learning need-adjustable. This assertion, if it is to be upheld, comprises two aspects:

• Independent of the learning content and the attribution of its value, there 'exists' a 'good', satisfying and fulfilling learning. The ability and achievement of education in an 'open society' dependent on emancipated individuals would simply be a matter of discovering and cultivating this positive ('sense') content of learning, which does not lie in a teleological structuring of any kind.

• The deciphering of the 'sense' inherent in learning, ie its attention to the world, would be one of the most distinguished tasks of 'hermeneutic pedagogies'.

If such a 'sense content' of learning exists, it can be conceived only according to the hermeneutic principle of the historicity of 'sense' phenomena, in the historical pronouncements and formulations of learning (the learning culture). In the following, therefore, we have to be willing to learn from the formulations of the learning culture.

2 On Anthropology of Learning

2.1 *The time structure of learning*

For approximately thirty years, learning has been described in pedagogic literature as an an-

thropinon of the first order. This no longer means exclusively the time granted to children and young people for preparing themselves to conduct their lives responsibly, but the dynamics of a consummation of life in which there is no inner completion in the sense of the accomplished developments of predisposed possibilities. The term 'learning' is rather con- [32/33] ceived as a counterpart to maturing, development and maturity. The 'results' of learning, therefore, can also lead to a paralysing of the consummation of life precisely because this presents none of the necessary stages in a developmental process. One can no longer be frightened by the old proverb 'What you don't learn in your youth, you'll never learn later'. On the contrary; the maxim of life-long learning is booming.

This concept of learning is based on an anthropological interpretation of life-consummation in modern times. It can be characterized by two essentially distinctive features. On one hand, life-long learning is necessary where the way of life is subject to conditions which are constantly changing so that life extends into a future that in principle is 'open'. In the modern time-frame the future is not real in the present and, therefore, it cannot be anticipated as a state in which something past is completed and consummated. The future no longer appears as the fulfilment of what was promised in the past, adulthood not as distinct shaping of foundations laid in childhood. An old person cannot leisurely look back upon his/her life while enjoying its fruits. Old age is perceived more and more as a stage of a new beginning or making-up for what life has so far denied. Thus there are no age-specific learning tasks which life itself assigns and in this way structures itself into clearly marked stages. It is rather a matter of learning what unpredictable possibilities an open future holds.

Theoretically speaking, the concept of learning under consideration here is a hypothetical construct by means of which one tries to explain surviving in an ever-changing reality. However, this is a conception of learning which no longer explains it in its biographical importance, ie in its importance for the construction of individual life-stories. In its importance for survival, learning is placed into the evolutionary realm of the survival of the species.

The biological theory of the evolution of learning should be extended and complemented by a cultural theory of learning. Such an extension would not only be of importance for the evolution of human learning but also for the social evolution of the human species as a whole ... There is every reason to believe that biological evolution with its mechanisms of mutation and selection is continued in the domain of the human species on a different level by means of different mechanisms; innate learning as well as social selection and recapitulation of original learning results are probably the most important. Without them there will be no satisfactory explanation of social evolutionary processes. (Schulze 1980: 145)

2.2 *Learning as adaptation?*

Judging by outward appearances, what in philosophical anthropology was meant by 'world openness' is raised to a scientific level in the concept of learning. Accordingly, the capacity for learning would be a fundamental, thus original', condition of humanness, determining the mode of life (practice) of humankind, which distinguishes it generically from all other organisms. Animals, too, are capable of learning, but only within certain limits. Human [33/34] the human capacity for learning, therefore, the immense plasticity of 'human nature' is manifested. It makes survival possible in not only the *physical* conditions of all regions in the world, but also in the 'artificially' created conditions of a scientific-technological civilization.

In the scientific definitions of learning and their operationalisations by learning experiments, learning is interpreted as the human organism's adaptive achievements tangible in behavioural changes.

Learning as adaption of the organism in response to conditioned reactions is to be understood as an acquisition of behavioural willingness in a situation or as a response to a stimulus which can be deduced from earlier reactions to this stimulus or situation. (Eyferth 1964: 85)

Only behavioural changes can be directly observed, their attribution to adaptive achievements of the organism is a hypothetical construct for their explanation.

In biology, the term 'adaptation' means the restoration of a natural order of life which has been disturbed by more or less dramatic events. 'As, for example, polygonum stretches its stem in flooding, also forming slot-openings on the upper surface of the leaves, etc in order to breathe' (Lipps 1941: 63). According to this biological insight, human learning should not simply be described as adaptive achievement. This is expressed when speaking of plasticity of human nature, namely that the human being is not 'constructed' for any environment; is not fitted into any environment. It is in this sense that Nietzsche and Gehlen spoke of the human being as the 'non-adapted animal'. Presupposing this, human learning is distinguished from 'biological' perceptions precisely because it cannot be perceived as the restoration of original environmental relations. Seen in this way, learning is the process in which environments form for human beings; it is a process of forming and transforming of environments.

2.3 *Learning as 'structuralist activity'*

To say that references to reality (to avoid the ambiguous term 'environment') are developed in learning does not mean that people continually have to reinvent the wheel. Instead, people grow into the cultural milieu in which they find themselves. Admittedly, this 'growing into' is not the process of determining an amorphous behavioural disposition. The child who is learning 'his/her' language does not adopt it in a passive way but, to a certain extent, he invents it. He weaves himself into the language, to use the apt description by Wilhelm von Humboldt, by *spinning it out of himself (III* 434). It is considered an established finding in linguistics that learning to speak is an active generating of language from semantic and syntactic structures. In the same way, the child who is learning to walk generates new motor patterns with which he newly co-ordinates the motor and sensory apparatus. Thus the external world is opened up in a new way as a place of action and experience. Seen in this way, in every learning process an adaptation (if one wants to retain the term at all) is achieved. This is of such a nature that, in the construct [34/35] of references to reality from a chaotic abundance of behavioural possibilities, those which carry *meaning* in the cultural milieu are filtered out. Thus learning is shown as a process of reduction and selective accentuation in which 'cues' are formed. Such accentuations and reductions could be called *interpretative acts* because they extend horizons in which human beings let reality approach as something *which is meaningful for them.*

According to their formal structure, such interpretative acts, as shown by the example of learning to speak, are structuring processes or, as Roland Barthes called them, 'structuralist acts'. By 'structuralist acts' he means 'operations' in which paradigmatic and syntagmatic relations are realized. Languages in particular are constructed according to this pattern, but not *only* languages: the 'order' of dishes and clothes are also based on these two fundamental relations. The restaurant 'menu' actualizes the two levels: the horizontal reading of the starters, for instance, corresponds to the system (paradigm), the vertical reading of the menu to the 'syntagm' (Barthes 1979: 53). In paradigmatic relations the repertory of elements, signs and parts is formed — the lexicon, so to speak. Paradigmatic relations are class relations which are set up according to the criterion of substitution. In syntagmatic relations the function of an element is determined by its place in a chain or sequence — in a sentence.

The smaller details are not of importance in this context. What is important is that *learning* in

the sense of performing a structuralist act renders factual a reality which is present in no pre-set way, *in meaningful particulars.* It is not an image of an already existing reality which is created by the structuralist act but, as Barthes says, *'simulacrum'* of it. In it, it is not the visual representation that becomes apparent; rather reality is made accessible to us in a structured form, in the order of class relations and connections.

It is the aim of any structuralist act ... to reconstruct an 'object' in such a way that the reconstruction makes it clear by which rules it functions ... The structure is, in fact, only a simulacrum of the object, though a specifically directed, 'interested' simulacrum because the imitated object reveals something which remained concealed or, if one prefers, remained incomprehensible. The structural human being takes the given fact, takes it apart, puts it together again; this does seem to be unimportant ... And yet this unimportant bit, seen from a different angle, is decisive; because between the two objects or between the two moments of the structuralist act something new is formed and this new thing is not less important than the generally intelligible: the simulacrum, this is the intellect added to the object, and this addition is of anthropological importance insofar as it is the human being himself, his history, his situation, his freedom and the resistance which nature puts up against his intellect. (Barthes 1966: 191f)

The concrete, intended reality is already represented in *simulacra;* its concrete interpretation is founded neither transcendental-philosophically (through the state of consciousness) nor ontologically. Images, too, are in this sense *simulacra* and by no means the actualisation of an innate concrete fact. The concrete details which have become tangible in *simulacra,* in which reality [35/36] syntagmatic relationships. The existence of reality is its possibility of being reconstructed (not technically reconstructed) in the structuralist act. As such, learning is always a productive intervention in the world: it is actualized as the formation of models, maps, patterns, anticipatory sketches and the like.

2.4 *Learning as a sharing of the 'life practice"*

It may well be that the structuralist act actualized in learning is neuro-physiologically founded. There are, however, no findings to support this.

Whatever the case may be regarding details of the neuro-physiological foundation of learning, the decisive factor is its motivation by the surrounding culture (by the cultural milieu). According to Jakobson (1969, 24 f), the child begins to learn 'his/her' language by selecting, from babbled monologues and from tongue delirium, the 'sounds' of the language surrounding him/her which have meaning attached to them. Seen from this angle, learning appears as a function of life practice ('practice' in the strict sense of the mode of life of a group or an individual). Learning is motivated by the form of self-representation determining all practice. Following E Leach, Uri Rapp distinguished between two aspects of all experience: the representative one and, in a broader sense, the 'technical' one by which something is brought about (Rapp 1973: 11 ff). On the strength of the representative aspect, actions are first of all social facts. As such they can be re-constructed and imitated. Imitation *per se* has an acquisition function so that the exercising of practical behaviour is connected with the imitation. By acquiring practice which is conveyed in self-representation, the learner gains the generative patterns *(habitus)* by which the behavioural, sensory and thought modes of a culture are produced (Bourdieu 1974 and 1987). In the medium of such *habitus* the structuralist function, in the historical and social distinctness of which Barthes spoke, becomes tangible.

The human capacity for learning is deduced and determined in the abilities and skills 'acquired' in this way. In this sense all learning is deutero-learning (Bateson 1981: 219 ff). In and through factual learning, learning structures are formed which mark the cross-sections of life

practice and learning research, as Bateson has shown. In deutero-learning, however, and this has to be stressed in our context, the capacity for learning proves to be motivated in itself; it cannot be checked, ie as an 'ability' which, left to itself, has to fathom its possibilities and its limits. In spite of all social and cultural links learning, seen in this way, can ultimately be conceived only through itself. The forms in which it is realized shed light on what learning is and can be.

3 The Cultivation of Learning

3.1 *Removing limits from the learning ability in school learning*

This self-relatedness of learning, so to speak, forms the basis for the possibility of institutions which fashion themselves under the *idée directrice* of the 'learning of learning'; thus the possibility of institutions of an explicit learning [36/37] culture. With the entry into school the quasi-natural learning in the cultural milieu of the *'Lebenswelten'* (life-worlds) is interrupted; in this way the entry into school can be seen as an *epochē*. Learning in school, at any rate, is not imparted in the self-representation of life practice, but through a more or less developed 'art' of teaching which is always also represented by the person of the teacher. What this means practically for the teaching profession cannot be further expounded at this point.

The forms of school-like learning are becoming of ever greater importance in our civilization. That is not by mere chance. The 'practice' of living has changed qualitatively. The place of *entelechy* (practice in the sense of the way of life) which was ruling practice (in the strict sense of the way of life of persons or groups of people) was taken by the medium in which it became clear what is good for the human being. In the strict sense of 'practice' as the *way of life* of persons or groups of people, the place of entelechy ruling practice was taken by what clearly became useful to humanity: in this sense practice was seen as the 'appropriate' way of life for the human being; it served no other, outside purpose; *entelechy* of practice has therefore been replaced in the scientific-technological civilization by socially conveyed (motivated) purposes. Action and attitude are socially conditioned, ie normatively conveyed. The 'sense' of the socially conveyed attitude and action lies in the fulfilment of such conditions set by social norms. This applies above all to the 'practice' of social intercourse.

Against this background, the pedagogic task of school is shown in a special light. Notwithstanding the fact that as a social institution it has to impart useful knowledge and skills, the essence of its educational task lies in detaching learning from life practice which has become 'worldless', pragmatically directed, in order to lay claim to it in its special potentiality, the rooting being in a reality which is not understood and has become dreaded. Set this task, learning loses its apparent rooting in life practice. This is what makes school learning so precarious. It always seems as though school teaches either too much or too little and never something *right* in the sense of being *useful*. However, one has to understand that the original form of the old saying *'non vitae, sed scholae discimus'* embraces more educational 'sense' than the pedagogic *'Zeitgeist'* is prepared to admit. In the *'non vitae'* is indicated the great chance of school learning: the chance of removing limits from the learning ability, its liberation from the particularity and fortuitousness of the life-worlds.

What this removing of limits and liberation of learning means positively for its specific potentiality is apparent in the historical features of the school learning culture.

3.2 *Learning as 'enracinement''*

In written records relating to their justification and foundation, schools were given the task, as early as the Middle Ages, of laying claim to learning as the process of rooting humankind in fleeting and, due to its variability, evasive [37/38] reality. ('Growing up' in the life-worlds was perceived as learning only in the transition to modern times, with the propagation of the 'new', life-orientated school (see Dolch 1959: 242 ff). According to Comenius, learning is seen as a counterforce to the fleeting nature of the moment in which we catch only a superficial impression of things. It is by learning, and only through learning in accord with his/her inner order, that a person escapes the vice of curiosity which drives him/her from one stimulation to the next and from one impression to the other so that he/she cannot retain anything. In curiosity, life dissolves in itself without any inner stability.

The motivating force of learning is *'studium',* a passionate seriousness in the struggle for the way in which things are detached from the current of time and retained in their presence. Study presupposes 'seclusion' from the life-world, the presence of things, a figurative nature *(mimesis)* in which they are present beyond all modification and change. What is crucial for the 'figurative nature' is not the form in which we actualize them (in pictures or texts), but that our forms are derived from the effect in which things are present for us; as if our forms were nothing else but an appearing and a coming-to-the-fore (epiphany) of the things themselves.

In this way study is the imagining ('Ein-Bildung') of things into the human mind and through this imagination the spirit itself becomes the image and semblance of God *(imago dei)*. Inasmuch as imagination represents things in such a way as they are by themselves present, it actualizes them by carrying the image through change, preserving them as they are of themselves. Thus the spirit as *imago dei* obtains its reality in the form of memory *(memoria)*. What is important is that the images whereby the spirit comprehends and preserves the presence of things are not reflections but independent images, created from the objects themselves. The medium of independent production of images is language disengaged from direct association, which is used according to its inherent rules. This use of language which is not activated as an aid to smooth communication is realized and manifested in texts. (Painted, drawn pictures are aids to these texts; taken by themselves, they suddenly turn into mere 'images'.) What in the end is stored in the memory are not complete pictures or concepts, but *schemata* of generating concepts: the language-logical structure in which the production of concepts takes place.

Be that as it may, the imagining of the world into *memoria* is brought about by texts. Besides *disputatio* and *meditatio, lectio* is the most important element of *studium.* The interpretation of learning ability in *lectio* is determined by an *ordo legendi.*

3.2.1 The *ordo legendi* (the lesson)

According to Hugo von Sankt Viktor (1964: 164 ff), *studium legendi* is classified according to three criteria: 'First of all, everyone must know *what* he wants to read, secondly *in which order,* ie what first and what later, thirdly *in which way* (Hugo 1964: 165). For our purposes, the third is interesting: *how* to read. [38/39]

If we want to embark upon learning, we have to begin with the known, the definite and comprehensive, and then, in a gradual descent and differentiating the details, by the process of dividing, research the nature of things which are contained in the general. (Hugo 1964: 197; Illich 1991)

This order by Hugo, briefly outlined above, is differentiated in a scheme of articulation developed in jurisprudence of the Middle Ages, which in its main features determines the teaching

form of the lesson to this day. This structure has found a mnemonic formulation in the following couplet (Paulsen 1919: vol. I, 38):

Praemitto, scindo, summo, casumque figuro, Perlego, do causas, connoto objicio.

In *'praemittere'* a preparatory characterization of the learning subject based on familiarity is signified, in which the most important concepts are described and the terms defined. *'Scindere' (partitio)* is the dividing of the lesson's content into relevant parts, which is then expounded in a summary form. Then follows the propounding of a 'pure' case, on the basis of which the intention of the text is elaborated without taking any possible accompanying circumstances into consideration. Then the text *(perlegere)* is usually read several times aloud or *sotto voce* (murmuring), so that it is committed to memory with its specific expressions, style and rhythm. The learner in the Middle Ages literally chewed through his text and absorbed it like food. Reading was an act of absorbing (by the mind). After the reading, arguments are found for the decision in a concrete case; this is the stage of substantiating application to concrete cases (subsumption). Finally, additional explanations (connotations) are stated, relationships and differences to what has already been learned are set down and the new elements in the 'range of thoughts' established (integration). The objectives finally deal with adverse statements, opposing opinions and introduce controversies.

The structure *of lectio* thus proves to be an order of viewpoints whereby the *meaning of a text* can be reconstructed. The *ordo legendi* is therefore a *hermeneutic procedure.* (Texts could also be dealt with in a different way: linguistically, from a philological critical base, statistically, etc.) The characteristic feature of the hermeneutic procedure is that the text is examined with regard to its sense of reality, its function of disclosing reality. It is therefore treated as a medium which makes reality accessible to us in a unique way; in a way which precisely is not founded on life-world accidental and biographically pioneered experience. The text rather transcends the direct experience absorbed in itself by casting a net of references over reality, in the structure and knottings of which facets of the real are represented in a 'concise' form, determined by the cohesiveness of the text.

The cohesiveness of the text, the 'conciseness' of it, constitutes itself as a ' *Zeitgestalt'.* In it, texts are detached from the current of time like melodies. In spite of time progressing, one can return at any time; beginning and end are not moments in a linearly-perceived course of time, but rather are they intertwined in a manifold way. Reading progressing from line to line is at the same time insolubly a self-recurrent revocation of the course of time, flowing into [39/40] the infinite. This also means that what is meant by the 'cohesiveness' of texts is 'removed from the current of time and transition'. In this sense texts are released from the unreliability of the evidence of sensual experience. Texts transcend the variety of sensual experience and thus act as the medium in which thinking is directly related to reality.

Readers fulfil the requirements which the text imposes upon them by understanding, in their own way and according to their own abilities, and by interpreting anew and absorbing their life experiences into the text. Their experiences are placed into the objective coherence of the text and interpreted anew. Seen from this angle, the text facilitates a new identification with one's own experience, an identification which, above all, makes possible the exchange of experience with unimaginable Others with whom one does not already communicate and share a common life-world. Through conveying a text with one's own experiences the facts of the experience are revealed: the appropriation of the text thus proves to be an enlightenment of the experience in which the particularity of the experience and its fortuitousness are cancelled. An objective, not biographically rooted, dignity and commitment of the experience are set free. Paul Ricoeur has described the appropriation of texts as the vehicle by means of which a breakthrough of cultural milieus and life-worlds to the world may be achieved.

The world is for us the ensemble of references opened up through the texts. Thus we speak of

the world of the Greeks not in order to describe in any way the situation of those who lived there, but to describe the non-situative and lasting reference which, from now on, are accessible as possible -ways of being, as a symbolic dimension of our being in the world. (Ricoeur 1972: 258 f) What is meant here by appropriation of texts Hugo von Sankt Viktor describes as 'meditation': Meditation is the constant deliberate contemplation which explores with circumspection cause and origin, nature and purpose of every object. Meditation begins with reading, but is no longer bound to any rule or regulation of reading. It enjoys wandering through an open field where it directs its attention freely to the truth to be contemplated, and now it touches on these, now on those origins of things, but soon it delves into depths and does not leave, anything doubtful, anything unclear. The beginning of learning thus lies in reading, the accomplishment in meditation. (Hugo, 1964, 197)

3.2.2 The topical order of world meanings in Comenius' case

Hermeneutic art has presented itself as an order of aspects by which texts can be appropriated as organs of world experience. According to this order the teaching content of the texts can be reconstructed at any time: The order of appropriation proves to be an order of *memoria* in which reality is preserved in its relation to the moment, so that time no longer has any power over it. From this point of view, the order of text analysis appears as a topical art according to which world meanings are arranged and obtain their place in the microcosm of the memory.

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At the end of the Middle Ages the question of evidence of the reality and external reference of *memoria* which was simply assumed in the Middle Ages, the question of the structure of the order in which text elements (words) and objects are related to one another, became a pressing one. In his *orbis pictus* (first edition in 1658), Comenius treats the *res-verba* problem in the sense of a natural (given) order by which reality is conveyed and made accessible to us. This is a spatial order of localities where objects are found and have their place in the universe. Thinking *{memoria)* and being *(verba* and *res)* are conveyed in an encompassing order of localities, in a topical order. The *orbis pictus* represents this spatial order in the form of scenes, as *theatrum mundi* (see Yates 1990).

3.2.3 The formal phases of lessons; Herbart and the Herbartians

Founded in the learning ability itself, the *ordo legendi* was seen as the order of 'good', in the sense *of enracinement,* meaningful learning. Even good, valuable contents can be rendered valueless by interpretations of learning which miss its 'life tasks'. If the inherent laws of learning are observed — Comenius reduced the matter to this denominator — everyone can learn everything.

Individual talent plays only a marginal role, which can be either beneficial or an impediment, like air resistance with regard to the law of inertia. As far as contents are concerned, learning has a constitutive meaning according to which reality becomes accessible in an exceptional, non-socio-culturally conveyed way. The postulation to teach 'everything' refers to this constitutive function of learning. By this is meant an overall aspect of reality which presents reality in a lasting order and which can be depicted in books.'

Herbartianism turned the order of reading into a method of conducting a conversation. However, the method based on the order of formal phases is designed as a transformation of conversation into a lesson (reading), which is not dependent on material texts and books.

According to the concepts of Herbartianism the lessons should be structured in such a way that they extract the general factual content of the pupils' chance remarks and ideas and, irrespective of the meaning which they may have for the pupils themselves, make them evident. The art of teaching lies in relating successive individual remarks and contributions to one another in such a way that they form a coherent (text) entirety in which they are freed from situational narrowness. The teacher thus shows how pupils' ideas, from their perspective of life, have to be read.[1]

In this way, lessons obtain a dramatic structure insofar as the individual contributions are brought into a relationship and are linked to one another according to a pattern establishing a 'sense' context not founded in the intentions and aims of the contributors. Dramatic happenings in which remarks are woven into texts put themselves into the limelight over the heads of the persons, so to speak, or better still, through them. The pattern of the composition of the remarks becomes the *ordo legendi.* The so-called 'formal phases' — clarity, association, system and method – are the aspects whereby remarks are [41/42] linked with one another. It is not difficult to recognize the scholastic *ordo, praemitto, scindo* etc.

The formal phases of the Herbartians were developed from Herbart's 'theory of consciousness' (as one would say today). According to this, consciousness is a never-ending stream of ideas. In this stream, ideas surface and disappear again, they overlap and displace one another like ice floes in the ice-drift of a river. In the image of the river, the way is conceived in which 'something', a content, is presented and given to consciousness. The image of flowing represents time as a form of 'inherent cognition'. The specific way in which time imparts contents is 'actuality' and time itself is the organizing principle of inherent cognition: contrary to Kant, Herbart does not know a 'pure' form of inner perception underlying the flow of time.

The term 'actuality' stands for and marks a difference. The actual is determined against the background of a reverberation of the non-actual which is, however, carried along in the flow of time as something that can be made actual at any time. Seen in this light, the actual is not a point in the 'line of time', an irreversible succession. The actual is rather part of a circle of the non-actual which is either past or, in the sense *of 'avenire',* lies in the future. In this sense, the past and the future are linked in the actual: it comprises, so to speak, its determining protentions and retentions which can be realized in memories and anticipations. Through memories and anticipations time sequels take shape, with their own contours extracted from the flow of time. From mere sequences, units are constituted which can be grasped objectively and reproduced as such. The actual is merely the structuring moment of a *'Zeitgestalt'* (time figure), the fruitful moment which links memories with anticipations. (Lessing's teaching of the fruitful moment, 1955: 115 ff).

The forming of such time figures can best be studied in listening to music, eg in listening to melodies, or in the process of reading (see Iser 1976). In the form of time figures, something can be preserved and retained in the stream of consciousness. (In this way Herbart can show how *memoria* builds itself up in the immanence of time.) 'Concrete meaning' is developed in the forming of time figures in which concepts are linked with one another and extracted from the flow of time as coherent units.

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[1] Nineteenth century doctrines of teaching were imbued with the pedagogical intention of teaching the students to read from the book of nature according to the order (topic) of 'Socratic questioning'. The 'Socratically' orientated lessons did not require books (which were by no means cheap). A characteristic example would be a book published by Palm in Erlangen in 1802: Johann Pöhlmann, 'Wie lehrt man Kinder im Buch der Natur lessen?' Oder: Sokratische Unterhaltungen eines Lehrers mit seinen Schülern iiber Gegenstände der Natur' ('How can children be taught to read the book of nature? Or: A teacher's Socratic discussions with his students on objects of nature'). The order of questions is based on a logical order of predicaments (predicate categories). In answering the teacher's questions the students 'learn' to assimilate their experiences in the form of truthful sentences in a new, generally binding and communicable way.

According to Herbart, the forming of time figures is based on a strict order. The structure of this order is conveyed in the concept of actuality. The actual is what has somehow been stopped and captured, has been detached from the flow of time which in this way is distinguished from all else (non-actual) and carried along in the flow of time. In this distinction, however, the actual remains related to the flow of time. That which has actually been captured floats, so to speak, in the flow of time. The flowing of time is also effected in the capturing. The capturing of the actual Herbart calls *absorption;* effecting the flow of time in the capturing, he calls *reflection.* Absorption and reflection are therefore the fundamental forms in which the 'inner perception' presents contents and develops the concrete content of conceptions.

The order in which learning takes place, according to which therefore the concrete content of conceptions is developed, is a grammatical one in which [42/43] conceptions are raised. One could also say that, according to the grammatical order of learning, conceptions are converted into a text or book of consciousness in which a concrete world is constituted and preserved.

In contrast to this, the Herbartians used the grammatical structure as a topical one, namely as a secondary order of viewpoints on the basis of which something can be 'thematicized' and 'taken through'. These viewpoints are made topical through questions, in the answers to which the 'somehow' known, learned, experienced is constituted as knowledge in the strict sense. The answers to the questions organized according to topics are possible only in the form of truthful statements with the postulate of being equally valid for all, independent of individual experiences, standpoints and interests. Knowledge in the strict sense, verbalized in the form of the statement, is in its substance the answer to systematically organized potential questions. 'And yet, one can actually regard every statement as an answer to a question... If the question which is commented by a statement is not distinct, the statement itself remains obscure' (Straus 1960: 317 ff).

For the Herbartians, the path to knowledge is dependent on the guidance of the questioning teacher. In this way *learning becomes a meaningful turning* towards reality by which the latter comes to light in its concrete meaning. 'Meaning' in this context equals 'meaning of a sentence'. The concrete world, the communicable and objective world shared with others 'exists' only in the form of 'whole', complete sentences (propositions).

The concrete world originally confronts the pupil in the figure of the methodically questioning teacher. The teacher represents what the pupil is not yet, but possibly could be, and actually is: the being projecting itself on the world, the rational being.

At this point the criticism of reformatory pedagogics started in Herbartianism. By merely separating life-world experience and knowledge in a strict sense, the question regarding the claimed importance of knowledge is ignored. Reformatory pedagogics tried to substantiate this by bringing about the return of knowledge to the life-world and by anchoring theory in practical life. The basis of Herbartianism, the presupposition of a timeless order of questioning had become untenable. The project of reformatory pedagogics, the anchoring of strict knowledge in practical life, has proved impossible, however, due to the almost paradoxical separation of life-world experience and science.

4 Learning: Integration of Knowledge

4.1 *'Sense-orientated'-receptive learning (Ausubel)*

The attempts of reformatory pedagogics to develop knowledge (as promoted by scientific research) from practical life failed due to a hermeneutic misunderstanding. The didactics of re-

formatory pedagogics presupposed what would have had to be established first of all in the learning culture of lessons: being at home in reality. The familiar references to the existential environ- [43/44] ment, however important they may possibly be in other educational regards, especially in the education of small children, are, as already stated, anything but safe foundations on which a scientific interpretation could be built. The obvious, the familiar, proves to be the unexplained when looked at closely. In the familiar we learn to disregard the uncanny aspect of human reality. In this way, the paradoxical separation of scientific and life-world experience, which is described again and again, is explained. (See Dahrendorf 1967: 128.) The real learning process always begins with discovering what is not understood in the familiar.

The means of researching, the pursuit of science, is again not itself the object of science. This is probably also connected with the theory of the limitations of 'decidability'. (Goedel)

Particularly the freedom of contradictions in a system cannot be proved by means of the system itself. There will never be a complete system of rules of thought which is entirely secured in itself. In the last resort every formal thinking is founded on intuitive pre-conditions. (Gierer 1991: 33 ff) To conceptualize and describe the way in which sciences root themselves in reality, define their concreteness, perform their selections and reductions and thereby meaningfully overcome contingency, would therefore be the task of truly self-conceptualized didactics of scientific (or scientifically orientated) lessons. This task has hardly been embarked upon.

This is why the dimensions of 'sense' in the sciences which are not discussed, not considered in research, cannot play a part in school. The fields of science manifested in text books appear, therefore, as the purest expression of cognitive structures, and learning as the actualization of these structures based on knowledge content. Therefore, no further 'sense-orientated' conveying, no reconstitution, of the concreteness and 'factualness' of knowledge is needed. The 'learning process' can be interpreted as a 'fitting on'. Ausubel's theory of 'sense-orientated-receptive learning', for instance, is an example of this (Ausubel 1974). According to his theory, learning is effected through conveying texts which, in essence, provide a fitting on, a connection between the logical structure of the learning material and the cognitive structure of the learner.

Learning finds its accomplishment in the integration of the logical structure of the learning material. The connection of these two structures is effected by so-called 'advance organizers'. This is a short text which presents terms with which a (usually comparative) relationship is established between the conceptual repertoire of the pupil and the concepts to be acquired from the learning material or, if something completely new is involved, the structure of the learning material is outlined in broad, still undifferentiated terms. The learning process itself then proceeds in the sense of a 'progressive differentiation' of the inclusive, comprehensive concepts. The aim of the lesson has to be that the relationships between concepts, rules and operations in which the learning content is organized are explicitly grasped by the pupils.

The organization of the lesson is determined by the hierarchy of the learning categories. In the hierarchic organization of the learning categories the [44/45] structure of the learning content is transferred into structured learning. The hierarchy of learning categories represents the learning process as an order of inherent conditions: the respective lower learning category represents in this order a necessary, although not sufficient, pre-condition for the realization of the subsequent category. Whoever wants to introduce a concept has to ensure that there is a discrimination of the characteristics necessary for this purpose; to formulate a rule or propound a principle presupposes the availability of relevant concepts (see Gagne 1973). After all, the lesson has to ensure the stability of the matter learned by going over it; by applying it to concrete cases and by practice.

In the example of Ausubel's theory of 'sense-orientated'-receptive learning (following the tra-

dition of text-didactics) our attention is drawn to the following problem: the understanding of 'sense-orientated'-receptive learning originates and runs its full course in its logical significance, but the efforts which make logical penetration of reality possible are passed over, so to speak. Logical structures, which for Ausubel make up the factuality of the learning contents, are presupposed as something given, as if reality were already composed in logical letters. Logical structures which are only one dimension of the object are not developed on the basis of the objects themselves, by engaging in their pretension. When, however, 'sense-attributing' reductions are ignored, which first of all make the presentation of reality in the logical sphere possible, then access to the logical structure of knowledge is missed. The tacit equating of object and concept (structure of concept) in which it is determined that with the integration of the logical structure of the learning content, and only in it, the learner gains a firm footing in an otherwise evasive reality, draws largely on the spirit of Hegelian idealism. In the learning integration of the logical structures of life contents the learner grasps himself as the *subjectum* of reality. In cognition lies true 'subjectivity' and in its unfolding the development of the world basis.

Strictly speaking, the pupils' encounter with the sciences is still today postulated under the sign of this Hegelianism: as a process of 'formation' of the subjectivity of people which, according to the concepts of idealism, also comprises the responsible conduct of life. Admittedly the reasoning is different, however. It is said that the sciences, at a time when they are influencing all spheres of life, are necessary in the preparation for life in society. However, the achievements of scientific teaching have not proved highly successful in terms of qualifications.

Between the qualificational demands of commerce and industry and the training achievements of the educational system a back-coupling is obviously hardly possible by means of scientific observation and political planning. ... It cannot be ascertained in a politically reliable way what the success of general school education today could be. No institution of society can be detected which would have got into a crisis because the schools had insufficiently educated the public. And as expressed by the phrase of the crisis in general education, there is no politically reliable consensus on what a cultivated way of life is, the propagation of which should be the task of the schools. (Lenhardt 1 984[1]) [45/46]

The pupils themselves hardly exploit the qualificational achievements of the school (Hurrelmann 1983). In view of the value breakdown of knowledge — a half-value period is presently approximately five years — this could not be different. Therefore, the universities too have increasingly to shoulder propaedeutic tasks. It seems, however, that the value of school learning lies not so much in illusive qualifications but rather in what one could call — without exact analysis or measuring processes — 'education'.

What is decisive for our purposes, however, is something different: what is missed by idealistic interpretation of learning contact with the sciences is the dynamic fundamental feature of sciences, orientated towards an open future and corresponding with learning which is not directed by inherent teleology or *entelechy*. Demands are constantly made on learning by the dynamics of the sciences in the same way as the flexibility of the human being; thus his/her ability to learn is the driving force of research.

4.2 *The problematic nature of scientific teaching*

A meaningful interpretation of the human ability to learn seems, for the reasons indicated above, to be possible only in the medium of the sciences. Because of its 'openness' it seems that learning finds its fulfilment in the openness and dynamics of scientific thinking: by ap-

propriating scientific modes of thought and procedures, the ability to learn should even be maximized accordingly. Seen in this way, maximizing the ability to learn by appropriating scientific thought and action patterns would be the positive definition of its 'openness'. Against this background, learning would have to be interpreted, in principle, as 'science approach'. It is, therefore, not by chance that all school reforms — at least since Sputnik — have been marked by a science-orientation in teaching.

Particularly in terms of this trend, reforms have failed, however (Flitner 1977). The pupils themselves are beginning to question the essence and purpose of their pursuit of the sciences. Referring to by no means poor high-school pupils, Hurrelmann states: 'The high-achieving pupils rather complain — according to their own statements — that they understand the system in its demands with regard to structure and dynamics and that they can usually conduct themselves accordingly without any difficulties, but that the "deeper meaning" of the whole escapes them and therefore also the possibility of profiting personally and directly from these demands' (Hurrelmann 1983: 34 f). Hurrelmann sums this up by saying: 'I want to discuss only briefly those of the high-achieving pupils. As already mentioned, increasingly these pupils, particularly high-school pupils, ask questions regarding the "essence and purpose" of school requirements. These pupils miss primarily the subject and application connection in the content and form of the learning processes at school: they want a better understanding of themselves and the world by means of the learning content and in this way to be able to develop. They want also to be able to apply what they have learned as knowledge and skill (in the form of a qualification), to both in their present and future lives, [46/47] particularly in their working environment. Pupils are missing this subject and application connection in their everyday school lives. Their argument is that school knowledge can neither be applied nor is it useful empirically in daily communication nor from the perspective of a possible practical vocation' (Hurrelmann 1983: 44). A number of reasons can be stated for the failure of science-orientated teaching.

• The paradox of the future orientated aspect of the lessons has to be mentioned, a point which is seen as scientific propaedeutic. It is based on the 'professionalization' of the sciences. It is no longer the way in which Wilhelm von Humboldt could see it, namely that science is the highest aim which a person can achieve — in a *'self-actus'* — 'in and through himself (IV 191). The sciences are found present as social facts (institutions) for which a person is as little predestined as he is for the job of a turner, for example. The thought patterns of the sciences and their methods represent external conditions under which the ability to think and act are claimed; conditions which are certainly not lodged in the structure of the human mind, as was assumed by transcendental philosophy.

Due to their being professionally equipped, pupils are required to orientate themselves towards a future which need not be their own and with which, therefore, they are able to reconcile their present interests and needs only under favourable conditions. For the pupils, an alien future is an unpleasant, sometimes undesirable future. The 'essence' of science-orientated teaching is derived and judged logically by the pupils from their own occupational perspectives or intended specialist studies. The occupation with physics seems to be of very little help to somebody who wants to study the history of art.

What is important, however, is that science, as it is presented in school, for structural reasons, almost has to fail the inherent dynamics of scientific research and thus the immanent future relatedness of the sciences. What school can convey — at best — is the respective current state of a science. The process of research and cognition appears in it as something complete and perfect. Adopting the perfect, which in itself is independent of individual life-stories and worldly designs, is possible only by storing it. This perfection is concentrated in the necessary order of text books, in the cultural memory organs of the sciences. There, knowledge is pre-

sented in functional relationships and dependencies: in order to be able to calculate or explain something, something else has to be presupposed. The presupposed is limited to this function and fulfils itself there.

What has found its conclusion in knowledge which is organized 'systematically' in this way is the underlying process of cognition, in which knowledge is produced as a reasonable *organon* of experience. It is the importance of knowledge in connection with cognition which is concealed in the 'systematic' structure of the curricula. The original context of meaning within which knowledge had its place value, is spirited away by the functional context of retention. *School knowledge, therefore, has no 'own' immanent future but only a completed past.* In its perfection it can only be [47/48] remembered in functional contexts. In the absence of any future, texts' book knowledge appears as the manifestation of cognitive structures which seem to be the basis of the learning ability (so that learning could be misunderstood as the actualization of presupposed structures).

• A further reason for the failure of teaching reform carried out within the framework of scientific methods can be seen in the fact that together with the philosophy of idealism we have also lost the language with which the achievement of rooting, brought about by the sciences, could theoretically be developed and conveyed. Scientific abstractness can no longer be understood as the exhaustion of the categorial potential in which reason finds itself as an object of reality. The human being does not face himself or herself in any way when approaching reality scientifically; it is therefore not by chance that the pupils do not 'find themselves' through scientific thinking, that beyond job opportunities this thinking gives them nothing personally.

• A third factor is involved in this. Sciences are not founded in an arbitrarily formed 'original' self-generated nature of objects: neither are their procedures and methods legitimized by the descriptive presence of the objects, nor are their statements substantiated in absolutely applicable, manifest principles. Sciences are based rather on the absence in principle of objects and they certainly do not find their fulfilment in clearly exhibited visualization. What is 'given' at best by the absence in principle and eluding of reality are clues, clues which mysterious events and happenings leave behind. The sciences interpret these clues in the same way that a detective interprets clues, namely in 'stories' which bring the clues left behind into a textual referential context and interpret them accordingly. The 'real' happening 'exists' only in the interpretation of the 'story', in which the clues are decoded. The conditions of truth of the detective stories, that is the forms in which the story refers to a reality outside itself, are the traps in which the criminal gets caught. In exactly the same sense, scientific theories are proved by the traps with which they 'set' effective factors in 'experimental systems' (Fleck 1980 and Rheinberger 1992).

5 Hermeneutics of Learning - Fundamental Forms of Rooting *(enracinement)*

5.1 *The problem of a rehabilitation of perception*

It is because of the interpretational need for elusive reality in principle that this is presented to the 'modern world' of scientific civilization through the media. In this context, we understand 'media' to be all forms in which interpretations of reality are supplied to us without our own efforts and totally unsolicited: the manifold forms in which knowledge surrounds us, the flood of news and information which threatens to drown us, the world of pictures in which we are immersed, etc. The difference between *near* and *far* has become eroded in these media. The far-away has become familiar and the familiar has revealed itself as the unknown, the almost

sinister. Due to this [48/49] indistinctness, interpretations are understood as organs. In them, it seems, the world presents itself as it is — without our having contributed anything. Thus by 'media' we understand interpretations which give the impression of presenting an original picture of reality.

Through this impression, generated because of the absence in principle of reality, the selective achievement of the media and their textual structure is concealed. They evade reconstructing appropriation: television pictures are taken as true copies of real happenings; knowledge as epiphany of nature (or history). In this way, the interpretations of the media gain the status of an independent, impenetrable intermediate world. These interpretations are at one and the same time the giving organ and the given in the organ (the object).

Paul Virilio (1992) has described this very impressively. Television lets us participate in all events in such a way that it places us into the very pictures which we see as contents of these pictures. The spectator watches with and in the eye of the camera in the way in which a bomb aims at its target. The non-reconstructing acquisition, the learning of the media, eg of knowledge, becomes in this process the reconstruction of self-referral whereby the media refer to themselves as the given reality. Their meaningful task is perceived exclusively as the facilitation of communication among the 'inhabitants' of the medial intermediate world. In a world in which the 'generality' of objective references is becoming more and more doubtful, social intercourse is dependent on the reductive work of the media through which reasons for, themes and length of communication are singled out from an infinite abundance of possibilities.

In order to find a starting point for the hermeneutics of learning, for a kind of learning which is not only to be the self-reproduction of the media and thus 'sense extending', it is necessary to look at an anthropological dimension of 'medial' transmission which, so far, has been disregarded. However, one has to bear in mind that the question of 'sense extension' involves fundamentally nothing other than the acquisition of thought-extending achievements which are reflected in knowledge. These achievements, breaking through and, in the strict sense, transcending life-worlds, cannot be discussed in research itself, in its theories and procedures. Thought-extending learning is ultimately about the acquisition of these achievements which have not been discussed in practical research: thus it is about the reconstruction of the performances not thematically dealt with in research.

Which are these performances? Which are the anthropological prerequisites of the science itself with whose methods they cannot be grasped and described. The independence of interpretation on the part of the media (of a reality absent in principle) is closely connected with a 'revaluation' and re-interpretation of the performance of our sensuousness. The classical epistemologies had attributed to sensuousness the power of intuition, the 'intuitive faculty', as Pestalozzi called it. This tradition believed itself capable of conceiving in the intuitive faculty a 'sense attributing' achievement inherent in sensuousness: the revealing of reality in its visual presence. All conceptual interpretations of [49/50] perception were seen in a subordinate function: in a concept what is expressly guaranteed is only what is visually present in sensuousness.

On the other hand, where the absence of reality in principle is presupposed, one has already abandoned the idea of the visual presence of reality in sensory perception. Textual interpretation no longer has its basis in descriptive fulfilment and it is not based on an original given reality of the objects themselves. It follows that the absence of the real and the need for its interpretation means the loss of our reliance on the intuitive faculty of our senses. Seen in this light, the media's independence of interpretation would be only an expression of the structural 'lack of objectivity' of the senses, their unreliability and inscrutability.

This view led to a metaphysical interpretation of the sciences which had its origin in Western tradition. The support which the sensory experience cannot give, one hoped to find in the sci-

ences. This way of thinking was still maintained in the twenties in physics: Max Born renounced it movingly after the Second World War (Born 1951). Yet the scientific interpretations are the most reliable ones. They are based first of all on the fact that research creates in its (theoretically founded) methods and procedures its own bases of experience, on which it can start building and continue to build. With these self-created bases of experience research has established itself as an authority against the apparent security of life-world experience. By exposing the fake securities of the life-world, modern sciences have shown very sharply the uncertainty and inscrutability of sensory existence. (The reference to intuition of the senses originated in effects of civilization and criticism of science — especially, in the Aristotelian renaissances.) In the final analysis, this means that the methodical inventions of the sciences refer to the inscrutability of sensory existence in a respectively specific way: namely, not in the dialectic movement of their abolition, but in specific respects which still have to be explained.

The peculiar characteristic of the sensory representation of the sciences would thus lie in the importance of dissolving the irritations of the senses. This referring back of the sciences to sensory existence which is not discussed in the sciences themselves therefore needs to be interpreted. What would have to be actualized in the explanation of this 'referring back' is what could be called the 'didactic content' of the sciences based on Goethe's formula. This is the aspect of 'knowledge' which opens our eyes by opening up the content of the perception, that which we actually perceive when, for example, snow, beer froth, clouds and an (originally transparent) film appear white to us. According to these presuppositions, the acquisition of the didactic content of knowledge would have to be understood by 'sense-extending' learning or the reconstitution of knowledge under the conditions of our bodily sensory existence.

5.2 School: a place of alienation

What does the formula 'reconstitution of knowledge under the conditions of bodily sensory existence' mean exactly? How can this postulate be fulfilled? Learning by rooting necessarily begins with revealing the fake securities of the life-worlds in which children grow up. It is true that children are irritated, [50/51] even frightened, at a young age by mysterious apparitions such as the parallax, the refraction of light, the Archimedean principle (Wagenschein 1973) but, trusting in adults, their repressive mechanisms soon take over - the pragmatic attitude which does not investigate the 'disturbances', but which shows how one copes with them by 'allowing' for them in daily dealings.

That learning has to begin with exposing the fake securities of everyday life is not a pedagogic philosophical postulate, but the harsh reality of childhood in those societies which send their children to school. School represents a deep incision into children's lives. Dealing with objects in a way which was determined by direct life experience in the social and cultural family milieu is interrupted as a matter of principle, ie in such a way that the objects gain a completely different meaning. The cat, the dog, the bunch of flowers (even if they are brought from home) all have a different 'meaning' in lessons, although the difference from their everyday meaning is usually concealed. What is simply given in directly experienced life is removed from direct access and has now to be realized, represented. School does not know a direct presence of objects and other people. (In familiar family relations other people, parents, brothers and sisters are permanently present in a shared life story: they belong to this shared life story as its 'own'. The classmates, on the other hand, step into the life of the pupil as unknown persons, as strangers: communication with them is possible only by means of the explicit representation of the objects talked about.)

What is interrupted in school, above all, is the self-evident, quasi-natural function of the

senses and language. The patterns of perception, practiced in the life-world, forfeit their 'giving', concrete function. The senses and language are, as it were, referred back to themselves. What is meant is the following: in immediate, obvious, everyday references the senses and language are integrated in language games of social relations. Where obvious relations are interrupted, as in school, the task which presents itself is of new 'acquisition' of senses and language which does not already exist in everyday lives. The question of the inner sense, the inner faculty and the inner dynamics of language and the senses thus arises.

5.3 *Sense dimensions of learning*

The fundamental theme of hermeneutics of learning is the cultivating and disciplining of the learning ability, reclaimed under the term 'learning to learn', as a possibility of transcending life-worlds. This 'transcending work' is actualized in the scientific production of knowledge. Learning to learn accordingly would be the 'acquisition' of knowledge as a form of a 'sense orientated' representation of reality 'absent' in principle, a form which is not conveyed through the life-world. By 'sense orientated representation' we understand such interpretations of reality where strictly limited texts, *'simulacra',* generated according to open rules, take the place of contexts. The interpretation which is carried out here in the form of structuralist activity is reflected objectively in [51/52] the composition of the *'simulacrum',* ie in the functions which are fulfilled by the 'picture elements' in the structure of the whole.

We have considered the acquisition of knowledge as, specifically, a reconstitution of reality represented in it under the conditions of a bodily sensual existence. We have called the given task a reconstitution because the learning pupil does not have to re-invent all the wheels, so to speak. The lessons can neither want to construct the *simulacra* of the sciences (teacher and pupils are, after all, not involved in research) nor can the learning acquisition of knowledge be about a mere reproduction of that found at hand. That one understands only what one can do or copy is a misconception. Learning to learn would therefore be the disciplining of our abilities for the reconstitution of what is present in a perfect form. The realization of the reconstitution takes place on different levels, which are hierarchically structured.

5.3.1 The aesthetic dimension of learning

What does the formula 'reconstitution of knowledge under the conditions of our bodily sensual existence' mean? What specifically does it mean that the reconstitution is to be, at the same time, the liberation of our senses from their occupation by the language games of daily life in the life-world?

Independent of the objective interpretations of the activity of the senses in the pragmatics of everyday life, the reality in our senses is 'given' by the sentiments and impressions which it arouses in us. In our sentiments we are given to ourselves in being bodily embedded and fitted into reality which we cannot suspend: in our relationship to the world over which we have no power, from which we can only dissociate ourselves at the cost of our own lives. 'Subject' and 'object', if we may use these inadequate expressions for the purpose of understanding, are entwined in the sentiments in an indissoluble unity. Condillac has worked out this characteristic of the sentiments, with a precision that can hardly be surpassed, on the thought model of the marble statue, which he gradually equips with senses.

If we hold a rose to the statue, it will be in relation to us a statue which smells a rose; but in relation to itself, it will only be the perfume of this very flower ... In short, the perfumes are in this respect only the statue's own modifications or modes of being and it cannot regard itself

as something else, because these are the only sentiments it responds to. (Condillac 1870: 19f)

Fichte developed this concept further and understood this undifferentiated subject-object unity as the starting point of the subject-object unity which is accomplished in knowledge and as knowledge (see II 125).

In daily dealings the sentiments are already construed in the pragmatic contact with the objects and therefore exceeded. One does not actually hear sounds in their acoustic qualities only but from the beginning, the rustling of a newspaper, the snoring of the sleeper and the starting of a motor-bike, etc. In the same way one sees the 'contact' qualities of the objects: something seems to be *too* large, etc. The sensory perceptions are always already interpreted and evaluated as properties of the object. [52/53]

According to this, the acquisition of the non-objectively interpreted (and conveyed) sensuousness would mean considering the sense contents of perception and the impressions they leave us with. These impressions, the effects of our being affected can, however, not be grasped as objective facts. Being directly impressed is missed in the categories of objective description. In their actual and strict sense, impressions 'exist' only in the expression in which their effect is displayed, irrespective of the fact that they are not created in their expression and that they are 'there', independent of it. The effect which is 'referred to itself is the fundamental phenomenon of the aesthetic (see also Komg 1937; 1978: 256-337).

Several things are included in 'expression', which cannot be differentiated here. Thus the impression which an object leaves behind can arouse memories in which references to similarities are created; noises can be imitated — 'there or thereabouts', sounds can be 'moved'; in the physical fading out or resonation of a metal sound (eg a gong) the volume of the sound obtains its motor form. The impressions which are produced only in the expression of their effect are like traces inscribed in our corporeity. The effect of the impression is that the traces captivate us so that we have to follow them even against our wills. In this way, by investigative expressing, the aesthetic penetration of our impressions becomes a kind of 'encasing' in our own bodies. Merleau-Ponty has described the relationship to our body (the corporeity of our existence) as 'living and inhabiting' (1984, 29 *et ah* 1976).

Thus 'inhabited', the body does not display the obstinate clumsiness with which it resists our intentions; one learns to use one's own body as one uses a musical instrument: by playing a violin one tries to get out of it what lies dormant in it, what makes it more than just a worked piece of wood. In the same way, the aesthetic fabric of one's own body does not yield in submission to superior purposes, but rather its purpose is that of sensitive, supple involvement, of opening itself up to the reality in which it finds itself.

In this sense, an elementary relationship to reality is developed in the aesthetic penetration of perception, in which reality appears not as *threatening* but *trustworthy*. In this relationship the possibility of engaging in reality does exist, in so far as one is able to perceive the demand made on us by objects. A venerable philosophical tradition has called this being able to engage in the demand of objects by fulfilling the conditions under which objects place us: delight *(fmitio)*. The elementary relationship to objects which we are attempting to describe here is already shown in the most simple forms of enjoyment: an apple will be enjoyed and in its enjoyment revealed differently from an orange, and tea in a different way from coffee. There are three things which are important in this context:

- The most elementary form of rooted learning is enjoyment in the sense of being able to engage in the demands of objects we meet, as perceived in impressions.

- The fulfilment of these demands is seen as an enrichment of ourselves.

- The relationship to the world realized in *the* structures of enjoyment resounds like an organ point through our ability to be productive. [53/54]

One could call the way in which we engage in objects and attempt to meet their demands *'mimesis'*. According to the Pythagorean proposition, *mimesis* expresses what is missed by perception, although in a mysterious way it is present in it (see Ritter/Grunder 1980: Vol v Column 1396). What is expressed in *mimesis* is the pictorial quality of objects with which we realize our pre-occupation with them in a sensual way.

5.3.2 Exemplary learning

The aesthetic rehabilitation of the senses can, however, not yet be taken as a basis for objective universal conditions. The objective is, in a certain sense, dissolved in the aesthetic. It seems that the rehabilitation of sensuousness cannot be brought about all at once and for always. It shows clearly that there are different levels of rooted learning which encourage and complement, but cannot replace, one another. In concrete terms this means: precisely because the objective is dissolved in the aesthetic acquisition of the senses, the reconstitution of the objective becomes 'need-adaptable' if the objective relationship to the world is to be a kind of rooting in the reality. The aesthetically sensitized person, in particular, is also sensitized for the limitations of the aesthetic, a limitation which breaks down with mysterious phenomena (light refraction, displacement of water, magnetism, etc).

In his teaching Wagenschein singled out, from the normality of everyday life, 'strange phenomena' in which nature becomes distinctive and the testimony of the senses is challenged. The occurrence thus singled out becomes an example. Such phenomena which bring childhood irritations to life again cause shock, namely in the sense that one realizes one has lightly passed over the inconsistencies of the world. With the effect of shock, realization begins (Lipps 1941: 44 ff). In the very realization the human being is brought to himself in a virtually paradoxical way. On one hand, one finds oneself facing reality in an irritating way — unorganized and disorientated, in profound helplessness and embarrassment. On the other hand, one is referred back to oneself as the attributive subject.

With regard to the mysterious phenomena which shock us, we have to find the solution ourselves. No prompting or advancing of the solution frees us from a clear self-realization. This describes the fundamental situation of teaching which found its classical representation in 'Menon'. Certainly Menon's slave does not develop the solution from the profoundness of his own mind, but what Socrates 'demonstrates' (by drawing the diagonal into the square to be doubled) becomes only a teaching due to the slave arriving at understanding this himself. In more general terms: the mystery of the phenomena refers one back to oneself as the attributive subject which finds itself called upon to reorientate in order to be able to find firm ground again. Such 'turnings' form, as shown by the example of Menon, the basis of teaching; teaching to be understood in the sense of craft teaching in which a certain direction and orientation of the senses are of importance, which the everyday life situation does not know 'in this way'. Seen in this light, teaching shows itself as informing, ie disciplining sensuousness. [54/55]

The person referred back to himself in the face of mysterious phenomena does not find the solution within himself, however, in his experience or in his stored knowledge, and in the concepts and rules thus far proven the solution has to be found in the object itself and developed from it. It lies in such a way in the phenomena themselves, however, that one has to 'look into' them by re-directing the eye or changing the given facts. This changing is generally done by inventing a legend by means of which the mysterious is demystified, decoded. The decoding of the mysterious which is discussed here is, however, not based on a universal code; rather the legend has to be produced with regard to the concretely unusual in the form of a text, like a detective story. Asked the question as to why an otherwise transparent plastic film appears opaque and white when it is folded, the twelve-year old might answer that by folding it 'a

thousand small mirrors' are created which reflect one part of the light like mirroring window panes and filter through the other. The 'turning white' of the plastic film is the story in which an otherwise mysterious process is demystified.

The mediation between the occurrence and the human being referred back to himself and surrendered to his subjectivity, through the 'insinuation' of the story, has been called a 'phenomenon'. In this sense, teaching is contained in the phenomena themselves and takes place as the informing of an initially irritated sense perception. Teaching brings to the fore what one actually perceives when snow, the froth of beer and the folded plastic film appear white. The teachings, which in the form of legends produce the phenomenal content of irritating occurrences, are seen as satisfactory answers to the questions which are generated by the irritation. The solution is found in an answer which satisfies the need for adequate perception and which restores the confidence in our sensuousness. The suspension of the difference between seeing and the seen object was called 'cause' in the concepts of philosophy. A suspension of the difference of perception and object in the phenomenal content of an appearance is discussed here only with regard to a specifically selected case. The 'satisfactory answer' applies only to this case; the cause we spoke of with regard to teaching would then be — in this case — a sufficient cause.

5.3.3 Understanding knowledge

Elements of knowledge are involved in the forming of the legend of exemplary learning; the pupil who sees a 'thousand mirrors' created by the folding of the plastic film would not arrive at this assumption (hypothesis) if he had no idea of reflection and the refraction of light. An acquisition of knowledge as such does not yet take place here; knowledge contents are used and meaningfully applied only in constructing an explanatory story.

The acquisition of knowledge is a specific form of gaining a firm foothold m a reality absent in principle, thus in a specific form of understanding. In knowledge, reality becomes accessible in the form of statements and combinations of statements. Seen in this light, it is the manifestation of *logos* (of speaking reason) and the conditions of 'life on earth' (to use of Schleiermacher's formulae). This means primarily that in knowledge the logi- [55/56] cal penetration and establishing of reality is accomplished. It represents, in Wittgenstein's term, 'situations' ('*Sachlagen')* in a logical sphere (1963: 16 ff). The logical penetration of reality can itself not be deduced logically and derived strictly from first principles. Although knowledge represents reality in the logical sphere, the exploration of the possibility and extent of this logical penetration, which idealism thought of being able to use as a starting point, cannot be established logically.

In this sense the reduced statement has to be understood, namely that knowledge is the manifestation of *logos* under the conditions of life on earth. The exploration of the possibility of logical representation is brought about in the forming of theories. The latter has no reason beyond itself and, seen in this light, is a practical art which has to attend to the exploration and probing of its own possibilities and limitations. In scientific theories based on empirical execution, it is shown what influence *logos* has over them under the conditions of human reality. The development of theories distinguishes itself from the arts only in so far as it works out the patterns of generating statements explicitly in the shape of formal structures and thereby, as in a kind of instruction for use, making them usable.

If this is correct, it follows that it is only he or she who generates in a 'self act' the theoretical context within which empirical findings 'say' something who *really* knows. The acquisition of knowledge can be actualized only as a process of developing its generating patterns. Martin

Wagenschein has given a brilliant example for the comprehending acquisition of knowledge in a didactic piece on never ending prime numbers (1965: 102 ff).

The evolution of theory is the most accomplished form of the reduction of contingency that we know, as it makes possible unambiguousness in the representation of reality. This unambiguousness is possible only as delimitation of the aesthetic and exemplary didactic creation of meaning, however. Seen in this light, the evolution of theory remains bound to our bodily-sensual existence in the form of limitation. Thus limitation presents itself as transformation and reorganization of our perception in the process of which perception not only informs but is also submitted to technically produced conditions and substituted by apparatus. (As Hans Lipps put it, physics is the environment of *apparati.)* Comprehending the theory is therefore possible only by the process of 'transformation' of perception which always also shows what it disregards. The theory becomes comprehensible from the difference to that which it disregards. One has to know Goethe to understand Darwin.

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